

# FIX DROP (BX Options)

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# 1. Overview

## Overview

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 NASDAQ implementation and the FIX 4.2 standard.

# 2. Session Information

## 2.1. Logon

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

The IP Address of the subscriber, the *SenderCompID* and *TargetCompID* will be validated. If validation fails the connection will be dropped.

### 2.1.1. ID Fields

<b>SenderCompID sent</b>	The SenderCompID as assigned by NASDAQ. The maximum size is 4 to 6 characters.
<b>TargetCompID</b>	The TargetCompID as assigned by NASDAQ. The maximum size is 4 to 6 characters.

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

Similarly NASDAQ will issue a Resend Request to the subscriber for messages that it missed.

*HeartbeatInterval* must be specified by the subscriber in the Logon message in whole seconds. Though there are no restrictions imposed by NASDAQ on *HeartbeatInterval*, we recommend using a value as low as possible, so disconnects are detected sooner. The accepted *HeartbeatInterval* value will be returned on the Logon Acknowledgement message.

## 2.2. Sequence Numbers

Sequence numbers, both inbound and outbound, will be reset to 1 at the beginning of each session. Messages are processed sequentially. Sequenced messages that have fallen behind (other than Sequence Reset – Reset, Sequence Reset - GapFill and those marked with PossDup flag of 'Y') can cause an immediate logout. Sequence Reset – Reset attempting to reset the sequence to a new sequence number that is lower than current expected sequence will also cause an immediate logout. Messages with sequence numbers higher than expected (other than Logon and Logout) will trigger message recovery via Resend Request.

## 2.3. Heartbeat

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.

## 2.4. Test Request

NASDAQ will reply with a Heartbeat message to a Test Request message, providing TestReqId as of original Test Request.

NASDAQ will issue a Test Request if a *HeartbeatInterval* + 1 seconds have elapsed since the last message received. If 3 consequent NASDAQ Test Requests go by without receiving a message the TCP connection is considered broken and will be dropped.

## 2.5. Resend Request

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). NASDAQ will honor either type of request. Any messages sent in response to NASDAQ Resend Request should have PossDup="Y".

## 2.6. Reject

Session level rejects are used to indicate violations of the session protocol, or missing (or invalid) fields. These are to be expected during development and certification, but should be extremely rare in production. Application layer rejects (like Order Reject and Cancel Reject) are normal.

## 2.7. Sequence Reset

Sequence Reset - Gap Fill (GapFillFlag = "Y") messages should conform to standard message sequencing rules, sequence numbers in the past will be ignored and treated as PossDup="Y".

Sequence Reset - Reset (GapFillFlag not "Y") is used only as a last resort, and always by human intervention, to allow an otherwise confused session to be resumed. In these cases all chances at automatic message recovery are lost.

## 2.8. Logout

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 Acknowledgement, and then break the TCP connection. NASDAQ will typically only request Logout after the scheduled end of a FIX session.

## 3. Data Types

NASDAQ follows FIX standard for data types.

## 4. Fault Redundancy

A single FIX Drop account can be bound to multiple physical FIX Drop instances. These FIX Drop instances then provide "parallel" fix sessions for fault redundancy.

In this configuration, all instances are able to "drop" messages. Both incoming and outgoing sequencing will be maintained across all instances. However subscriber will be allowed to maintain only one active connection at a time. If the subscriber connects to one of the alternative instances when still connected on another instance, the old connection will be dropped and the new connection will be accepted.

## 5. Service Bureau Configuration

A DROP host can deliver information for one or more firms, allowing a service bureau configuration. In this case, the DROP account must be authorized by each desired firm using a DROP Port Authorization Form.

