



Cboe Futures Exchange FIX Specification

Version 1.1.26

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1 Introduction

1.1 Overview

Cboe Futures Exchange (“CFE”) Trading Privilege Holders (“TPH”)s use a subset of the FIX 4.2 protocol for order entry and drop copies.

It is assumed that the reader is familiar with the FIX 4.2 protocol as described at <http://www.fixprotocol.org>. This document describes the differences between the CFE implementation and the FIX 4.2 standard.

Please refer to <http://cfe.cboe.com> for updates and further information on CFE policies and procedures.

1.2 Hours of Operation

Refer to the web site for the [CFE Holiday schedule](#).

All orders are live upon acceptance by CFE. Orders are rejected if they are received outside the sessions as defined in the associated product contract specifications.

For more information on the CFE Opening Process, please refer to the [Cboe Futures Exchange Opening Process Specification](#).

Trading hours on CFE vary by product. See the product contract specifications for details on trading hours for each product, which may differ for expiring and non-expiring contracts. See the [CFE Holiday schedule](#) for trading hour adjustments corresponding to holidays.

FIX sessions are available for connection on Sunday starting at 10:30 a.m. CT. FIX sessions will disconnect each day between 4:05 and 4:45 p.m. CT for the daily restart. This will reset all sequences to zero in preparation for the next trading segment. FIX sessions will disconnect on Friday at around 4:05 p.m. CT but will remain available for connectivity testing (telnet testing) until startup on the following Sunday.

1.3 Data Types

1.3.1 Timestamps

All FIX timestamps are GMT as per the FIX standard. TPHs are expected to synchronize their clocks with an external time source.

1.3.2 Prices

Price fields (e.g., *Price* (55), *LastPx*, (31), *StopPx* (99), *AvgPx* (6)) can contain positive, negative and zero values as a result of Spread instrument support. Order prices (e.g., *Price* (44), *StopPx* (99)), must comply

with product-specific minimum trading price increments as specified in associated product contract specifications.

TPHs should program systems to allow execution prices to be returned with up to four decimals.

1.4 Protocol Features

1.4.1 Carried Order Restatements

Good 'till Cancel ("GTC") orders, Good 'till Date-Time ("GTD") orders, and Day orders entered during partial holiday sessions can result in orders persisting between sessions. The CFE FIX protocol provides a mechanism for clients to request restatement of orders that have been carried forward from the previous business day trading session. See 'Section 7 - FIX Order Entry Port Attributes' for information on available port attributes, including 'Carried Order Restatements'.

When enabled, Carried Order Restatements are sent to connected clients for each product on the CFE 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 `Execution Report` messages with the following optional attributes set;

- `ExecTransType` = "3" (Status)
- `ExecType` = "D" (Restated)
- `ExecRestatementReason`:
 - GTC, GTD: `ExecRestatementReason` = "1" (GT renewal)
 - Day: `ExecRestatementReason` = "4" (Day order restatement)

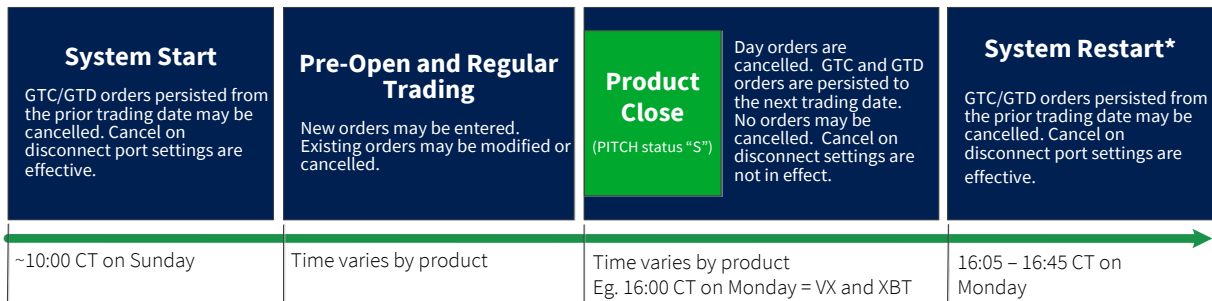
To receive Carried Order Restatements, the Carried Order Restatement port attribute must be set (contact CFE Trade Desk). Since the Carried Order Restatement `Execution Report` messages are delivered to the session handler before the TPH connects, the `MsgSeqNum` (34) field of the `Logon Message` received by the TPH reflects the number of Carried Order Restatements that are available to retrieve by using a subsequent `Resend Request` message.

Note that no notification is provided at the end of a trading session to indicate when GTC, GTD, or Day orders on partial holiday sessions are persisted to carry over to the next trading sessions. Instead, Carried Order Restatements can be used by members to be notified of orders that have persisted from the previous session.

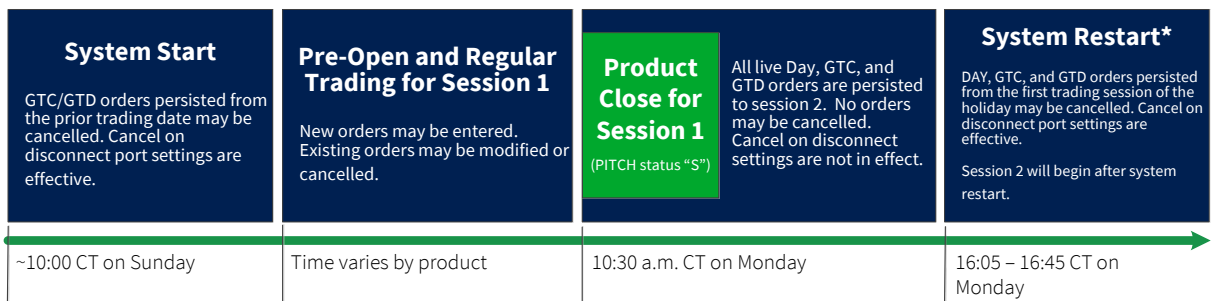
1.4.2 Cancellation of Carried Orders Between Market Sessions

GTC and GTD orders persist within CFE’s trading system between CFE business days. GTC, GTD, and Day orders also persist between multiple trading sessions on the same business day in connection with a holiday. Persisted orders can be cancelled while the associated product is in a suspended state and during other trading states as described above. At the scheduled end of trading for a product, cancellation requests for persisted orders in that product will be rejected with reason “O: Unknown Order” until after the system restart completes. After the system restart, persisted orders can be canceled from that time until the scheduled end of trading. In other words, the period of time in which persisted orders cannot be cancelled starts at the scheduled end of trading for the associated product and ends after the system restarts. System restarts occur during a suspended state prior to the start of a queuing period and there may be minimal variation in the system restart time.

Regular Trading Example



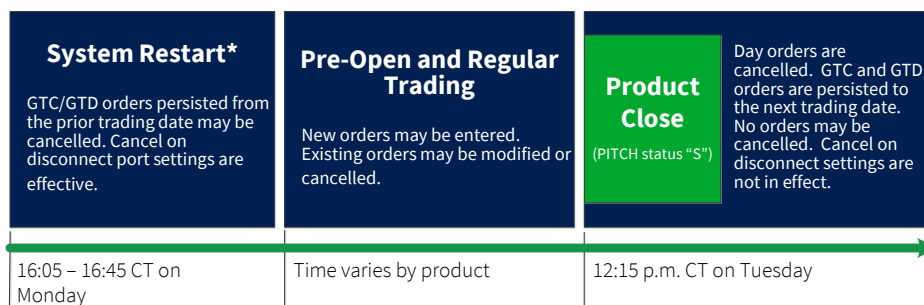
Monday Holiday Example



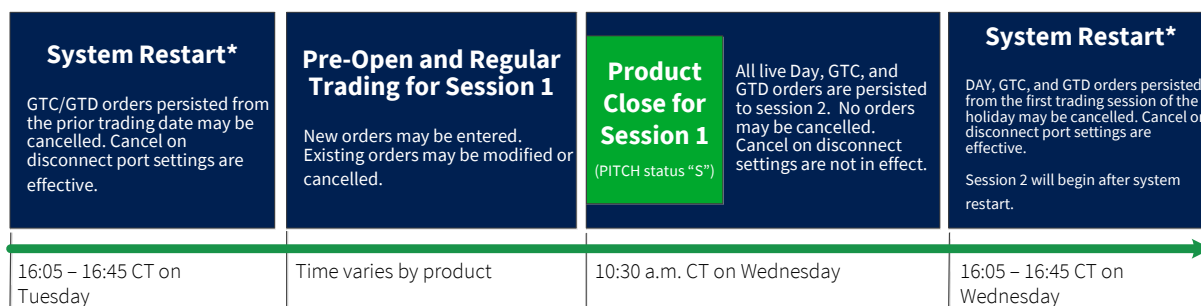
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Tuesday Half-Day followed by Wednesday Holiday Example

Tuesday Half-Day



Wednesday Holiday



* The disconnect/reconnect sequence of a system restart generally takes about two minutes and could occur anytime between 16:05 and 16:45 CT.

1.4.3 Post-Settlement Execution Restatements

Execution Report messages received at the time of the trade in products VXT (Trade-At-Settlement (TAS) for VX), VA (Variance Futures) and VAO (Variance Stub Futures) should be considered initial notification of trade. In all three of these products, information available only after the settlement time of the associated contract is required before the trade can be cleared. The following describe the post-settlement processing required for each applicable product:

VXT Execution prices of VXT (TAS) trades represent an offset to the end-of-day settlement price of the associated VX contract. For example, a trade executed at 0.02 is an agreement to buy and sell VX contracts at a price that 2-cents above the end-of-day settlement price, which is available after 3:15PM CST. When VX end-of-day settlements are available, TAS trades executed during the business date are 'resolved' by updating the execution price and changing the symbol to the associated VX contract. TAS trades are cleared as VX trades.

VA Variance Futures are traded at prices in Volatility points (e.g., 15.5% volatility equals a price of 15.5) and quantity expressed in units of Vega (e.g., 100 equals 100 * 1,000 = 100,000 Vega, which is an exposure such that the value change of the position corresponding to a 1% change in Volatility change is \$100,000). While VA trades are executed in Volatility and Vega terms, they are cleared in Variance price and size units. At the time of a trade, required

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information is available to compute the trade size in Variance units (i.e., traded size in Vega units, traded price in Volatility units, and expected and elapsed trading days). As a result, the pending `Execution Report` at the time of execution, as well as the end-of-day `Execution Report` will contain the traded size in Variance units in the `ClearingSize` (21051) field. At approximately 4:00PM CST, the closing price of the S&P 500 index is obtained and used to translate the trade price from Volatility to Variance units, after which trades can be cleared and restated with the Variance units price placed in the `ClearingPrice` (21050) field.

VAO Variance Stub futures are used to trade small size Variance Futures as required to exactly exit a previously entered Variance Futures position (see the Variance Futures Contract Specification). Exiting a VA position requires determining the number of Vega units to be transacted in order to offset a previously executed trade (note the Vega associated with a specified number of Variance Units changes daily). Inevitably, the associated Vega is not an even multiple of 1,000 (minimum VA contract size). To exit a VA position, the round lots of Vega are executed directly in VA. VAO trades are used to execute residual ‘odd lots’ of VA directly in Variance Units to completely exit a position. The ‘odd lots’ of Variance Units is computed by subtracting the Variance Units associated with the just executed offsetting VA trade (in Vega units) from the original size in Variance Units. Like VA futures, VAO trades in price units of Volatility. Unlike VA futures VAO futures trade directly in Variance units for size. As a result, both the pending `Execution Report` and the end-of-day restatement `Execution Report` contains the `ClearingSize` (21051) populated with Variance units size, which is simply a copy of the `LastShares` (32) field. At approximately 4:00PM CST, the closing price of the S&P 500 index is obtained and used to translate trade price Variance units, after which trades can be cleared and restated as VA trades in the associated VA contract.

In all three of the above products, trades executed intraday are acknowledged back to participants using standard `Execution Report` messages. The first `Execution Report` message received in these products is considered a ‘Pending’ trade. CFE follows up each initial (i.e., pending) TAS and Variance future execution with post-settlement `Execution Report` messages with the following field values:

- `ExecTransType` = “2” (Correct)
- `ExecType` = “D” (Restated)

In addition, custom fields are added to the follow-up `Execution Report` messages (see Section 4.4 - Custom FIX Fields). The following summarizes the restatement details for each product:

VXT VXT trades are restated with the same `ExecID` and `ClOrdID` as the original trade. The as-executed symbol, price and size are maintained in the `Symbol`, `LastPx` and `LastShares` fields respectively. The symbol with which the VXT execution will clear (i.e., the VX symbol with

the equivalent expiration as the as-executed VXT symbol) is contained in the *ClearingSymbol* (21053) field. The price with which the VXT execution will clear (i.e., the as-executed price from the *LastPx* field offset by the settlement price of the associated VX contract) is contained in the *ClearingPrice* (21050) field.

