Options Order Feed

Version 2.1

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1. Overview

The Nasdaq MRX, GEMX, ISE and PHLX Order Feeds are direct data feed products in the Nasdaq MRX, GEMX, ISE and PHLX (MRX, GEMX, ISE and PHLX) systems offered by Nasdaq® that features the following:

- Order data: For MRX, GEMX, ISE and PHLX Options, Nasdaq will provide full order updates using the standard MRX, GEMX, ISE and PHLX Order feed formats. MRX, GEMX, ISE and PHLX Orders uses a series of order messages to track the life of an order. Note, MRX, GEMX, ISE and PHLX Order is an outbound feed only and cannot be used for order or quote entry.
- Auction Notifications: Provides participant with auction notification for various single leg auctions that can be responded to on various inbound order and quote entry APIs
- Net Order Imbalance Data: In the minutes leading up to the MRX, GEMX, ISE and PHLX Options Opening Auction, Nasdaq disseminates the indicative opening price and net order imbalance in the MRX, GEMX, ISE and PHLX Options system. Because the calculation includes orders that not booked, the Net Order Imbalance Indicators, included in the Auction Notification Message, are the best indicator of the MRX, GEMX, ISE and PHLX Options opening prices available to the public.
- Administrative messages: Messages that will reflect general instrument information:
  - Trading action messages are used to inform market participants when an option is halted or released for trading and the current state of the option
  - Option Directory Messages provide basic option canonical and other information NOTE: This feed cannot be used to build the full order book.

2. Architecture

The MRX, GEMX, ISE and PHLX Order feed will be made up of a series of sequenced messages. Each message is variable in length based on the message type and is composed of binary and alphanumeric data. The messages that make up this protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees. MRX, GEMX, ISE and PHLX Order is an outbound market data feed only. The MRX, GEMX, ISE and PHLX Order protocol does not support order or quote entry.

The MRX, GEMX, ISE and PHLX options system offers the data feed in two protocol options:

Protocol Option	Number of Outbound Channels
SoupBinTCPv3.00	Multiple output channels, each channel supporting a subset of securities, the range defined by first letter of underlying
MoldUDP64v1.00	Multiple output channels, each channel supporting a subset of securities, the range defined by first letter of underlying

Both the primary ("A feed") and secondary ("B feed") will be hosted by servers co-located with the trading system and will have identical performance characteristics. In fact the "A" and "B" feeds are logically identical: Mold or Soup messages will have the same Mold or Soup sequence numbers across all the streams.

Please note that Nasdaq has determined to provide local redundancy in the NY Metro Area ("A" and "B" feeds), while using the Mid-Atlantic Region ("C" feed) for disaster recovery in the event order entry is switched from the NY Metro Area. A complete set of alternate connection parameters are available for each Multicast Channel and TCP Connection in the event of a failure in any of the primary connections.

The SoupBinTCP channel will be available only for replaying messages. Upon client login, the channel will replay all messages until it is ready to stream live data. Once the replay is complete, it will publish an "End Of Replay Sequence" message with the sequence number that allows the client to resume receiving real-time messages from the Mold channel. The client connection on the replay channel will stay up with just the soup heartbeats. The client can then disconnect and ask for another replay if necessary.

3. Data Types

All Alpha or Alphanumeric fields are left justified and padded on the right with spaces.

All Integer fields are unsigned big-endian (network byte order) binary encoded numbers unless otherwise specified. Integers may be 1, 2, 4 or 8 bytes long.

Prices are 2 byte or 4 byte Integer fields. 2 byte Price fields are unsigned positive numbers. 4 byte Price fields are signed positive numbers. When a 4 byte price is converted to a decimal format, prices are in fixed point format with 6 whole number places followed by 4 decimal digits. When a 2 byte price is converted to a decimal format, prices are in fixed point format with 3 whole number places followed by 2 decimal digits.

4. Message Formats

This feed supports the following basic types of messages:

- System Events
- Derivative Directory Messages
- Trading Action messages
- Imbalances before opening and reopening
- Announcements of new resting orders in the book
- Announcements of auctions

Within the system event and administrative types, the options system may support multiple message formats as outlined below.