## 6. Standard Message Header

### Message Header

Tag	Field Name	Req'd	Comments
8	BeginString	Y	FIX.4.2. Must be the first field in message.
9	BodyLength	Y	Must be second field in the message.
35	MsgType	Y	Must be the third field in the message.
34	MsgSeqNum	Y	
49	SenderCompID	Y	SenderCompID as assigned by NASDAQ.
56	TargetCompID	Y	TargetCompID as assigned by NASDAQ.
52	SendingTime	Y	Required by FIX but not validated by NASDAQ.
50	SenderSubID	N	Ignored. When sending execution report NASDAQ will send INET in this field.
57	TargetSubID	N	Ignored, When sending execution report NASDAQ will duplicate first 4 characters of Client Order Id in this field.
43	PossDupFlag	N	Should be present on retransmitted messages, whether prompted by the sending system or as the result of a resend request.
97	PossResend	N	Required when message may be duplicate of another message sent under a different sequence number.
122	OrigSendingTime	N	Required for message resends but not validated by NASDAQ.

## 7. Standard Message Trailer

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

## 8. Outbound Sequenced Messages

### 8.1. Execution Report

The execution report message is used to:

1.	Relay order receipt
2.	Relay changes to an existing order (i.e. accept cancel and replace requests)
3.	Relay order status information
4.	Relay fill information on working orders

Each execution message will contain information that will describe the current state of the order and execution status as understood by NASDAQ. State changes will be sent as separate messages and will not be used to also convey new partial fill details:

## Execution Report

Tag	Field Name	Req'd	Comments
	Standard Header	Y	MsgType = 8
37	OrderID	Y	OrderID, as assigned by NASDAQ, is required to be unique for each chain of orders for a given day
70	AllocID	N	Unique identifier of transaction that caused the execution. Will be 0 if not available
17	ExecID	Y	Unique Identifier of execution message. In case where the execTransType is either 1 (Partial Fill) or 2 (Filled), this identifier is match number of actual execution
20	ExecTransType	Y	Identifies transaction type Valid values: 0 = New 1 = Cancel  Trade breaks will be sent with an ExecTransType of '1'. NASDAQ does not support trade corrections.
76	ExecBroker	N	Exec Broker associated with the order as specified in order entry. See table for possible values  Will not be available in quote or sweep executions
150	ExecType	Y	Describes the type of execution report. Same possible values as OrdStatus.
39	OrdStatus	Y	Describes the current state of a CHAIN of orders, same scope as OrderQty, CumQty, LeavesQty, and AvgPx Valid Values: 0 = New 1 = Partial Fill 2 = Filled 4 = Canceled 5 = Replaced (see section 9 for notes on replacements)
55	Symbol	Y	Symbol root
54	Side	Y	
38	OrderQty	Y	Original order quantity
32	LastShares	Y	Quantity of contracts bought/sold on this (last) fill.
31	LastPx	Y	Price of this (last) fill.
151	LeavesQty	Y	Amount of contracts open for further execution. If the OrdStatus is Canceled, DoneForTheDay, Expired, Calculated, or Rejected (in which case the order is no longer active) then LeavesQty could be 0, otherwise LeavesQty = OrderQty - CumQty.
14	CumQty	Y	Currently executed contracts for chain of orders.
6	AvgPx	Y	Calculated average price of all fills on this order.
19	ExecRefID	N	Appears on Breaks only and contains the ExecID of the trade being broken.
11	ClOrdID	N	ClOrdID of the Fix /OTTO order being reported
117	QuoteID	N	Identifier of quote/sweep being reported. If TIF = 3 (IOC) & this tag is present, it refers to a sweep-id sent by the client. If TIF = 0 (DAY) & this tag is present, it refers to a quote-id sent by the client. See notes for explanation how this tag will be decoded
44	Price	N	As specified in the NewOrder
41	OrigClOrdID	N	ClOrdID of the previous order (NOT the initial order of the day) when reporting replace.