VA VA trades are restated with the same *ExecID* and *ClOrdID* as the original trade. The as-executed symbol, price and size are maintained in the *Symbol*, *LastPx* and *LastShares* fields respectively. The symbol with which the VA execution will clear is the VA symbol directly. As a result, the *ClearingSymbol* (21053) does not exist for VA execution restatements. The price with which the VA execution will clear (i.e., the as-executed Volatility until price in the *LastPx* field transformed into Variance units) is contained in the *ClearingPrice* (21050) field. The size with which the VA execution will clear (i.e., the as-executed Vega unit size in the *LastShares* field transformed into Variance units) is contained in the *ClearingSize* (21051) field.

VAO VAO trades restated with the same *ExecID* and *ClOrdID* as the original trade. The as-executed symbol, price and size are maintained in the *Symbol*, *LastPx* and *LastShares* fields respectively. The symbol with which the VAO execution will clear (i.e., the VA symbol with the equivalent expiration as the as-executed VAO symbol) is contained in the *ClearingSymbol* (21053) field. The price with which the VAO execution will clear (i.e., the as-executed Volatility until price in the *LastPx* field transformed into Variance units) is contained in the *ClearingPrice* (21050) field. The size with which the VAO execution will clear is contained in the *ClearingSize* (21051) field and is a copy of the as-executed size from the *LastShares* field since VAO instruments trade directly in Variance units.

Post-execution restatement *Execution Report* messages that are associated with orders originally submitted with *TimeInForce* (59) value of 4="FOK" will be contain a *TimeInForce* (59) value of 3="IOC" rather than the originally specified 4="FOK" value.

1.4.4 Spreads and Signed Prices

Spreads instruments trade on CFE in a well-defined universe of two, three and four legged spreads with a restricted set of ratios and buy/sell conventions as shown in the table below. The notation S(1):B(1) means sell the first (earliest) expiration and buy the second (latest) expiration. The ratios of each leg is one, which means one unit of the spread contract is equivalent to selling 1 unit of the first expiration and buying one unit of the second expiration.

Legs	Spreads (B=Buy, S=Sell, ()=Ratio)
2	S(1):B(1) , B(1):B(1), S(1):B(2), S(2):B(1)
3	B(1):B(1):B(1), B(1):S(2):B(1)
4	B(1):B(1):B(1):B(1), B(1):S(1):B(1):S(1), B(1):S(1):S(1):B(1)

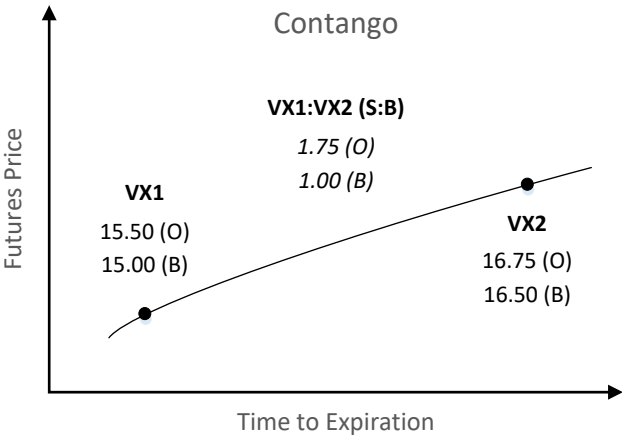
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The bold two leg spread – S(1):B(1) – is a special spread that always exists in the CFE system. As new contracts are listed, the S(1):B(1) two leg spread instruments are automatically created between the new contract and all existing active contracts.

Spread instruments can result in executions where the buyer gets paid and the seller pays. This can be non-intuitive in all but the simplest spreads. Consider the simplest two leg spread VX1:VX2 comprising selling one unit of the VX1 contract and buying one unit of the VX2 contract. To illustrate how buyers can get paid and sellers can pay, we examine spread pricing in Contango and Backwardated price environments.

Figure 1 below illustrates spread pricing in a ‘Contango’ price environment in which the price of the early expiration contract is lower than the later expiration contract. In this example the Bid/Offer of the VX1 simple contract is 15.00 x 15.50 and the Bid/Offer for the VX2 contract is 16.50 x 16.75. The synthetic market for the VX1:VX2 spread (i.e., the Bid/Offer implied by the leg markets) is 1.00 x 1.75. The bid of 1.00 derives from the fact that the offer on the VX1 leg is 15.50 and the bid on the VX2 leg is 16.50 and the net of the two is 1.00 net debit (i.e., buyer pays). Figure 1 shows the implied spread market in italics. This is the normal intuitive situation where spread buyer pays and seller gets paid.

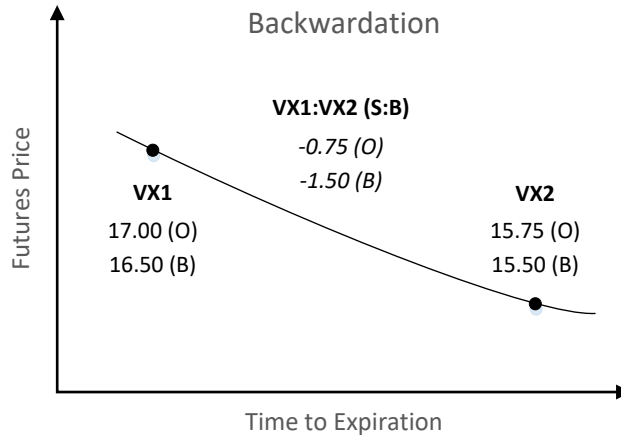
Figure 1 - Contango S(1):B(1) spread price example



Next, consider the same example in the context of a Backward, or Inverted, market in which the price of the early expiration is higher than the price of the later expiration. Figure 2 below illustrates spread pricing in a Backward price environment. The Bid/Offer of the VX1 simple contract is 16.50 x 17.00 and the Bid/Offer for the VX2 contract is 15.50 x 15.75. The synthetic market for the VX1:VX2 spread is -1.50 x -0.75. The bid of -1.50 derives from the fact that the offer on the VX1 leg is 17.00 and the bid on the VX2 leg is 15.50 and the net of the two is 1.50 net credit (i.e., buyer gets paid).

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Figure 2 – Backwardation (Inverted) S(1):B(1) spread price example



Spread pricing requires thinking of instrument prices on the entire real number line and not just positive numbers. In the example above the bid is *less* than the offer as it is left of the offer on the real number line. One can buy at the offer (paying -0.75 = receiving 0.75) and subsequently sell back at the bid (receiving -1.50 = paying 1.50), giving up the bid/offer spread (0.75) in the process; the same as positive prices. This concept generalizes to two and three leg spreads and unequal ratios; prices can just as easily be negative as positive as a result of the pricing environment (i.e., shape of the price curve vs. expiration date) and the spread definition (which legs bought/sold and ratios).

1.4.5 OCC Clearing Reference

The following table can be used to assist firms in mapping values sent in FIX to their associated field names at the OCC. Note that Tag 440 (*ClearingAccount*) is not sent to the OCC.

Tag	Field Name	OCC Mapping
115	<i>OnBehalfOfCompID</i>	Exec Broker
1	<i>Account</i>	The first ten characters will appear in the Account # field. The entire 16 character string will appear in the Optional CM Data field.
17	<i>ExecID</i>	Trade ID
37	<i>OrderID</i>	Exchange Data
11	<i>ClOrdID</i>	Order ID
439	<i>CMTANumber</i>	CMTA CM#
440	<i>ClearingAccount</i>	Not sent to the OCC.

2 Protocol

2.1 Message Format

FIX messages are ASCII formatted. The TPH will be provided with a *SenderCompID* and *SenderSubID* that must be sent on every message. The *TargetCompID* for all messages the TPH sends will be "CFE". All messages the TPH receives will have the Sender and Target fields swapped.

FIX Tags not defined in this specification will be ignored and will not be returned on `Execution Reports` back to the TPH.

2.2 Sequence Numbers

Sequence numbers, both inbound and outbound, will be reset to one daily between 4:00PM CST and 4:45PM CST. Existing FIX connections will be forcibly disconnected at that time each day.

Messages are processed in sequence order. Behind sequence messages (other than `Sequence Reset`) cause immediate logout. Ahead of sequence messages (other than a `Resend Request`) trigger a message recovery via a `Resend Request`.

2.3 Version Compatibility

CFE uses the FIX 4.2 session protocol.

3 Sessions

The following session messages are supported in both directions:

Message	Type	Comment
Logon	A	Begin session (or resume a broken session)
Heartbeat	0	
Test Request	1	
Resend Request	2	
Reject	3	Malformed message or improper session level handling
Sequence Reset	4	Both Gap Fill (<i>GapFillFlag=Y</i>) and <i>Reset</i>
Logout	5	Used to gracefully close session

3.1 Connectivity

IP Address	Address to connect to	Supplied by CFE
TCP Port	Port to connect to	Supplied by CFE
SenderCompID	Sent in every FIX message to CFE	Supplied by CFE
SenderSubID	Sent in every FIX message to CFE	Supplied by CFE
TargetCompID	Sent in every FIX message to CFE	“CFE”
TargetSubID	Sent in every FIX message to CFE	“TEST” for test system “PROD” for production

For information on connectivity options to CFE, refer to the [CFE Connectivity Manual](#).

3.2 Logon

Tag	Field Name	Required	Description
35	<i>MsgType</i>	Y	A
108	<i>HeartbeatInterval</i>	Y	Client Heartbeat Interval (in seconds).

The *Logon* must be the first message sent by the TPH after the TCP connection is established. *EncryptMethod* is ignored (FIX level encryption is not supported).

CFE will wait one second after a *Logon* is received to ensure that no *Resend Request* messages are in flight from the TPH. A *Heartbeat* will be sent to indicate that the one second wait period has ended. TPHs should not send any orders prior to receiving this first *Heartbeat* from CFE.

The IP Address of the TPH, the *SenderCompID*, *SenderSubID* and *TargetCompID* and *TargetSubID* (“TEST”/“PROD”) will be validated. If validation fails the connection will be dropped without a reject (to avoid corrupting the TPHs sequence in the case that the TPH merely mistakenly connected to the wrong port).

If connection is unexpectedly broken, upon reconnection the TPH may receive a login reply with a sequence number greater than expected. This means that in-flight messages were missed (likely important execution reports). The TPH should issue a `Resend Request` to retrieve the missed messages.

Similarly CFE will issue a `Resend Request` to the TPH for messages that it missed. The TPH may wish to send gap fill messages in place of new orders to avoid re-submission of potentially stale orders.

`HeartbeatInterval` must be specified by the TPH in the `Logon` message. This value will be clamped between five and 300 seconds and returned in the logon reply message. We recommend using as low a value as the reliability and latency of your telecommunications channel will allow.

3.2.1 Logon and Carried Order Restatement

If the `Carried Order Restatements` port attribute is set, unsolicited `Execution Report` messages representing “carried” orders loaded by the system at startup will be sent after the `Logon` response. Carried orders are orders that persist across a trading segment. Trading segments are delimited by periods of time in which the exchange is closed for trading. Good ‘till Cancel (GTC), Good ‘till Date-Time, and Day orders persisting across holiday trading segments comprising a single business date are the only order types that will appear in Carried Order Restatements (see Section 1.4.1 - Carried Order Restatements).

Carried GTC, GTD, and Day orders that span holiday trading segments within a single Business day will use `ExecTransType="3"` (status), `ExecType="D"` (Restated) and `ExecRestatementReason="1"` (GT renewal / restatement) for GTC and GTD orders and “4” for Day orders.

3.3 Heartbeat

Tag	Field Name	Required	Description
35	<code>MsgType</code>	Y	0
112	<code>TestReqID</code>	N	Required in response to a Test Request.

A `Heartbeat` message should be sent if the agreed upon `HeartbeatInterval` has elapsed since the last message sent. If any message has been sent during the preceding `HeartbeatInterval` a `Heartbeat` message need not be sent.

3.4 Test Request

Tag	Field Name	Required	Description
35	<i>MsgType</i>	Y	1
112	<i>TestReqID</i>	Y	Auto-generated request ID.

If a *HearbeatInterval* + one seconds have elapsed since the last message received, a *Test Request* should be issued. If another *HearbeatInterval* + one seconds go by without receiving a message the TCP connection should be dropped. This ensures that a broken TCP connection will be detected even if the TCP stack doesn't notice (this has been observed to happen in WAN environments, particularly when a VPN is involved).