4.1. System Event Message

The system event message type is used to signal a market or data feed handler event. The format is as follows:

System Event Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"S" = System Event Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight.
Event Code	11	1	Alpha	Refer to System Event Codes below

System Event Codes

Code	Explanation	When (typically)
"O"	Start of Messages. This is always the first message sent in any trading day.	After ~12:30am
"S"	Start of System Hours. This message indicates that the options system is open and ready to start accepting orders.	After Start of Messages and before Start of Currency Opening Process
"Q"	Start of Opening Process. This message is intended to indicate that the options system has started its opening auction process.	9:30:00am
"N"	Start of Normal Hours Closing Process. This message is intended to indicate that the options system will no longer generate new executions for options that trade during normal hours.	4:00:00pm
"L"	Start of Late Hours Closing Process. This message is intended to indicate that the options system will no longer generate new executions for options that trade during extended hours.	4:15:00pm
"E"	End of System Hours. This message indicates that the options system is now closed.	~5:15pm
"C"	End of Messages. This is always the last message sent in any trading day.	~5:20pm
"W"	End of WCO Early closing. This message is intended to indicate that the exchange will no longer accept any new orders or changes to existing Orders on last trading date of WCO options.	12:00 Noon

4.2.   Administrative Messages

4.2.1.   Derivative Directory Message

At the start of each trading day, Nasdaq disseminates options symbol directory messages for all active options symbols in the system. Notes on the Derivative Directory Messages:

- The Derivative Directory Messages are sent once per symbol, typically before the "Start of System Hours" System Event. Should it be necessary, intra-day updates to this message will be sent as they occur. In the case of an intra-day update, for a given Option Id, the canonical information for the option is invariant (will not change). The canonical information consists of Security Symbol, Expiration Year Month and Day, Strike Price and Option Type. Other attributes for the Option may change.
- Firms should note that they will only receive Derivative Directory messages for the symbol range associated with the matching engine serving that connection.
- The Underlying Symbol is in most cases the same as the industry standard ticker underlying. In rare cases, such as a special settlement symbol, the exchange assigns unique underlying symbols.
- If an Option is removed from the system intra-day, a new options directory message will be sent with "Tradable" field set to "N".

Any Quotes sent for this removed Option will be rejected. All existing quotes for this option will be purged.

- The Minimum Price Variation (MPV) has the following values:
  - "E" – All prices are in penny increments
  - "S" – Prices below $3.00 are in increments of $0.05, prices above $3.00 are in increments of $0.10
  - "P" – Prices below $3.00 are in increments of $0.01, prices above $3.00 are in increments of $0.05

Derivative Directory Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"m" = Directory Message
Tracking Number	1	2	Integer	Internal System tracking number
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Instrument ID	11	4	Integer	Integer ID of the option, as defined in the Options Directory Message.
Security Symbol	15	8	Alphanumeric	Denotes the option root symbol (security symbol)
Expiration Year	23	1	Integer	Last two digits of the year of the option expiration
Expiration Month	24	1	Integer	Expiration Month of the option (1-12)
Expiration Day	25	1	Integer	Day of the Month of expiration (1-31)
Explicit Strike Price	26	4	Integer	Explicit strike price. Refer to Data Types for field processing notes.
Option Type	30	1	Alpha	"C" = Call option "P" = Put option "N" = Not Applicable
Underlying Symbol	31	13	Alpha	Denotes the unique symbol assigned to the underlying security within the Exchange System.
Closing Type	44	1	Alpha	Denotes which System Event is used to determine when trading ceases in this symbol. "N" = Normal Hours "L" = Late Hours "W" = WCO Early Closing at 12:00

Derivative Directory Message

Name	Offset	Length	Value	Notes
Tradable	45	1	Alpha	"Y" = Option is tradable "N" = Option is not tradable
MPV	46	1	Alpha	Minimum Price Variation for this option: "E" = penny Everywhere "S" = Scaled "P" = penny Pilot
Reserved	46	16	Alpha	Reserved for future use.

4.2.2. Trading Action Message

The options system uses this administrative message to indicate the current trading status of an index or equity option within the options market.

The Options Trading Action message will be used to indicate the current trading state of the instrument as it transitions through the various states during the trading session. It will begin with Pre Open state if it is eligible for trading. The states Opening and Re-Opening indicate that the instrument is undergoing an auction prior to it moving into Continuous Trading state. Buy Side and Sell Side Trading Suspended states are special cases of Continuous Trading. The instrument transitions to Closed state at the end of trading hours. At any point before the Closed state the instrument can enter the Halted state for regulatory or operational reasons.

After the start of system hours, Nasdaq will use the Trading Action message to relay changes in trading status for an individual option. Messages will be sent when an option: is halted, is released for quotation, released for trading, or temporarily suspended for trading on the buy or sell side.