## Execution Report

Tag	Field Name	Req'd	Comments
109	ClientID	Y	Used for firm identification in third-party transactions. If a ClientID was specified in the original order then it will be returned in all subsequent execution reports. If the clientId was not specified in the original order, this will refer to the clientId assigned by the port of order entry
1	Account	N	Must be 32 characters or less.
18	ExecInst	N	Can contain multiple instructions, space delimited. f = InterMarket Sweep Order (ISO) G = All or none Will not be available in a quote or sweep execution
75	TradeDate	N	
59	TimeInForce	N	Specifies how long the order remains in effect Possible values are 0 = Market Hours (Day) 1 = Good Till cancel (GTC) 2 = OPG (Opening Cross) 3 = Immediate or Cancel (IOC) 4 = Fill or Kill (FOK) In case of a quote, the tif will be 0 and in case of a sweep the tif will be 3
60	TransactTime	N	Time of execution/order creation (expressed in GMT).
40	OrdType	N	'1' = Market, '2' = Limit This tag will not be present for a sweep or quote execution
47	Rule80A/ OrderCapacity	N	Capacity. Possible values are C = Customer F = Firm F = Firm M = Market Maker P = Professional Customer O = Other exchange registered market maker B = Broker Dealer J = Joint BackOffice
58	Text	N	Free format text string. In case of orders, replaces and fills, will be a optional 13 character supplementary id if specified on order entry In case of cancel will also contain NASDAQ cancel reason code. See "Cancel Reasons" table.
9730	LiquidityIndicator	Y	See below for liquidity indicator enumerations

## Execution Report

Tag	Field Name	Req'd	Comments
			For option linkage trades, away execution exchange: A = NYSE AMEX B = BOX C = CBOE E = EDGX D = MIAX Emerald H = GEMX I = ISE J = MRX M = Miami N = NYSE ARCA Q = NASDAQ P = MIAX Pearl S = MIAX Sapphire W = C2 X = NASDAQ PHLX U = MEMX Z = BATS
30	LastMkt		
77	OpenClose	Y	O = opening position C = closing position Tag will not be available in a quote or sweep execution
167	SecurityType	Y	OPT = options
200	MaturityMonthYear	Y	Format: YYYYMM (expiration date)
205	MaturityDay	Y	Format: DD (Expiration date-day of the month).
201	PutOrCall	Y	0 = put 1 = call
202	StrikePrice	Y	Strike Price for option: Valid values: 0 – 999999.99999999
440	ClearingAccount	N	Up to 5-character alphanumeric.
439	ClearingFirm	N	CMTA Number (firm that will clear the trade) upto 5-character numeric. If this tag was supplied on order entry, it will be passed along here
19	ExecRefId	N	In trade break messages, will refer to the execlid of the prior trade being broken
9373	AuctionType	N	Auction type of this order. Valid values: 'P' = PRISM Auction 'Y' = Customer to Customer Cross 'B' = Block Auction
9371	NWT OrdType	N	The NWT (No worse than) order type for the PRISM auction order. Valid values: '1' = MKT '2' = LIMIT
9372	NWT Price	N	The NWT (No worse than) limit price for the PRISM auction order.
9370	AuctionId	N	Auction ID of the PRISM auction.
9578	BillingCode	N	"P" = PRISM auction Priority Market Maker

## Liquidity Indicator Enumerations

9730	LiquidityIndicator	String	1= Add/Maker 2 = Remove/Taker 4 = Response 5=Hidden 6=Opening 7=Cross 8=Flashed Order 9=Flash Response 10=Routed Out 11=Trade Report 12=Combo Maker Against Combo 13=Combo Taker Against Combo 14=Combo Response Against Combo 15=Combo Hidden Against Combo 16=Combo Opening Rotation 17=Combo Cross 18=Combo Taker Against Regular 19=Regular Maker Against Combo 20=Combo Taker Against IO 21=Regular Taker Against IO (incl. PIM) 22=IO Maker Against Combo 23=IO Maker Against Regular 24=Regular Maker Against IO Participant 25=IO Participant Taker Against Regular 26=Broken Price Improvement 27=Broken Facilitation 28=Broken Solicitation 29=Combo Broken Price Improvement 30=Combo Broken Facilitation 31=Combo Broken Solicitation 32=Block 33=Block Response 34=Directed Response 35=Facilitation 36=Facilitation Response 37=Price Improvement 38=Price improvement Response 39=Solicitation 40=Solicitation Response 41=Qualified Contingent Cross 42=Customer to Customer 43=Combo Facilitation 44=Combo Facilitation Response 45=Combo Price Improvement 46=Combo Price Improvement Response 47=Combo Solicitation 48=Combo Solicitation Response 49=Combo Qualified Contingent Cross 50=Combo Customer to Customer 51=Sweep Routed Out 52=Sweep Trade Report 53= Combo Taker Against Regular – Thru NBBO 54= Combo Taker Against IO – Thru NBBO 55= Simple Exposure Order – Upon Receipt 56= Simple Exposure Order – Subsequent 57= Simplex Exposure Order – Responder NON-STANDARD field (BX)
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## Execbroker Possible Values