3.5 Resend Request

Tag	Field Name	Required	Description
35	<i>MsgType</i>	Y	2
7	<i>BeginSeqNo</i>	Y	Auto-generated request ID.
16	<i>EndSeqNo</i>	Y	0 means + infinity

A *Resend Request* message should be processed even if it is received ahead of sequence. Only after resending the requested range (all marked *PossDup*="Y", including any gap fills) should *Resend Request* be issued in the opposite direction.

As discussed in the FIX 4.2 specification, it is possible to send an open or closed sequence range in a *Resend Request* (an open range uses sequence zero as the *EndSeqNo*). CFE will honor either type of request, but will always issue *Resend Requests* with a closed sequence range.

3.6 Reject

Tag	Field Name	Required	Description
35	<i>MsgType</i>	Y	3
45	<i>RefSeqNum</i>	Y	<i>MsgSeqNum</i> of rejected message.
371	<i>RefTagID</i>	N	
372	<i>RefMsgType</i>	N	
373	<i>SessionRejectReason</i>	N	
58	<i>Text</i>	N	

Session level rejects are used to indicate violations of the session protocol, or missing (or bogus) fields. These are to be expected during development and certification, while the TPH is being adapted for

CFE, but should be extremely rare in production. Application layer rejects (like Order Reject and Cancel Reject) are normal.

3.7 Sequence Reset

Tag	Field Name	Required	Description
35	<i>MsgType</i>	Y	4
36	<i>NewSeqNo</i>	Y	<i>Next expected sequence number.</i>
123	<i>GapFillFlag</i>	N	<p>Sequence Reset - Gap Fill messages (<i>GapFillFlag</i>="Y") must be received in sequence. Any messages (including any Gap Fills) sent in response to a Resend Request should have <i>PossDup</i>="Y".</p> <p>Sequence Reset - Reset (<i>GapFillFlag</i> not "Y") is used only as a last resort, and always by human intervention, to allow an otherwise hopelessly confused session to be resumed. In these cases all chance at automatic message recovery are lost.</p>

3.8 Logout

Tag	Field Name	Required	Description
35	<i>MsgType</i>	Y	5
58	<i>Text</i>	N	<i>Indicates reason for Logout.</i>

Either side may issue a logout to gracefully close the session. The side that issues the logout should process messages normally until it sees the logout reply, and then break the TCP connection. CFE will typically only request Logout after the scheduled end of FIX session.

This includes the pausing of a session due to holidays.

4 FIX Messages

4.1 Standard Message Header

Tag	Field Name	Req'd	Description
8	<i>BeginString</i>	Y	FIX.4.2 Must be first field in message
9	<i>BodyLength</i>	Y	Length of message following <i>BodyLength</i> field up to and including the delimiter preceding the <i>Checksum</i> field. Must be second field in message.
35	<i>MsgType</i>	Y	Must be third field in message
49	<i>SenderCompID</i>	Y	ID of sender: Assigned by CFE for messages sent to CFE (<i>TargetCompID</i> for messages from CFE)
50	<i>SenderSubID</i>	Y	Sub ID of sender: Assigned by CFE for messages sent to CFE. (<i>TargetSubID</i> for messages from CFE)
56	<i>TargetCompID</i>	Y	ID of destination: "CFE" for messages sent to CFE (<i>SenderCompID</i> for messages from CFE)
57	<i>TargetSubID</i>	Y	Sub ID of destination: "TEST" for messages sent to CFE test system "PROD" for messages sent to CFE production system (<i>SenderSubID</i> for messages from CFE)
34	<i>MsgSeqNum</i>	Y	Sequential sequence number for session
43	<i>PossDupFlag</i>	N	Indicates a message resent from the admin level (has a duplicate sequence number). Default is "N"
52	<i>SendingTime</i>	Y	GMT date-time that message was sent
122	<i>OrigSendingTime</i>	N	For messages with <i>PossDupFlag</i> ="Y", indicates time that message was first sent
115	<i>OnBehalfOfCompID</i>	N	Used to specify clearing information on messages to CFE. Must be an allowed Executing Firm ID (EFID). Sent to OCC in Exec Broker field.
116	<i>OnBehalfOfSubID</i>	N	End-client sub identifier. 4 Characters alphanumeric, otherwise not validated. Recorded and returned in <i>DeliverToSubID</i> . Available via Drop feeds
128	<i>DeliverToCompID</i>	N	Identifies end-client on messages from CFE. Used to specify clearing information
129	<i>DeliverToSubID</i>	N	Returns <i>OnBehalfOfSubID</i> optionally sent by client

4.2 Standard Message Trailer

Tag	Field Name	Req'd	Description
10	<i>Checksum</i>	Y	Modulo 256 checksum of all characters in message up to and including the delimiter preceding the <i>Checksum</i> field. Three digits with leading zeroes if necessary

4.3 User Defined FIX Fields

The following FIX fields in the user defined tag range 5,000-9,999 are used by CFE:

Tag	Field Name	Description
7692	<i>RiskReset</i>	Refer to definition in the <i>New Order Single</i> section
7695	<i>MassCancelID</i>	Refer to definition in the <i>Order Cancel Request</i> section
7698	<i>CustomGroupIDCnt</i>	Refer to the definition in the <i>Purge Request</i> section
7699	<i>CustomGroupID</i>	Refer to the definition in the <i>Purge Request</i> section
7700	<i>MassCancelInst</i>	Refer to the definition in the <i>Order Cancel Request</i> section
7928	<i>PreventMatch</i>	Refer to definition in the <i>New Order Single</i> section
9617	<i>ModifySequence</i>	Refer to definition in the <i>New Order Single</i> section
9619	<i>CancelOrigOnReject</i>	Refer to definition in the <i>Order Cancel/Replace</i> section
9620	<i>CorrectedPrice</i>	Refer to definition in the <i>Trade Cancel/Correct</i> section
9688	<i>OrigCompID</i>	Refer to definition in the <i>Execution Report</i> section
9689	<i>OrigSubID</i>	Refer to definition in the <i>Execution Report</i> section
9702	<i>CTICode</i>	Refer to definition in the <i>New Order Single</i> section
9730	<i>TradeLiquidityIndicator</i>	Refer to definitions in the <i>Execution Report</i> and <i>Trade Cancel/Correct</i> sections
9882	<i>FeeCode</i>	Refer to definition in the <i>Execution Report</i> section

4.4 Custom FIX Fields

The following FIX fields in the custom tag range 20,000-39,999 are used by CFE:

Tag	Field Name	Description
25004	<i>OEOID</i>	Refer to definition in the <i>New Order Single</i> section
21050	<i>ClearingPrice</i>	Refer to definition in the <i>Execution Report</i> section
21051	<i>ClearingSize</i>	Refer to definition in the <i>Execution Report</i> section
21053	<i>ClearingSymbol</i>	Refer to definition in the <i>Execution Report</i> section

4.5 Order Protocol – TPH to CFE

4.5.1 New Order Single

Tag	Field Name	Req'd	Description
35	<i>Standard Message Header</i>	Y	MsgType="D"
97	<i>PossResend</i>	N	<p>"N" (default) indicates a new order. "Y" indicates an application level resend and is NOT SUPPORTED.</p> <p>For reasons of economy, CFE does not track (in primary storage) the <i>ClOrdID</i> values of orders that are no longer live.</p> <p>For reasons of performance, CFE does not access secondary storage to enforce unique <i>ClOrdID</i> values against orders that are no longer live.</p> <p>Without full duplicate <i>ClOrdID</i> value enforcement, it is not possible to safely implement the full behavior specified in the FIX 4.2 Protocol for <i>PossResend</i>="Y".</p> <p>To remain economical, fast, and safe, all <i>New Order Single</i> messages with <i>PossResend</i>="Y" will simply be ignored.</p>
1	<i>Account</i>	Y	<p>This field will be reflected back on execution reports associated with this order.</p> <p>16 characters or less (ASCII 32-126).</p> <p>The first 10 characters are sent to the OCC in the Account # field. The entire 16 character string will appear in the Optional CM Data field.</p> <p>Available via FIX DROP on an opt-in basis at the port level.</p>
11	<i>ClOrdId</i>	Y	<p>ID chosen by client. 20 characters or less. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe.</p> <p>If the <i>ClOrdId</i> matches a live order it will be rejected as duplicate (unless <i>PossResend</i>="Y", see above).</p> <p>Sent to the OCC in the Order ID field.</p> <p>Note: CFE only enforces the uniqueness of <i>ClOrdID</i> values among currently live orders, which includes long-lived GTC and GTD orders. However it is strongly recommended that you keep your <i>ClOrdID</i> values unique.</p>
60	<i>TransactTime</i>	Y	Time order initiated/released. Required by FIX 4.2 but not used by CFE.

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167	<i>SecurityType</i>	Y	<p>Indicates the type of security.</p> <p>“FUT” = Simple Futures instrument “MLEG” = Multi-leg/Spread Futures instrument</p> <p>Order rejected if instrument type (Simple vs. Multi-leg) of specified symbol doesn’t match <i>SecurityType</i>(167) value.</p>
55	<i>Symbol</i>	Y	<p>Product or CFE format symbol (case sensitive).</p> <p>If <i>MaturityMonth</i> (200) AND <i>MaturityDay</i> (205) are both provided, then the <i>Symbol</i> (55) value is a Product identifier (e.g., “VX”, “VXT”, “VU”, etc.). Otherwise, <i>Symbol</i> (55) is the 6 character mapped SymbolID.</p> <p>Note Spread instruments must use 6 character mapped SymbolID.</p>
200	<i>MaturityMonth</i>	N	<p>Used when specifying the <i>Symbol</i> (55) by Product and Expiration Date rather than Symbol ID. When <i>MaturityMonth</i> is specified, <i>MaturityDay</i> (205) is required and <i>Symbol</i> must refer to valid Product identifier.</p>
205	<i>MaturityDay</i>	N	<p>Used when specifying the <i>Symbol</i> (55) by Product and Expiration Date rather than Symbol ID. When <i>MaturityDay</i> is specified, <i>MaturityMonth</i>(200) is required and <i>Symbol</i> must refer to valid Product identifier.</p>
54	<i>Side</i>	Y	<p>”1” = Buy ”2” = Sell</p>
38	<i>OrderQty</i>	Y	<p>Number of contracts for order, 1 to 999,999</p>
40	<i>OrdType</i>	Y	<p>”1” = Market ”2” = Limit ”4” = Stop Limit</p> <p>Market implies <i>TimeInForce</i> of IOC.</p> <p>Stop Limit orders must have a <i>TimeInForce</i> of DAY (0), GTC (1), or GTD (6).</p>

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44	<i>Price</i>	N	<p>Limit Price.</p> <p>Required for limit orders. If populated for a market order (<i>OrdType</i>=1), the order will be accepted and behave like a market order (i.e. <i>Price</i> will be ignored).</p> <p>Orders will be rejected if <i>Price</i> does not fall on the applicable minimum trading increment.</p> <p>For all contracts other than VXT, simple orders will be rejected if <i>Price</i> is less than or equal to zero, or greater than or equal to 100,000. For VXT, simple orders will be rejected if <i>Price</i> is outside the price limits presented in the contract specification.</p> <p>Spread orders will be rejected if <i>Price</i> is outside the price limits implied by the spread instrument definition and constituent instrument min and max prices.</p>
99	<i>StopPx</i>	N	The trigger price for Stop Limit orders. Required if Tag 40 (<i>OrdType</i>) is equal to "4".
47	<i>OrderCapacity</i>	Y	<p>The capacity for the order.</p> <p>"C" = Customer "F" = Firm</p> <p>The <i>OrderCapacity</i> refers to the OCC account type. A value of "C" denotes an account that clears in the Customer range at OCC. A value of "F" denotes an account that clears in the Clearing Firm range at OCC.</p>
59	<i>TimeInForce</i>	N	<p>"0" = DAY (Default) (Expires at end of market day.) "1" = GTC (Order remains until cancelled.) "3" = IOC (Portion not filled immediately is cancelled. Market orders are implicitly IOC.) "4" = FOK (An IOC where the entire size must be filled, else the order will be cancelled back) "6" = GTD (Expires at the date-time specified in the <i>ExpireTime</i> (126) field).</p>
126	<i>ExpireTime</i>	N	Required for <i>TimeInForce</i> (59) = "6" (GTD) orders, specifies the date-time (in GMT) that the order expires. Values may be specified at a millisecond level.
110	<i>MinQty</i>	N	<p>Minimum fill quantity for IOC orders. Ignored for other Simple instrument orders.</p> <p>Not supported for Spread instruments. Spread instrument orders with specified <i>MinQty</i> will be rejected.</p>
77	<i>OpenClose</i>	N	<p>Indicates status of client position.</p> <p>"O" = Open "C" = Close "N" = None (same as not present)</p>

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7692	<i>RiskReset</i>	N	<p>Values may be combined “S” = Product-level risk/lockout reset “F” = Firm-level risk/lockout reset “C” = <i>CustomGroupID</i> lockout reset</p> <p>Resets by <i>CustomGroupID</i> require FIX Tag 7699 to be populated. Values may be combined together to allow for resets of multiple risk trips or self-imposed lockouts in a single message. For example, “FS”, “SC”, “FC”, and “SFC” are all acceptable values.</p> <p>The characters may be combined in any order. For example, to “reset all” set this field to “SFC”, which is the equivalent to “CFS”.</p> <p>For more information, refer to the CFE US Futures Risk Management Specification.</p>
7928	<i>PreventMatch</i>	N	<p>CFE Match Trade Prevention: 3 characters (not space separated):</p> <p>1st character – MTP Modifier: “N” = Cancel Newest “O” = Cancel Oldest “B” = Cancel Both</p> <p>2nd character – Unique ID Level: “F” = Prevent Match at CFE Exchange TPH level “M” = Prevent Match at EFID Level</p> <p>3rd character – Trading Group ID (optional): TPH-specified alphanumeric value 0-9, A-Z, or a-z.</p> <p>The Unique ID Level (character 2) of both orders must match to prevent a trade. If specified <u>on both orders</u>, Trading Group ID (character 3) must match to prevent a trade.</p>
439	<i>CMTANumber</i>	N	<p>CMTA Number of the firm that will clear the trade. Must be supplied for CMTA orders and left unspecified for non-CMTA orders.</p> <p>Sent to the OCC in the CMTA CM# field.</p>
440	<i>ClearingAccount</i>	N	<p>This field can be blank or filled out with an optional four character string.</p> <p>This field is recorded and returned in <code>Execution Reports</code>.</p> <p>This field is not sent to the OCC.</p> <p>Available via FIX Drop.</p>
7699	<i>CustomGroupID</i>	N	<p>Optional TPH-specified ID for the order. Cancellation by <i>CustomGroupID</i> available using Purge Port only.</p> <p>Integer 1-65535</p>

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9702	<i>CTICode</i>	Y	Valid values: 1, 2, 3, 4 “1” = CTI 1: Transactions initiated and executed by an individual TPH for the TPH’s own account, for an account the TPH controls, or for the account in which the TPH has an ownership or financial interest. “2” = CTI 2: Transactions executed for the proprietary account of a clearing TPH or non-clearing TPH. “3” = CTI 3: Transactions where an individual TPH or authorized trader executes for the personal account of another individual TPH, for an account the other individual TPH controls or for an account in which the other individual TPH has an ownership or financial interest. “4” = CTI 4: Any transaction not meeting the definition of CTI 1, 2 or 3. (These should be non-TPH customer transactions).
1028	<i>ManualOrderIndicator</i>	Y	“Y” = Manual order entry “N” = Automated order entry
25004	<i>OEOID</i>	Y	Identifies the Order Entry Operator responsible for this message. Minimum length of the field is 3 characters and the maximum length is 18 characters. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe.
21097	<i>FrequentTraderID</i> <i>(effective 11/1/18)</i>	N	Supplemental customer identifier used for billing related programs. 6 character alphanumeric (0-9, A-Z, or a-z) value.
	<i>Standard Message Trailer</i>	Y	

4.5.2 Order Cancel Request

Request the cancellation of a single order or multiple orders (Mass Cancel) on the FIX session. Note that Order Cancel Requests do not apply to open orders across multiple sessions unless submitted on a [Purge Port](#).

The system limits the rate at which identical Mass Cancel and Purge Orders requests can be submitted to the system. Requests are restricted to twenty (20) 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.

Tag	Field Name	Req'd	Description
35	<i>Standard Message Header</i>	Y	MsgType="F"

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97	<i>PossResend</i>	N	<p>“Y” = Indicates an application level unsolicited resend. If <i>ClOrdID</i> has not yet been seen, the cancel is treated as normal. If <i>ClOrdID</i> already exists, the resent cancel is ignored.</p> <p>“N” = (default) Indicates a new cancel.</p>
11	<i>ClOrdID</i>	Y	<p>Unique cancel ID chosen by TPH. 20 characters or less. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe. Duplicate order <i>ClOrdIDs</i> will be rejected (or ignored if <i>PossResend</i>=“Y”).</p>
41	<i>OrigClOrdID</i>	N	<p><i>ClOrdID</i> of the order to cancel. If the referenced order has undergone multiple changes, this will be the <i>ClOrdID</i> of the most recent accepted change.</p>
37	<i>OrderId</i>	N	<p><i>OrderId</i> of the order to cancel as supplied by CFE on the associated order acknowledgement. The <i>OrderId</i> is constant even in the event of multiple changes to a single order.</p> <p>If both the <i>OrigClOrdID</i> and <i>OrderId</i> are supplied and <i>MassCancelInst</i> is not, <i>OrderId</i> is used.</p>
60	<i>TransactTime</i>	Y	<p>Time cancel initiated/released. Required by FIX 4.2 but not used by CFE.</p>
55	<i>Symbol</i>	N	<p>Product or CFE format symbol (case sensitive).</p> <p>If <i>MaturityMonth</i> (200) AND <i>MaturityDay</i> (205) are both provided, then the <i>Symbol</i> (55) value is a Product symbol (e.g., “VX”, “VXT”, “VU”, etc.). Otherwise, <i>Symbol</i> is the 6 character mapped <i>SymbolID</i>.</p> <p>Note individual Spread instruments must use 6 character mapped <i>SymbolID</i>.</p>
200	<i>MaturityMonth</i>	N	<p>Used when specifying the <i>Symbol</i> (55) by Product and Expiration Date rather than Symbol ID. When <i>MaturityMonth</i> is specified, <i>MaturityDay</i> (205) is required and <i>Symbol</i> must refer to valid Product identifier.</p>
205	<i>MaturityDay</i>	N	<p>Used when specifying the <i>Symbol</i> (55) by Product and Expiration Date rather than Symbol ID. When <i>MaturityDay</i> is specified, <i>MaturityMonth</i>(200) is required and <i>Symbol</i> must refer to valid Product identifier.</p>
7700	<i>MassCancelInst</i>	N	<p>Used to perform Mass Cancel operation rather than single order cancel. If <i>MassCancelInst</i> is provided, tags 37, 41, 200 and 205 will be ignored.</p> <p>At least one character must be provided (Clearing Firm Filter). Contiguous characters must be specified up to total length. Truncated/unspecified</p>

		<p>characters will default to values indicated (Default) below.</p> <p>1st Character : Clearing Firm Filter “A” = No filtering by EFID is performed. “F” = All orders that were sent under the EFID specified in <i>OnBehalfOfCompld (115)</i> will be cancelled.</p> <p>2nd Character : Acknowledgement Style “M” = (Default) Individual Execution Reports are sent for each cancelled order. “S” = Single Execution Report sent once all cancels have been processed. Single Execution Report will contain <i>MassCancelld (7695)</i> and <i>CancelledOrderCount (7696)</i>. <i>MassCancelld (7695)</i> must be specified or the Order Cancel Request will be rejected. “B” = Both individual Execution Reports and single summary Execution report. Also requires <i>MassCancelld (7695)</i> to be specified or the Order Cancel Request will be rejected.</p> <p>3rd Character : Lockout Instruction “N” = (Default) No lockout “L” = Lockout until corresponding Risk Reset received. Lockout can be used only with Clearing Firm Filter set to ”F”, otherwise the Order Cancel Request will be rejected. Lockout will apply to all new orders and cancel/replace orders for the EFID (and <i>Symbol (55)</i>, if specified), regardless of other filtering in the <i>MassCancelInst</i>.</p> <p>4th Character : Instrument Type Filter “B” = (Default) Cancel both Simple and Spread orders “S” = Cancel Simple orders only “C” = Cancel Spread orders only</p> <p>5th Character : GTC Order Filter “C” = (Default) Cancel GTC and GTD orders “P” = Don’t cancel (preserve) GTC and GTD orders</p> <p>If <i>Symbol (55)</i> is specified, it must contain a valid product symbol (e.g., “VX”), in which case only orders associated with the specified product will be cancelled.</p> <p>A self-imposed lockout can be released using the <i>RiskReset (7692)</i> field of the <i>New Order Single</i></p>
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			message. If <i>Symbol</i> (55) is specified, a Product level reset is required, otherwise a Firm level reset is required to release a lockout. For more information, refer to the CFE Risk Management Specification .
7695	<i>MassCancelID</i>	N	This field will be echoed back in the resulting order execution report when <i>MassCancelInst</i> (7700) Acknowledgement Style is set to “S” or “B”. Mass Cancel requests containing a <i>MassCancelID</i> that is currently outstanding will be rejected.
1028	<i>ManualOrderIndicator</i>	Y	“Y” = Manual order entry “N” = Automated order entry
25004	<i>OEOID</i>	Y	Identifies the Order Entry Operator responsible for this message. Minimum length of the field is 3 characters and the maximum length is 18 characters. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe.
	<i>Standard Message Trailer</i>	Y	

4.5.3 Order Cancel/Replace Request

Price, *OrderQty*, *OrdType*, *StopPx*, *ManualOrderIndicator*, *OEOID*, and *FrequentTraderID* may be adjusted. Modifies will result in a loss of time priority unless (1) they have no change in *Price* and also reduce *OrderQty* or (2) they change the *StopPx* for a stop order that has not been elected. *OrdType* may be adjusted from Limit to Market.

Other fields will be ignored, and the value from the original order will be reused.

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 replace request overlaps partial fills for the current order, leaving the TPH in total control of the exposure of the order.

A *Cancel/Replace* should not be issued until the ack for the previous *Cancel/Replace* has been received for that order (or the *New Order Ack* for the first *Cancel/Replace*). The FIX handler will reject a new *Cancel/Replace* if it has not seen the prior *Cancel/Replace* return from the Matching Engine.

Cancel/Replace requests that merely reduce *OrderQty* may be overlapped if the existing *ClOrdID* is re-used. This is the only case where re-use of the existing *ClOrdID* is allowed.

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A maximum of 1,679,615 Cancel/Replace requests may be made to a single order each trading day. Once the 1,679,615th modification is made, then the next user-generated message on the order should be an Order Cancel Request.

Tag	Field Name	Req'd	Description
35	<i>Standard Message Header</i>	Y	MsgType="G"
97	<i>PossResend</i>	N	"Y" = Indicates an application level resend. If the <i>ClOrdID</i> does not indicate an already pending Cancel/Replace, the cancel is treated as normal. If <i>ClOrdID</i> does indicate an already pending Cancel/Replace then the resent Cancel/Replace is ignored. "N" = (default) Indicates a new cancel.
1	<i>Account</i>	N	Ignored – value preserved from original order
11	<i>ClOrdId</i>	Y	Unique ID chosen by TPH. 20 characters or less. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe. Duplicate order <i>ClOrdIDs</i> will be rejected (or ignored if <i>PossResend</i> ="Y").
41	<i>OrigClOrdID</i>	N	<i>ClOrdID</i> of the order to replace. In the case of multiple changes to a single order, this will be the <i>ClOrdID</i> of the most recent accepted change. <i>OrderID</i> must be sent if <i>OrigClOrdID</i> is not.
37	<i>OrderId</i>	N	<i>OrderId</i> of the order to replace as supplied by CFE on the associated order acknowledgement. The <i>OrderId</i> is constant even in the event of multiple changes to a single order. <i>OrigClOrdID</i> must be sent if <i>OrderId</i> is not. If both the <i>OrigClOrdID</i> and <i>OrderId</i> are supplied, <i>OrderId</i> is used.
60	<i>TransactTime</i>	Y	Time Cancel/Replace initiated/released.
54	<i>Side</i>	N	Must match original order.
38	<i>OrderQty</i>	Y	Number of contracts for order. This will modify the <i>OrderQty</i> of the current order; it does not directly set the remaining quantity.
40	<i>OrdType</i>	N	Defaults to original order if not sent. "1" = Market "2" = Limit "4" = Stop Limit May replace Limit with Market and vice versa, but otherwise must match original order (or not sent).
44	<i>Price</i>	Y	Limit Price. Order rejected if priced finer than the minimum trading increment for the symbol.