DNR, SRCH, FIND

## Cancel Order Reasons

Reason	Explanation
#IOC	Immediate or Cancel Order.
#USR	User requested cancel. Sent in response to a Cancel Request Message.
#HLT	Halted. There is currently a trading halt on the primary exchange so orders cannot be accepted in these options at this time.
#SUP	Supervisory. The order was manually cancelled or reduced by a NASDAQ supervisory terminal.
#SYS	System cancel.

Note the following treatment applies to Execution Report Message:

- Manual Trades entered by market operations will result in the following fields being populated as described:
- ClOrdID (Tag 11), Quoteld (117), Price (44), OrderType (40), TimelnForce (59), and all other related tags will not be there.



- ExecType (Tag 150) and OrderStatus (Tag 39) will be 0
- OrderQty(38), LeavesQty (151), CumQty(14), AvgPx(6) will be 0
- Trade cancellations will result in the following fields being populated as described:
- ExecTransType (Tag 20) will be populated with 1
- ExecRefID (Tag 19) will be populated with the reference ExecID
- Successful Post Trade Allocation Request or corrections will result in the following fields being populated as described:
- Trade Cancel Message with:
  - ExecTransType (Tag 20) =‘1’
  - ExecRefID (Tag 19) will be populated with the reference ExecID
  - ExecType (Tag 150) and OrderStatus (Tag 39) will be 2
- New Trade Message with:
  - ExecTransType (Tag 20) =‘0’
  - ExecRefID (Tag 19) will be populated with the reference ExecID
  - ExecType (Tag 150) and OrderStatus (Tag 39) will be 2

## 8.2. Purge Notification/Purge Reset/Underlying Reset Response

Tag	Name	Req'd	Description
	Standard Header	Y	MsgType = r (OrderMassCancelReport)
109	ClientID	Y	NASDAQ MPID/ Firm mnemonic
37	OrderID	Y	Exchange assigned unique Identifier of the notification for the trading session.
530	RequestType	N	Present if this is a response to Firm's purge or Reset Request. Possibler values are: 8 - Reset 2 - Purge
531	Response	Y	8 – Purge/Reset Request Successful 9 – Rapid Fire Notification K – Kill Switch Purge/Reset Notification.
311	UnderlyingSymbol	N	Present if tag 531 9 or this is a response to firm reset/purged by underlying. If this tag is absent, it means that the purge/reset is for all underlyings
	Standard Trailer	Y	

## 9. Notes

- Replaces
  - Note that in messages with orderStatus = 5 (Replaced), the tag origClOrdId will indicate the client Order Id of the original order being replaced, the tag clOrdId indicates the client Order Id of the replacement and the tag OrderId indicates the Nasdaq assigned id of the replacement. However, there may be cases where one or both of the following is true:
    - The origClOrdId and the clOrdId values are the same
    - The OrderId of the replacement is the same as OrderId of the original order
    - In all replaces, the client behavior should be replace the original order details with the provided in the replacement.
- Quote/Sweep Id
  - SQF Quote / Sweep message Ids are specified as binary strings and must be encoded to be transmitted via ASCII OTTO drop. 8-byte binary SQF Ids are encoded as 16-byte ASCII strings where each byte of the SQF Id is represented by two 0-F ASCII characters, e.g. "5E" for 0x5e.
  - FIX Drop will support the granularity available in the existing BX Platform to provide customers with the ability to configure their port to include order, cancels and/or executions.

## 10. Support

If you have any questions or comments about this specification, email [tradingservices@nasdaqomx.com](mailto:tradingservices@nasdaqomx.com). We welcome suggestions for new features or improvements.