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99	<i>StopPx</i>	N	Defaults to original order if not sent
9619	<i>CancelOrigOnReject</i>	N	Default is configurable per port (“N” if not configured). “N” = Leave original order alone. “Y” = Cancel original order if replacement fails (an unsolicited cancel report will be sent for original order in this case).
1028	<i>ManualOrderIndicator</i>	Y	“Y” = Manual order entry “N” = Automated order entry
25004	<i>OEOID</i>	Y	Identifies the Order Entry Operator responsible for this message. Minimum length of the field is 3 characters and the maximum length is 18 characters. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe.
21097	<i>FrequentTraderID</i> (effective 11/1/18)	N	Supplemental customer identifier used for billing related programs. 6 character alphanumeric (0-9, A-Z, or a-z) value.
	<i>Standard Message Trailer</i>	Y	

4.6 Order Protocol – CFE to TPH

4.6.1 Execution Report

Please note that `Execution Reports` with tag 150 (`ExecType`) = “M” are responses to Mass Cancel requests. Mass Cancel `Execution Reports` are compact and will only carry fields as stated in the description of tag 150 (`ExecType`) that follows.

The `MultilegReportingType` (442) field can be used to determine whether a fill or partial fill corresponds to a Spread instrument, a Single leg instrument that is part of a Spread instrument execution or a Single leg instrument fill only (field will not be present in this case). Similarly, the `SecondaryExecID` (527) field can be used to distinguish Single leg instrument executions from Spread instrument executions and to identify Single leg instrument executions that comprise a Spread instrument execution.

- If the `SecondaryExecID` (527) field is not present, the Execution Report is associated with a Simple instrument.
- If the `SecondaryExecID` (527) field is present and is identical to the `ExecID` (17) field, the Execution report represents a Spread instrument execution for which associate individual leg Execution Reports will follow.
- If the `SecondaryExecID` (527) field is present and not identical to the `ExecID` (17) field, the Execution Report represents a Simple instrument execution that comprises a Spread execution and the `SecondaryExecID` (527) field is set to the `ExecID` (17) field of the associated Spread execution.

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Tag	Field Name	Description
35	<i>Standard Message Header</i>	MsgType="8"
52	<i>SendingTime</i>	GMT date-time that execution report was sent by CFE.
75	<i>TradeDate</i>	Business date of the execution report. Note that on CFE, <i>TradeDate</i> is not always the same as the calendar date. For example, the VX/VT products open for trading on the calendar day prior to the associated business date or <i>TradeDate</i> . Executions that occur after the open and before midnight will have a <i>TradeDate</i> value that is not the same as the calendar date of the execution.
20	<i>ExecTransType</i>	"0" = New "1" = Cancel "2" = Correct "3" = Status <i>ExecTransType</i> = "2" (Correct) is used for post-Settlement Execution Reports that update Trade At Settlement (TAS) trades with settlement offset prices, Variance trades with their Variance unit price and size, and symbol changes for both as appropriate. <i>ExecTransType</i> ="3" (Status) is used for Carried Order Restatements if associated port attribute is set.
17	<i>ExecID</i>	Day-unique ID of execution message. Will be zero for <i>ExecTransType</i> of Status (3). Sent to the OCC in the Trade ID field.
527	<i>SecondaryExecID</i>	Field indicates whether a fill or partial fill (<i>ExecType</i> (150)="1" or "2") is a Spread instrument fill or a Simple instrument fill that comprises a Spread execution. If <i>SecondaryExecID</i> (527) is not present, the fill is a Simple instrument fill only. If <i>SecondaryExecID</i> (527) is present and is the same as the <i>ExecID</i> (17) the fill represents a Spread execution for which associated Simple instrument fills will follow. Simple instrument fills associated with a Spread execution will contain a <i>SecondaryExecID</i> (527) value that matches the <i>ExecID</i> (527) of the associated Spread execution.
442	<i>MultilegReportingType</i>	"1" = Simple instrument execution "2" = Simple instrument execution that is part of a Spread instrument execution. "3" = Spread instrument execution.
19	<i>ExecRefID</i>	Only present when <i>ExecTransType</i> = Cancel (1) or Correct (2). Refers to the <i>ExecID</i> of the message being cancelled or corrected.
150	<i>ExecType</i>	Reason for this execution report:

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		<p>“0” = New (acknowledgement of new order) “1” = Partial Fill “2” = Fill “4” = Canceled “5” = Replaced “8” = Rejected “D” = Restated “M” = Mass Cancel Complete</p> <p>For Standard FIX Drop, only ExecType values Partial Fill (“1”), Fill (“2”) and Restated (“D”) Execution Reports will be sent. For Order by Order FIX Drop, all ExecTypes will be sent. Refer to ‘Section 6 - FIX DROP Ports’ for information on FIX Drop ports.</p> <p>When responding to a Mass Cancel request, ExecType is set to a value of “M”. This indicates that the only tags present in this message are the following:</p> <p><i>Standard Message Header (35)</i> <i>SendingTime (52)</i> <i>ExecTransType (20)</i> <i>ExecType (150)</i> <i>MassCancelID (7695)</i> <i>CancelledOrderCount (7696)</i></p>
378	<i>ExecRestatementReason</i>	<p>Only present when 150=“D”</p> <p>“1” = GTC and GTD Restatement “4” = State Change “5” = Reduction of OrdQty</p> <p>The value “1” is used for GTC and GTD Carried Order Restatements if associated port attribute is set.</p> <p>The value “4” is used for post-Settlement Execution Reports that update Trade At Settlement (TAS) trades with settlement offset prices, Variance trades with their Variance unit price and size, and symbol changes for both as appropriate. Restatements of Day orders on intraday system starts (for example, during holidays involving multiple trading segments for a day) will also use “4”.</p>
828	<i>TrdType</i>	<p>If present, the Execution represents a Block or an ECRP trade.</p> <p>“1” = Block Trade “2” = ECRP Trade</p> <p>Block and ECRP trades will only appear on Standard FIX DROP connections and not on Order-By-Order DROP connections or FIX sessions.</p>
11	<i>ClOrdID</i>	<p><i>ClOrdID</i> of the order being accepted, executed or rejected.</p> <p>-or-</p>

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		<p><i>CLOrdID</i> of the cancel or replace request.</p> <p>-or-</p> <p><i>CLOrdID</i> of the order subject to unsolicited cancel (<i>OrigCLOrdID</i> will not be present).</p>
41	<i>OrigCLOrdID</i>	<i>CLOrdID</i> of the order being cancelled or replaced (for a solicited <i>Cancel</i> or <i>Cancel/Replace</i> , otherwise not present).
37	<i>OrderId</i>	<p><i>OrderId</i> (supplied by CFE).</p> <p>Sent to the OCC in the Exchange Data field.</p>
382	<i>NoContraBrokers</i>	Only present on trades. Always "1"
375	<i>ContraBroker</i>	Only present on trades. Always "CFE"
39	<i>OrdStatus</i>	<p>State of order:</p> <p>"0" = New "1" = Partially Filled "2" = Filled "4" = Canceled "5" = Replaced "6" = Pending Cancel "8" = Rejected "A" = Pending Ack "B" = Calculated "E" = Pending Replace</p> <p>For FIX Drop, only "1" or "2" will be sent and will always equal <i>ExecType</i> (tag 150). For Order by Order FIX Drop, all execution information will be sent.</p> <p><i>OrdStatus</i> (39) will always be set to "B" for TAS and Variance post-settlement restatements.</p>
103	<i>OrdRejReason</i>	<p>Optional when <i>ExecType</i> is Rejected (8):</p> <p>"0" = Broker option "1" = Unknown symbol "2" = Exchange closed "3" = Order exceeds limit "5" = Unknown order "6" = Duplicate order "8" = Stale order</p>
1	<i>Account</i>	Copied from order (available in FIX DROP)
59	<i>TimelInForce</i>	<p>Copied from order unless overridden by the system. For example, Market orders are implicitly IOC.</p> <p>Post-settlement restatement messages for VXT and VA/VAO (150="D") executions for which the associated order was submitted with <i>TimelInForce</i> value of 4="FOK" will include <i>TimelInForce</i> value of 3="IOC".</p>

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126	<i>ExpireTime</i>	Copied from order
110	<i>MinQty</i>	Copied from order
439	<i>CMTANumber</i>	Copied from order
440	<i>ClearingAccount</i>	Copied from order
55	<i>Symbol</i>	<p>Copied from order</p> <p>For FIX DROP and Order by Order DROP only, Execution Reports will always contain “Expiration Symbology” in fields <i>Symbol</i> (55), <i>MaturityMonth</i> (200), and <i>MaturityDay</i> (205). <i>Symbol</i> (55) will always contain the Product identifier associated with the traded instrument (e.g., “VX”). <i>MaturityMonth</i> (200) and <i>MaturityDay</i> (205) specify the expiration of the traded instrument. Note if <i>MultilegReportingType</i> (442) is set to 3 (i.e., Spread execution), Expiration Symbology does not uniquely identify the traded instrument, and in this case both <i>Symbol</i> (55) and <i>SecurityID</i> (48) contain the 6 character mapped SymbolID of the traded spread instrument.</p>
200	<i>MaturityMonth</i>	<p>Copied from order</p> <p>For FIX DROP and Order by Order DROP Execution Reports, <i>MaturityMonth</i> (200) specifies the month component of the expiration date of the traded instrument.</p> <p>For Spread executions (i.e., <i>MultilegReportingType</i> (442) = 3), <i>MaturityMonth</i> (200) is not included since <i>Symbol</i> (55) contains mapped SymbolID and not Expiration symbology.</p>
205	<i>MaturityDay</i>	<p>Copied from order</p> <p>For FIX DROP and Order by Order DROP Execution Reports, <i>MaturityDay</i> (205) specifies the day component of the expiration date of the traded instrument.</p> <p>For Spread executions (i.e., <i>MultilegReportingType</i> (442) = 3), <i>MaturityDay</i> (200) is not included since <i>Symbol</i> (55) contains mapped SymbolID and not Expiration symbology.</p>
48	<i>SecurityID</i>	Present only for FIX DROP and Order by Order DROP Execution Reports. Field will always contain the associated symbol using the 6 character mapped SymbolID.
167	<i>SecurityType</i>	Copied from order
54	<i>Side</i>	Copied from order
38	<i>OrderQty</i>	<p>Copied from order</p> <p>Field not present on TAS and Variance post-settlement restatements.</p>
424	<i>DayOrderQty</i>	For GTC and GTD orders only. Contracts remaining to be filled for the order at the beginning of the current business day (i.e., <i>OrderQty</i> - <i>CumQty</i> at the end of the previous business day)

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14	<i>CumQty</i>	Cumulative quantity of contracts executed for the order over life of the order, which may be multiple business days in the case of GTC and GTD orders. Populated for leg fills related to complex executions.
425	<i>DayCumQty</i>	For GTC and GTD orders only. Cumulative quantity of contracts executed for the order during the current business day.
151	<i>LeavesQty</i>	Quantity of contracts still open for further execution. Will be zero if order is dead, otherwise will be (<i>OrderQty - CumQty</i>). Note: It is possible for <i>LeavesQty</i> to be zero when <i>ExecType</i> = "5" indicating that the order is dead. Field not present on TAS and Variance post-settlement restatements.
32	<i>LastShares</i>	Quantity of contracts traded on this fill (zero for nonfills). Must request opt-in at firm or port level for "Report MTP Fields" to receive this field on a MTP triggered cancel/restatement where both sides were cancelled. <i>LastShares</i> is set to the number of contracts that would have been matched in the event of cancel on account of MTP.
44	<i>Price</i>	Copied from order
31	<i>LastPx</i>	Price of this fill (zero for non-fills). Must request opt-in at firm or port level for "Report MTP Fields" to receive this field on a MTP triggered cancel/restatement where both sides were cancelled. <i>LastPx</i> is set to the price at which <i>LastShares</i> would have matched in the event of cancel on account of MTP.
6	<i>AvgPx</i>	Average price of executions for this order weighted by trade size. Zero if <i>CumQty</i> is zero or if a leg fill related to a complex execution.
426	<i>DayAvgPx</i>	For GTC and GTD orders only. Average price per contract of executions on current business date (<i>TradeDate</i>). Zero if <i>DayCumQty</i> is zero.
99	<i>StopPx</i>	Copied from order
198	<i>SecondaryOrderID</i>	Present on a MTP triggered cancel. Must request opt-in at firm or port level for "Report MTP Fields" to receive this field.
9730	<i>TradeLiquidityIndicator</i>	Present for acknowledgements and fills (150 = "0", 150 = "1" or 150 = "2"): 1st Character "A" = Trade Added Liquidity "R" = Trade Removed Liquidity "C" = Market opening/re-opening trade 2nd Character (must opt-in to receive)

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		<p>“U” = Qualifying Market Turner order. Only sent when first character value = A.</p> <p>State Change Tracking</p> <p>Order acks (150=0), modify acks (150=5) and restatements (150=D with 378=4 or 378=1) will carry 9730 messages defined as follows:</p> <p>“A” = Zero or more immediate partial remove fills followed by posting.</p> <p>“AU” = Zero or more immediate partial remove fills followed by posting as market turner.</p> <p>“R” = Zero or more immediate partial remove fills followed by a cancel (or full fill).</p>
9882	<i>FeeCode</i>	Specific fee code associated with execution. See the Fee Schedule for the respective market for possible values.
9617	<i>ModifySequence</i>	FIX Drop only. Base 36. Number of times order has been replaced.
9688	<i>OrigCompID</i>	FIX Drop only. <i>TargetCompID</i> of original FIX exec report FIX Drop port must be configured to send this optional field.
9689	<i>OrigSubID</i>	FIX Drop only. <i>TargetSubID</i> of original FIX exec report FIX Drop port must be configured to send this optional field.
60	<i>TransactTime</i>	GMT date-time that transaction occurred
58	<i>Text</i>	If present, indicates reason for reject or cancel. Format is one letter reason code followed by colon and space followed by free form text (e.g., “N: No Liquidity at price”). See ‘Section 8 - Reason Codes’ for a list of valid reason codes.
7695	<i>MassCancelID</i>	Mass cancel ID provided when ExecType is set to Mass Cancel Complete (“M”) indicating that a Mass Cancel operation has completed.
7696	<i>CancelledOrderCount</i>	Number of orders cancelled from a Mass Cancel request.
9702	<i>CTICode</i>	Copied from order
1028	<i>ManualOrderIndicator</i>	Copied from order
25004	<i>OEoid</i>	Copied from order
47	<i>OrderCapacity</i>	Copied from order if provided
77	<i>OpenClose</i>	Copied from order
21050	<i>ClearingPrice</i>	<p>Present in restatement execution reports in which the originally reported fill price (<i>LastPx</i> (31)) is transformed prior to clearing.</p> <p>VXT executions are reported at the time of execution as a differential to the contract settlement price. Post-settlement the execution price offset with the contract settlement price and reported in the <i>ClearingPrice</i> (21050) field of the restatement.</p>

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		VA and VAO executions are originally reported in Volatility units at the time of execution. Shortly after 4:00PM CST, execution prices are transformed into Volatility units and reported in the <i>ClearingPrice</i> (21050) field of the restatement.
21051	<i>ClearingSize</i>	<p>Present in restatement execution reports in which the originally reported fill quantity (<i>LastShares</i>(32)) is transformed prior to clearing.</p> <p>Present in pending <i>Execution Report</i> and post-close VA and VAO restatement <i>Execution Report</i> messages. Field contains the original <i>Execution Report LastShares</i> (32) field transformed to Variance units; a calculation that can be performed at the time of the original execution, and as a result, <i>ClearingSize</i> (21051) is present in both pending and restatement <i>Execution Report</i> messages. Note that in the case of VAO restatements, this field will be identical to <i>LastShares</i>(32) in the original <i>Execution Report</i> as VAO trades directly in Variance units.</p>
21053	<i>ClearingSymbol</i>	<p>Present in restatement <i>Execution Report</i> message in which the symbol associated with execution at the time of the execution (<i>Symbol</i> (55)) is transformed prior to clearing.</p> <p>Present only in restatement <i>Execution Report</i> messages for VXT and VAO instruments for which the execution clears with a different symbol than the symbol from the original <i>Execution Report</i>. Field contains the new mapped symbol ID that will be used for clearing.</p> <p>For VXT restatement <i>Execution Report</i> messages, the field will contain the mapped symbol ID of the VX instrument with same expiration as the originally traded VXT instrument.</p> <p>For VAO restatement <i>Execution Report</i> messages, the field will contain the mapped symbol ID of the VA instrument with the same expiration as the originally traded VAO instrument.</p>
21097	<i>FrequentTraderID</i> <i>(effective 11/1/18)</i>	Copied from order
	<i>Standard Message Trailer</i>	

4.6.2 Cancel Reject

Rejects a *Cancel* or *Cancel/Replace* request.

When a *Cancel/Replace* is rejected, by default the original order is left alive. A *Cancel Reject* should not be used as a sign that the original order has been cancelled. Even if the *CancelOrigOnReject* = "Y" option is being used a separate "unsolicited" cancel will be sent to close out the original order.

Tag	Field Name	Description
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35	<i>Standard Message Header</i>	MsgType="9"
11	<i>ClOrdID</i>	<i>ClOrdID</i> from the Cancel or Cancel/Replace request.
41	<i>OrigClOrdID</i>	<i>ClOrdID</i> of the order that failed to be cancelled or replaced.
37	<i>OrderId</i>	<i>OrderId</i> of order that failed to be cancelled or replaced. "NONE" if <i>CxlRejReason</i> is Unknown (1).
39	<i>OrdStatus</i>	<i>OrdStatus</i> of order that failed to be cancelled or replaced.
1	<i>Account</i>	Copied from <i>Cancel</i> or <i>Cancel/Replace</i> request.
434	<i>CxlRejResponseTo</i>	"1" = Cancel "2" = Cancel/Replace
102	<i>CxlRejReason</i>	"0" = Too late to cancel. "1" = Unknown order. "3" = Already pending cancel or pending replace. This field will not be reflected back on risk rejects.
58	<i>Text</i>	Free form text
7695	<i>MassCancelID</i>	<i>MassCancelID</i> from a <i>Cancel</i> Request where <i>MassCancel</i> is set
	<i>Standard Message Trailer</i>	

4.6.3 Trade Cancel/Correct

Sends a trade/cancel or correct message for trade breaks and adjustments.

Trade Cancel/Correct (UCC) is an optional message that must be enabled at the port level. It may be enabled for current-day only or for all cancels and corrections. Only the *Price* of a trade may be corrected, all other details remain the same. Trade cancels and corrections do not alter live order state.

Tag	Field Name	Description
35	<i>Standard Message Header</i>	MsgType="UCC"
20	<i>ExecTransType</i>	"1" = Trade Cancel "2" = Trade Correct
17	<i>ExecID</i>	Day-unique id of execution message.
19	<i>ExecRefID</i>	Refers to the <i>ExecID</i> of the message being cancelled or corrected.
37	<i>OrderID</i>	<i>OrderID</i> of the original trade being cancelled/corrected
11	<i>ClOrdID</i>	<i>ClOrdID</i> of the original trade being cancelled/corrected
55	<i>Symbol</i>	Copied from original trade being cancelled/corrected
200	<i>MaturityMonth</i>	Copied from original trade being cancelled/corrected
205	<i>MaturityDay</i>	Copied from original trade being cancelled/corrected
54	<i>Side</i>	Copied from original trade being cancelled/corrected
9730	<i>TradeLiquidityIndicator</i>	Copied from original trade being cancelled/corrected
128	<i>DeliverToCompID</i>	Copied from Tag 115 (<i>OnBehalfOfCompID</i>)
439	<i>CMTANumber</i>	Copied from original trade being cancelled/corrected (if present)
440	<i>ClearingAccount</i>	Copied from original trade being cancelled/corrected (if present)
9620	<i>CorrectedPrice</i>	Only for Trade Corrects. Corrected price
32	<i>LastShares</i>	Quantity of contracts on the original trade being cancelled/corrected
31	<i>LastPx</i>	Price on the original trade being cancelled/corrected.
42	<i>OrigTime</i>	GMT date-time of original trade
60	<i>TransactTime</i>	GMT date-time of cancel/correct
	<i>Standard Message Trailer</i>	

4.7 Purge Port Protocol – TPH to CFE

A Purge Port may be created using either the FIX or BOE protocol. For BOE Purge Port messaging please refer to the [CFE BOE Specification](#).

The system limits the rate at which identical Mass Cancel and Purge Orders requests can be submitted to the system. Requests are restricted to twenty (20) 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.

4.7.1 Purge Request

Request the cancellation of a subset (or all) open orders across multiple logical ports/sessions.

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This differs from a Mass Cancel sent via an Order Cancel Request as the Purge Request is applied across all the TPH's sessions, not just the session on which the Order Cancel Request was received. In addition, the Purge Request message optionally accepts a list of one or more CustomGroupID (7699) values as part of the order matching filter.

- Purge Request requires sending *MassCancelInst* (7700).
- Optionally, *OnBehalfOfCompID* (115), *Symbol* (55), *MassCancelID* (7695) and list of *CustomGroupID* (7699) values may also be sent.
- *Symbol* (55) and *CustomGroupID* (7699) are mutually exclusive. Messages containing both will be rejected.
- A maximum of 10 *CustomGroupID* (7699) values may be sent in one message.
- If cancelling by *OnBehalfOfCompID* (115) by using "F" as the first character of *MassCancelInst* (7700) in combination with one or more *CustomGroupID* (7699), only orders entered matching both *CustomGroupID* (7699) and the EFID will be cancelled.
- A Purge Acknowledgement (35="8", 150="M") may be requested by setting the Acknowledgement Style to "S" or "B", in which case the *MassCancelID* (7695) field must be provided or the Purge Request will be rejected.

Tag	Field Name	Req'd	Description
35	<i>Standard Message Header</i>	Y	MsgType="F"
97	<i>PossResend</i>	N	"Y" = Indicates an application level unsolicited resend. If <i>ClOrdID</i> has not yet been seen, the cancel is treated as normal. If <i>ClOrdID</i> already exists, the resent cancel is ignored. "N" = (default) indicates a new cancel.
60	<i>TransactTime</i>	Y	Time cancel initiated/released. Required by FIX 4.2 but not used by CFE.
7700	<i>MassCancelInst</i>	Y	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 (Default) below. 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 <i>OnBehalfOfCompID</i> (115) will be cancelled. 2nd Character : Acknowledgement Style "M" = (Default) Individual Execution Reports are sent for each cancelled order. "S" = Single summary Execution Report sent once all cancels have been processed. Single Execution

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			<p>Report will contain <i>MassCancelld</i> (7695) and <i>CancelledOrderCount</i> (7696). <i>MassCancelld</i> (7695) must be specified or the Order Cancel Request will be rejected.</p> <p>“B” = Both individual Execution Reports and single summary Execution report. Also requires <i>MassCancelld</i> (7695) to be specified.</p> <p>3rd Character : Lockout Instruction</p> <p>“N” = (Default) No lockout</p> <p>“L” = Lockout until corresponding Risk Reset received. Lockout can be used only with Clearing Firm Filter set to “F”, otherwise the Order Cancel Request will be rejected. Lockout will apply to all new orders and cancel/replace orders for the EFID (and <i>Symbol</i> (55) or <i>CustomGroupld</i>(7699), if specified), regardless of other filtering in the <i>MassCancelInst</i>.</p> <p>4th Character : Instrument Type Filter</p> <p>“B” = (D) Cancel both Simple and Spread orders</p> <p>“S” = Cancel Simple orders only</p> <p>“C” = Cancel Spread orders only</p> <p>5th Character : GTC Order Filter</p> <p>“C” = (D) Cancel GTC and GTD orders</p> <p>“P” = Don’t cancel (preserve) GTC and GTD orders</p> <p>If <i>Symbol</i>(55) is specified, it must contain a valid product symbol (e.g., “VX”), in which case only orders associated with the specified product will be cancelled.</p> <p>A self-imposed lockout can be released using the <i>RiskReset</i> (7692) field of the New Order Single message. If <i>Symbol</i> (55) is not specified a zero <i>CustomGroupld</i> (7699) values are specified, a Firm level reset is required. If <i>Symbol</i> (55) is specified, a Product level reset is required. If one or more <i>CustomGroupld</i> (7699) values are provided a Custom Group level reset is required. For more information, refer to the CFE Risk Management Specification.</p>
7695	<i>MassCancelID</i>	N	<p>This field will be echoed back in the resulting order execution report when the Acknowledgement Style value of the <i>MassCancelInst</i> (7700) field is set to “S” or “B”.</p> <p>Purge requests containing a <i>MassCancelID</i> that is currently outstanding will be rejected.</p>
55	<i>Symbol</i>	N	<p>Futures product symbol (upper case). Limits cancellations to only orders with the specified product.</p>

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7698		<i>CustomGroupIDCnt</i>	N	Number of repeating <i>CustomGroupIDs</i> (7699) included in this message. Integer 0-10
→	7699	<i>CustomGroupID</i>	N	<i>CustomGroupID</i> (7699) to cancel. Only present if <i>CustomGroupIDCnt</i> (7698) is non-zero. Number of repeating groups must match number specified in <i>CustomGroupIDCnt</i> (7698).
1028		<i>ManualOrderIndicator</i>	Y	“Y” = Manual order entry “N” = Automated order entry
25004		<i>OEOID</i>	Y	Identifies the Order Entry Operator responsible for this message. Minimum length of the field is 3 characters and the maximum length is 18 characters. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe.
		<i>Standard Message Trailer</i>	Y	

4.8 Purge Port Protocol – CFE to TPH

4.8.1 Purge Acknowledgement

A response to a `Purge Request` will only be sent when the `MassCancelID` (7695) is populated on a `Purge Request`. This includes cases where the Acknowledgement Style of `MassCancelInst` is “S” or “B”.