## 11. Revision History

Revision #	Date	Change
2.3e	1/23/2024	<ul style="list-style-type: none"> <li>Added MIAX Sapphire for Lastmkt (tag 30)</li> </ul>
2.3e	6/14/2023	<ul style="list-style-type: none"> <li>Adding MEMX spec updates to Security Exchange, Last Mkt, Liquidity Flag, Execution Mkt and Origin Mkt</li> </ul>
2.3e	10/26/2020	<ul style="list-style-type: none"> <li>Adding note in Execution Report for Manual Trades, Trade cancellation and PTA</li> </ul>
2.3e	09/01/2020	<ul style="list-style-type: none"> <li>Adding liquidity codes</li> <li>Deprecating CrossSurrender (Tag 9375) with BrokerPCT (Tag 9204)</li> </ul>
2.3e	07/01/2020	<ul style="list-style-type: none"> <li>Added note to indicate configurability of ports.</li> </ul>
2.3e	4/27/2020	<ul style="list-style-type: none"> <li>Added SeriesID (Tag 5333) to Execution Report Message</li> </ul>
2.3e	1/6/2020	<ul style="list-style-type: none"> <li>Replace CrossSurrender (Tag 9375) with BrokerPCT (Tag 9204) to support configurable PRISM surrender functionality</li> <li>Add Block and Customer to Customer Cross enumerations to Auction Type (Tag 9373)</li> <li>Adjust LiquidityIndicator (Tag 9370) enumerations to numeric</li> </ul>
2.3e	9/9/19	<ul style="list-style-type: none"> <li>Adding LiquidityIndicator (Tag 9370) and LastMkt (30) to support new liquidity codes available for BX on the Fusion platform and deprecating Liquidity Flag (Tag 9882)</li> </ul>
2.3d	2/20/19	<ul style="list-style-type: none"> <li>Added MIAX PEARL Liquidity Code (5)</li> </ul>
2.3c	1/28/17	<ul style="list-style-type: none"> <li>Added MIAX PEARL Liquidity Code (4)</li> </ul>
2.3b	01/02/15	<ul style="list-style-type: none"> <li>Added ISE MERCURY Liquidity Code (3)</li> </ul>
2.3.a	09/30/15	<ul style="list-style-type: none"> <li>Added BATS EDGX Liquidity Code (D)</li> </ul>
2.3	05/20/15	<ul style="list-style-type: none"> <li>Added new tags for PRISM auction orders</li> <li>Updated the Purge/Reset Notification for Kill Switch</li> <li>Added a new liquidityFlag value 'J' for order exposure</li> </ul>
2.2a	7/29/14	<ul style="list-style-type: none"> <li>Added Joint BackOffice Capacity ('J') for Rule80A (tag 47)</li> <li>Added Liquidity codes for Executions done at MIAX and GEMINI exchanges.</li> </ul>
2.2	4/19/12	<ul style="list-style-type: none"> <li>Updated execBroker values for BX Options</li> <li>Removed FIND execBroker</li> <li>Replaced NSDQ execBroker value with DNR</li> </ul>
2.1	1/19/12	<ul style="list-style-type: none"> <li>Added POST Strategy(ExecBroker value) (Available February 29 2012)</li> </ul>
1.02	NA	<p>Changed per NOM 2.0 requirements</p> <ul style="list-style-type: none"> <li>Removed system event messages</li> <li>Added new tag Quoteld in execution report.</li> </ul> <p>Made tag ClientId mandatory</p> <ul style="list-style-type: none"> <li>Removed tag display</li> <li>Expanded description of tag TIF</li> <li>Added tag OrdType to denote market or limit</li> <li>Updated possible values in tag Rule80A</li> <li>Added tags clearingAccout, clearingFirm &amp; execRefId</li> </ul>
1.01	NA	<ul style="list-style-type: none"> <li>Removed unsupported display values from display field</li> </ul>
1.0	NA	<ul style="list-style-type: none"> <li>Initial Document</li> </ul>