Tag	Field Name	Description
35	<i>Standard Message Header</i>	MsgType=”8”
52	<i>SendingTime</i>	GMT date-time that execution report was sent by CFE.
20	<i>ExecTransType</i>	“3” = Status
150	<i>ExecType</i>	Reason for this execution report: “M” = Mass Cancel Complete
7695	<i>MassCancelID</i>	Copied from original <code>Purge Request</code> .
7696	<i>CancelledOrderCount</i>	Number of orders cancelled from a <code>Purge Request</code> with the specified <code>MassCancelID</code> .

4.8.2 Purge Reject

Rejects a `Purge Request`.

Tag	Field Name	Description
35	<i>Standard Message Header</i>	MsgType=”9”
39	<i>OrdStatus</i>	“8” = Rejected
434	<i>CxlRejResponseTo</i>	“1” = Cancel
102	<i>CxlRejReason</i>	“2” = Broker Option
58	<i>Text</i>	Free form text message with additional reject information.
7695	<i>MassCancelID</i>	<code>MassCancelID</code> from the <code>Purge Request</code>
	<i>Standard Message Trailer</i>	

5 Implementation Issues

5.1 Automatic Cancel on Disconnect or Malfunction

Open orders for a TPH will be cancelled automatically if no messages have been received from the TPH for two heartbeat intervals. The set of open orders cancelled will include Good 'Til Cancel ("GTC") and Good 'Til Date-Time (GTD) orders if the CancelOnDisconnect port setting is configured to include GTC and GTD orders. This is done to prevent orders from being stuck in an unknown state in the event of telecommunications failure. TPHs should choose their heartbeat interval carefully based on the latency and reliability of their telecommunications channel. The minimum supported interval is 5 seconds, and this is also the recommended interval if the latency and reliability of your telecommunications channel support it. Execution reports for the automatically cancelled orders are available upon reconnection. TPHs are responsible for rerouting orders to other market centers based on their business needs. This should be rare, but all open orders may also be cancelled in the event of a complete or partial system malfunction.

5.2 Service Bureau (ISV) Configuration

Service Bureaus require special configuration. *OnBehalfOfCompID* should be set for `New Order`, `Order Cancel` and `Cancel/Replace` messages sent to CFE. Orders with an unknown *OnBehalfOfCompID* will be rejected. *ClOrdId* values are required to be unique only within a given *OnBehalfOfCompID*.

`Execution Report` and `Cancel Reject` messages sent by CFE will have the *DeliverToCompID* set.

Orders must be cancelled or replaced using the same *OnBehalfOfCompID* as was sent on the Order.

5.3 Common Session Level Issues

CFE uses FIX 4.2 as specified by the FPL document [Version 4.2 \(with Errata 20010501\)](#) with business level extensions described in our own FIX spec. The session level of the FPL spec is followed as closely as possible.

The version with errata cleared up many ambiguities with session level present in the earlier Version 4.2 (March 1, 2000).

Important notes direct from the public FPL spec ([blue lines are anchor locations in the FPL document](#), bold emphasis is from original spec, [purple emphasis added by CFE](#), [green notes added by CFE](#)) :

5.3.1 FINANCIAL INFORMATION EXCHANGE PROTOCOL / FIX MESSAGE FORMAT AND DELIVERY / Ordered Message Processing

The FIX protocol assumes complete ordered delivery of messages between parties. Implementers should consider this when designing message gap fill processes. Two options exist for dealing with

gaps, either request all messages subsequent to the last message received or ask for the specific message missed while maintaining an ordered list of all newer messages. For example, if the receiver misses the second of five messages, the application could ignore messages 3 through 5 and generate a resend request for messages 2 through 5, or, preferably 2 through 0 (where 0 represents infinity). Another option would involve saving messages 3 through 5 and resending only message 2. In both cases, messages 3 through 5 should not be processed before message 2.

5.3.2 FINANCIAL INFORMATION EXCHANGE PROTOCOL / SESSION PROTOCOL / Logon

After the initiator has been authenticated, the acceptor will respond immediately with a confirming Logon message.

5.3.3 FINANCIAL INFORMATION EXCHANGE PROTOCOL / SESSION PROTOCOL / Message Recovery

When the incoming sequence number does not match the expected number corrective processing is required. Note that the SeqReset-Reset message ([CFE: this refers only to GapFillFlag=No 123=N]) to be used only to recover from a disaster scenario vs. normal resend request processing) is an exception to this rule as it should be processed without regards to its MsgSeqNum. If the incoming message has a sequence number less than expected and the PossDupFlag is not set, it indicates a serious error. It is strongly recommended that the session be terminated and manual intervention be initiated. If the incoming sequence number is greater than expected, it indicates that messages were missed and retransmission of the messages is requested via the Resend Request (see the earlier section, Ordered Message Processing).

If there are consecutive administrative messages to be resent, it is suggested that only one SeqReset-GapFill message be sent in their place. The sequence number of the SeqReset-GapFill message is the next expected outbound sequence number. The NewSeqNo field of the GapFill message contains the sequence number of the highest administrative message in this group plus 1. For example, during a Resend operation there are 7 sequential administrative messages waiting to be resent. They start with sequence number 9 and end with sequence number 15. Instead of transmitting 7 Gap Fill messages (which is perfectly legal, but not network friendly), a SeqResetGapFill message may be sent. The sequence number of the Gap Fill message is set to 9 because the remote side is expecting that as the next sequence number. The NewSeqNo field of the GapFill message contains the number 16, because that will be the sequence number of the next message to be transmitted.

Sequence number checking is a vital part of FIX session management. However, a discrepancy in the sequence number stream is handled differently for certain classes of FIX messages. The table below lists the actions to be taken when the incoming sequence number is greater than the expected incoming sequence number.

NOTE: In *ALL* cases except the Sequence Reset - Reset message, the FIX session should be terminated if the incoming sequence number is less than expected and the PossDupFlag is not set. A Logout message with some descriptive text should be sent to the other side before closing the session.

Response by Message Type

Message Type	Action to Be Taken on Sequence # Mismatch
Logon	Must always be the first message transmitted. Authenticate and accept the connection. <i>After sending a Logon confirmation back, send a ResendRequest</i> if a message gap was detected in the Logon sequence number.

....

5.3.4 FINANCIAL INFORMATION EXCHANGE PROTOCOL / ADMINISTRATIVE MESSAGES / Resend Request

Note: the *sending application may wish to consider the message type when resending messages*; e.g. if a new order is in the resend series and a significant time period has elapsed since its original inception, the sender may not wish to retransmit the order given the potential for changed market conditions. (*The Sequence Reset-GapFill message is used to skip messages that a sender does not wish to resend.*)

5.3.5 FINANCIAL INFORMATION EXCHANGE PROTOCOL / ADMINISTRATIVE MESSAGES / Sequence Reset (Gap Fill)

The sequence reset message is used by the sending application to reset the incoming sequence number on the opposing side. *This message has two modes: "Sequence Reset-Gap Fill" when GapFillFlag is 'Y' and "Sequence Reset-Reset" when GapFillFlag is N or not present.* The "Sequence Reset-Reset" mode should ONLY be used to recover from a disaster situation which cannot be otherwise recovered via "Gap Fill" mode. The sequence reset message can be used in the following situations:

- During normal resend processing, the sending application may choose not to send a message (e.g. an aged order). The Sequence Reset – Gap Fill is used to mark the place of that message.
- During normal resend processing, a number of *administrative messages are not resent, the Sequence Reset – Gap Fill message is used to fill the sequence gap* created.

...

The sending application will initiate the sequence reset. The message in all situations specifies NewSeqNo to reset as the value of the next sequence number *immediately following the messages and/or sequence numbers being skipped.*

...

If the GapFillFlag field is present (and equal to Y), the MsgSeqNum should conform to standard message sequencing rules (i.e. the MsgSeqNum of the Sequence Reset-GapFill message *should*

represent the beginning `MsgSeqNum` in the `GapFill` range because the remote side is expecting that next message).

The sequence reset can only increase the sequence number. If a sequence reset is received attempting to decrease the next expected sequence number the message should be rejected and treated as a serious error. It is possible to have multiple `ResendRequests` issued in a row (i.e. 5 to 10 followed by 5 to 11). If sequence number 8, 10, and 11 represent application messages while the 5-7 and 9 represent administrative messages, the series of messages as result of the `Resend`

Request may appear as `SeqReset-GapFill` with `NewSeqNo` of 8, message 8, `SeqReset-GapFill` with `NewSeqNo` of 10, and message 10. This could then followed by `SeqReset-GapFill` with `NewSeqNo` of 8, message 8, `SeqReset-GapFill` with `NewSeqNo` of 10, message 10, and message 11. One must be careful to ignore the duplicate `SeqReset-GapFill` which is attempting to lower the next expected sequence number. This can be detected by checking to see if its `MsgSeqNum` is less than expected. If so, the `SeqReset-GapFill` is a duplicate and should be discarded.

6 FIX DROP Ports

CFE offers two types of FIX Drop ports (Standard FIX Drop and Order by Order FIX Drop). Both port types do not accept orders. Their purpose is to provide real time information about order flow. They may be configured to send order flow based on various combinations of information relating to specific TPH firms, clearing EFIDs, and/or sessions. With proper authorization (e.g. clearing relationships), a single FIX Drop session can be used to obtain information about multiple TPHs.

6.1 Standard FIX Drop

Standard FIX Drop ports only send execution information comprising Execution Report messages for Filled (150="2"), Partially Filled (150="1") and Restated (150="D") for post-settlement restatement of TAS and Variance executions.

Block and ECRP executions are sent over Standard FIX Drop ports.

6.2 Order by Order FIX Drop

Order by Order FIX Drop ports are designed to send more than execution information.

All order message types are supported including, but not limited to Acknowledgements (150="0"), Partially Filled (150="1"), Filled (150="2"), Cancelled (150="4"), Replaced (150="5"), Rejected (150="8"), Restated (150="D"), Order Cancel Rejects (35="9") and optionally (if configured at the port level) Trade Breaks (35="UCC"). If the Rejects/Cancel are due to incomplete clearing information, they may be unavailable on Order by Order FIX Drop ports.

Block and ECRP executions are not sent over Order by Order FIX Drop ports.

Users of Order by Order FIX Drop must always be prepared to receive new/unknown FIX tag and FIX tag values for BOE/FIX ports being monitored. CFE reserves the right to add new FIX tags and to update values distributed on Order by Order FIX Drop with no notice.

6.3 Symbology on FIX and Order By Order Drop Execution Reports

Execution Report messages sent on FIX and Order By Order Drop ports will always contain both Expiration and Mapped Symbology. For Expiration Symbology, *Symbol* (55) contains the product identifier (e.g., "VX") and *MaturityMonth* (200) and *MaturityDay* (205) specify the expiration date of the associated symbol. For Mapped Symbology, *SecurityID* (48) will contain the 6 character mapped symbol representation. It should be noted that Expiration Symbology is insufficient to uniquely identify the traded instrument in the case of Spread instrument executions.

6.4 FIX Drop Port Attributes

Unless specified, both types of FIX Drop ports can be configured with the following features:

Attribute	Default	Description
Send Trade Breaks	No	Enables Trade Break Messages (35=UCC). Please note that enabling trade breaks on Order by Order FIX Drop port will be dependent on enabling trade breaks on corresponding BOE and/or FIX order entry ports.
Unique Wash Execution Ids	No	Appends a “.B” or “.S” to <i>ExecID</i> (17) on all trades.
Concatenate CompID and SubID	No	Requires all FIX traffic to contain concatenated (combined) Comp and Sub ID’s.
Send <i>OrigCompID/OrigSubID</i>	No	Send <i>OrigCompID</i> (FIX Tag 9688) and <i>OrigSubID</i> (FIX Tag 9689).
Send <i>Account</i>	No	Send <i>Account</i> (FIX Tag 1).
Send <i>OrdType</i>	No	Send <i>OrdType</i> (FIX Tag 40). Standard FIX Drop only. Order by Order FIX Drop will receive FIX Tag 40 based on FIX order entry port attribute “Echo Tag 40 on Ack”.
Send 2 nd Liquidity Character	No	Sends the second character in <i>TradeLiquidityIndicator</i> (9730).

7 FIX Order Entry Port Attributes

The table below lists FIX order entry port attributes that are configurable on the port or firm level. Changes to these attributes can be made by submitting a request through the [Logical Port Request form](#).

Attribute	Default	Description
Allowed Executing Firm Id(s)	All Executing Firm Ids	Executing Firm Id(s) allowed for trading on port.
Default Executing Firm Id	None	Default Executing Firm Id to use if none is sent on New Order.
Cancel on Disconnect	All	<p>Cancels open orders upon order handler disconnect; both graceful and ungraceful. If Cancel On Disconnect is set, open orders in products that are not in Closed state at the time of the disconnect are cancelled.</p> <p>All = Cancel Day, GTC and GTD orders Day = Cancel only Day orders. None = Disabled</p>
Cancel on ME Disconnect	All	<p>Controls whether orders are cancelled or preserved on a Matching Unit failover and provides for the ability to preserve GTC orders (Day). In any event, if a failover takes longer than 5 minutes, all orders are cancelled (including GTCs).</p> <p>All = Cancel Day, GTC and GTD orders Day = Cancel only Day orders None = Disabled</p>
Cancel on Reject†	No	Cancels an order upon a cancel or modify reject for that order.
Cancel Open Orders on DROP Port Disconnect	None	<p>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.</p> <p>All = Cancel Day, GTC and GTD orders Day = Cancel only Day orders None = Disabled</p> <p>Note this parameter applies to Standard FIX DROP ports and not Order-By-Order DROP ports (ODROP).</p>
Carried Order Restatements	Yes	<p>If the Carried Order Restatements port attribute is set, Execution Report messages representing orders carried forward from the previous business date will be made available to the TPH as described in ‘Section 1.4.1 - Carried Order Restatements’.</p> <p>Note that any changes made to any port attribute will not be enforced on carried GTC orders. Members who</p>

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		wish to apply updated port attributes to resting GTC orders must cancel those orders, and then resubmit them following the effective time of the port attribute change.
Concatenate CompID and SubId	No	Requires all FIX traffic to contain concatenated (combined) Comp and Sub Id's.
Default MTP Value [†]	None	Specifies Default value for <i>PreventMatch</i> (7928).
Echo Tag 40 on Ack	No	Return <i>OrdType</i> (40) value on FIX Ack. Note that this value will also be returned on Order by Order FIX DROP.
Echo Tag 47 on Ack	No	Return <i>OrderCapacity</i> (47) value on FIX Ack. Note that this value will also be returned on Order by Order FIX DROP.
Firm Risk Reset	Disabled	Disabled = (default) Will require manually resetting all Firm Level Risk trips by contacting the CFE Trade Desk. Enabled = Will allow Firm Level Risk resets using FIX or BOE <i>RiskReset</i> (7692) field of "F" or "FS".
Maximum Order Size	25,000 contracts	A system-wide maximum order size limit that is set by the CFE. TPHs may not request a change to this port attribute.
Microsecond Timestamp Granularity	No	Display microsecond level timestamp granularity for <i>TransactTime</i> (60), <i>OrigTime</i> (42) and <i>SendingTime</i> (52). These tags default to millisecond granularity.
Reject Orders on DROP Port Disconnect	No	Allows TPH to associate a FIX DROP port(s) to a FIX port(s). Once the association has been established and all FIX DROP ports associated with a FIX port experience a session disconnect, reject orders on the FIX port until at least one of the DROP port sessions have been reestablished.
Reject Orders on DROP Port Timeout (s)	30	Only applicable for sessions where "Reject Orders on DROP Port Disconnect" has been enabled. When the last associated FIX DROP port for the order entry session has disconnected, the reject/cancel actions will be taken on the order entry session if an associated FIX DROP port has not reestablished its connection in the defined time. Minimum value allowed is 0.
Report MTP Fields [^]	No	Enables <i>LastPx</i> (31) <i>LastShares</i> (32), and <i>SecondaryOrderId</i> (198) on <i>Execution Reports</i> caused by MTP.
Send Trade Breaks [^]	No	Enables <i>Trade Break Messages</i> (35="UCC").
Unique Wash Execution Ids	No	Appends a ".B" or ".S" to <i>ExecID</i> (17) on all trades.
Send 2 nd Liquidity Character	No	Sends the second character in <i>TradeLiquidityIndicator</i> (9730).

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Port Order Rate Threshold	Default = 3000 msgs/sec Max allowed = 3000 msgs/sec	The maximum allowed message rate on the session. When the first non-administrative message is received, a one second window begins. During the second no more than 2,999 additional non-administrative messages will be allowed within that window. If the rate is exceeded all new orders in the time window are rejected, modifies are treated as cancels, and cancels are processed.
Symbol Order Rate Threshold	3000 msgs/sec	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.

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

^ Requires certification.

8 Reason Codes

The following is a list of all reason codes used by CFE. These reason codes are used in a variety of contexts (order cancellations, order rejections, etc.). All reasons are not valid in all contexts. CFE may add additional reason codes without notice. Members must gracefully ignore unknown values.

- A = Admin
- B = Unknown maturity date
- C = Unknown product name
- D = Duplicate identifier (e.g., ClOrdID)
- H = Halted
- I = Incorrect data center
- J = Too late to cancel
- K = Order rate threshold exceeded
- M = Liquidity available exceeds order size
- N = Ran out of liquidity to execute against
- O = ClOrdID doesn't match a known order
- P = Can't modify an order that is pending
- U = User requested
- V = Would wash
- X = Order expired
- Y = Symbol not supported
- Z = Unforeseen reason
- f = Risk management firm level or custom group ID level
- m = Market access risk limit exceeded
- n = Risk defaults not set
- o = Max open orders count exceeded
- s = Risk management product level
- y = Order received by CFE during replay

9 References

For more information on CFE Opening Process, please refer to the [Cboe Futures Exchange Opening Process Specification](#).

10 Support

Please e-mail questions or comments regarding this specification to cfetradedesk@cboe.com.

Revision History

Document Version	Date	Description
1.0.0	05/01/17	Initial version.
1.0.1	05/17/17	Added Cancel on ME Disconnect port attribute. Cleanup of minor typos and formatting.
1.1.0	07/14/17	Added additional fields to accommodate Spread instrument executions. Updated Mass Cancel and Purge fields to add additional filtering based on GTC orders and Spread instruments.
1.1.1	07/24/17	Introduced improved method of specifying Mass Cancel and Purge Orders operations using the <i>MassCancelInst</i> field. Modified and clarified explanation for Variance and TAS pending and restatement Execution Reports and associated custom fields for transformed symbol, price and size for clearing.
1.1.2	08/07/17	Renamed <i>VariancePrice</i> , <i>VarianceSize</i> and <i>NewSymbol</i> to <i>ClearingPrice</i> , <i>ClearingSize</i> and <i>ClearingSymbol</i> respectively. Removed <i>TAS Price</i> field using <i>ClearingPrice</i> instead to report transformed TAS execution price.
1.1.3	08/25/17	Clarified <i>ClOrdId</i> uniqueness in <i>New Order Single</i> to account for long-lived GTC orders. Added “N” to optional field <i>OpenClose</i> values in <i>New Order Single</i> message. Clarified Cancel on Disconnect to apply whether graceful or ungraceful disconnect. Updated Cancel on ME Disconnect and Cancel on DROP Port Disconnect port attributes to provide ability to filter out GTC orders.
1.1.4	09/06/17	Corrected description of <i>SecurityType(167)</i> field description in <i>New Order Single</i> . Value must be either FUT or MLEG and must match instrument type of specified symbol or new order will be rejected.
1.1.5	09/12/17	Clarified description of Carried Order Restatements and details of restatement delivery to connected TPH.
1.1.6	09/25/17	Added to documentation of <i>Price</i> field of <i>New Order Single</i> message to specify that orders that don’t comply with tick increments or values outside of system price limits will be rejected. Removed <i>CorrectedSize</i> from <i>Trade Cancel/Correct</i> message as it does not apply to CFE. Added more detail to mass cancel and <i>Purge Request</i> , especially for Lockout behavior in <i>MassCancelInst</i> .
1.1.7	10/03/17	Added missing <i>CMTANumber (439)</i> field to the <i>Trade Cancel/Correct</i> CFE to TPH message. Changed name of Tag 439 from <i>ClearingFirm</i> to <i>CMTANumber</i> for consistency.
1.1.8	10/17/17	Cboe branding/logo changes

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1.1.9	10/30/17	Both Expiration and Mapped Symbology are provided for FIX and Order-By-Order DROP. Spec changes include clarification of 55, 200 and 205 fields for DROP and the addition of <i>SecurityID</i> (48) field which will always contain Mapped Symbology for DROP port Execution Reports. Added calculation of trade size in Variance units to VA pending Execution Report <i>ClearingSize</i> (21051) field. For consistency with VA, added <i>ClearingSize</i> (21051) to the pending Execution Report for VAO trades.
1.1.10	11/02/17	Removed superfluous MTP comment from <i>TradeLiquidityIndicator</i> (9730) field in <i>Execution Report</i> message. Added value “B” (Calculated) to <i>OrdStatus</i> (39) field of <i>Execution Report</i> message to be used for all TAS and Variance post-settlement restatements. Clarified that <i>OrderQty</i> (38) and <i>LeavesQty</i> (151) are not included for TAS and Variance post-settlement restatements.
1.1.11	11/14/17	Added Port Order Rate Threshold and Symbol Order Rate Threshold port attributes. Updated description of <i>MinQty</i> (110) field in <i>New Order Single</i> message to clarify usage. Added Good ‘till Date-Time orders (“GTD”), which includes support for <i>TimelnForce</i> (59) value of “6” and addition of <i>ExpireTime</i> (126) in <i>New Order Single</i> and <i>Execution Report</i> messages.
1.1.12	12/05/17	Combined the two ‘f’ Reason Codes into one line for clarity. Updated <i>Purge Acknowledgement</i> description to replace legacy <i>MassCancel</i> language with <i>MassCancelInst</i> .
1.1.13	12/21/17	Clarified use of Expiration symbology vs. mapped SymbolID for Spread execution Execution Reports. Specifically, updated description of <i>Symbol</i> (55), <i>MaturityMonth</i> (200) and <i>MaturityDay</i> (205). Added <i>OperatorId</i> (25004) and <i>ManualOrderIndicator</i> (1028) as fields that may be changed with an <i>Order Cancel/Replace Request</i> . Added GTC and GTD <i>TimelnForce</i> (59) values as accepted for Stop and Stop Limit orders.
1.1.14	01/19/18	FIX Tags not defined in this specification are ignored. Updated description of the <i>Capacity</i> (47) to clarify meaning of C and F with respect to OCC ranges.
1.1.15	02/02/18	The <i>TimelnForce</i> value on an <i>Execution Report</i> may differ from what was sent in cases where the value is overridden by the system. <i>MinQty</i> was missing from <i>Execution Report</i> message and has been added.
1.1.16	02/27/18	Added session availability times and description of daily restart to <i>Hours of Operation</i> section. Documented the system limit of 1,295 <i>Cancel/Replace Requests</i> per order per day.
1.1.17	03/06/18	Added OCC Clearing Reference section to more clearly describe the FIX to OCC field mappings. Maximum number of <i>Cancel/Replace Requests</i> per order per day will be raised to 1,679,615 effective 3/18/18.

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1.1.18	03/14/18	Changed valid Account field characters from 33-126 to 32-126 (i.e., space is a valid character). Effective 3/18/18, updated definition of the OperatorId field to include characters 33-126, except for comma, semicolon, and pipe with minimum length of 3 and maximum length of 18 characters.
1.1.19	04/10/18	<i>CumQty</i> (14) to be populated on leg fills related to complex executions (effective 4/29/18).
1.1.20	04/26/18	Changed field name from <i>OperatorID</i> (25004) to <i>OEOID</i> (25004). Removed references to 150 = 3 (Done for Day). This feature is specific to other Cboe platforms.
1.1.21	05/30/18	Added section to Protocol Features detailing the conditions under which persisted orders can be cancelled while the associated product is in a suspended state.
1.1.22	07/20/18	For <i>TradeLiquidityIndicator</i> , added 2 nd character value of “U” to indicate qualifying Market Turner order. Added <i>State Change Tracking</i> definitions. Added Fix port and Drop port attribute “Send 2 nd Liquidity Character”. Added Fix port attribute “Enable State Change Tracking”.
1.1.23	7/25/18	Removed Fix port attribute “Enable State Change Tracking”. Already enabled by default on all CFE FIX ports.
1.1.24	8/7/2018	Added notes to Order Cancel Request and Purge Request sections indicating request limits of 20 per second per port for identical requests.
1.1.25	10/9/2018	Added <i>FrequentTraderID</i> (21097) to be used as a supplemental customer identifier for billing related programs.
1.1.26	10/10/2018	Added description of Maximum Order Size limit set by CFE in Port Attributes section.