Trading Action Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"H" = Trading Action
Tracking Number	1	2	Integer	Internal System Tracking number
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Instrument ID	11	4	Integer	Integer ID of the option, as defined in the Options Directory Message.
Current Trading State	15	1	Alpha	Reflects the current trading state for the options security in the options market. The allowable values are: "B"=Buy Side Suspended "S" =Sell-Side Suspended "H" = Halt in effect "T" = Continuous Trading "I" = Pre-Open "O" = Opening Auction "R" = Re-Opening "X" = Closed

4.3. Order Message

The Order Message indicates that a new order has been accepted by the Nasdaq MRX, GEMX, ISE and PHLX Option system and was added to the displayable book. The message includes a day-unique Order Reference Number used by MRX, GEMX, ISE and PHLX to track the order

Add Order Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"O" = Order Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Instrument ID	11	4	Integer	Instrument ID assigned daily, valid for trading day
Order Reference Number	15	8	Integer	The unique reference number assigned to the new order. The order reference number is Increasing, but not necessarily sequential.
Side	23	1	Alpha	Indicates the side of the order: "B" = Buy order "S" = Sell order
Original Order Volume	24	4	Integer	Original Order Volume for this order
Executable Order Volume	28	4	Integer	Volume available for execution at the venue. Note that this number can increase or decrease as the size available for trading changes due to away exchange routing
Order Status	32	1	Alpha	Indicates the current status of the order: "O" = Open "F" = Filled "C" = Cancelled Note: Partial fills will be sent with Order Status = "O" and reduced Executable Order Volume
Order Type	33	1	Alpha	Indicates the type of order: "M" = Market "L" = Limit
Order Qualifier	34	1	Alpha	"O" = Opening Order "I" = Implied Order " " = N/A (field is space char)
Limit Price	35	4	Integer	Original Limit Price of Limit or Stop Order, will not include repricing updates. Otherwise field is zero.
All or None	39	1	Alpha	Indicates if order is All or None Order: "Y" = Order is All or None Order "N" = Order is not All or None Order
Time in Force	40	1	Alpha	Indicates duration of the order: "D" = Day Order "G" = Good till cancelled (GTC) Order
Order Capacity	41	1	Alpha	Indicates whether this is a: "C" = Customer Order "F" = Firm Order "M" = Nasdaq registered Market Maker Order "B" = Broker Dealer Order "P" = Professional Order "O" = Other exchange registered Market Maker Order 'J' = JBO (Joint Back Office, only PHLX) " " = N/A (For Implied Order)

Add Order Message

Name	Offset	Length	Value	Notes
Open Close Indicator	42	1	Alpha	Indicates whether this Order opens or closes a position: "O" = Opens position "C" = Closes position " " = N/A (For Implied Order)
Owner ID	43	6	Alpha	Attributable Order may provide Firm ID to disseminate with order; Spaces when not set
Giveup	49	6	Alpha	Attributable Order may provide Give-up to disseminate with order; Spaces when not set
CMTA	55	6	Alpha	Attributable Order may provide CMTA to disseminate with order; Spaces when not set

4.4. Auction Message

This message is used to announce auctions, including the opening auction. The start of the auction will be announced, followed by possible updates on the auction, and announcing the end of the auction.

Block Auctions may hide some fields in the auction notification: Side, Price and/or Size. Block Auctions may disseminate owner ID, CMTA or Giveup in the Auction notification.

For AuctionEvent = 'E' (End of auction) Quantity, Side, Price, Imbalance volume, Order Capacity, Owner ID, Giveup and CMTA will be presented as spaces or 0 depending on the field type.

Exposed orders will provide a notification to the market via the Auction notification message, however, this is not technically an auction and instead a notification of an order that is imminent to route. Exposed orders (AuctionType = "I") will always present AuctionEvent ="U" and will not provide an End of auction update (AuctionEvent = "E") or a Start of auction event (AuctionEvent = "S").

Auction Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"J" = Auction Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight.
Instrument ID	11	4	Integer	Instrument Id assigned daily, valid for trading day.
Auction ID	15	4	Integer	Uniquely identifies the Auction for the trading day.
Auction Type	19	1	Alpha	Type of Auction: 'B' = Block Auction 'O' = Opening 'R' = Reopening 'I' = Order Exposure 'P' = Price Improvement (PIM) Auction 'C' = Facilitation 'S' = Solicitation 'X' = Flex Auction *When AuctionType = "O", "R", or "I" this AuctionEvent will always be presented as "U"*
Auction Duration	20	4	Integer	User defined for Auction Duration. In milliseconds between 3,000 and 300,000. AuctionDuration will be populated only for Flex Auctions, or PIMs/SOLs for Flex Instrument. It will only be present for Start of Auction event "S" and in other cases it will be '0'.

Auction Message

Name	Offset	Length	Value	Notes
AuctionEvent	24	1	Alpha	'S'=Start of Auction 'E'=End of Auction 'U'=Auction Update When AuctionType = "O", "R", or "I" this AuctionEvent will always be presented as "U"
Quantity	25	4	Integer	Auction Quantity. Opening auction will present paired quantity in this field. Hidden Quantity will be presented as 0
Side	29	1	Alpha	Indicates the market side of the imbalance in case of Opening or the direction of the auction in case of Auction. Hidden side will be set to blank space 'B'=Buy or Buy side imbalance 'S'=Sell or sell side imbalance
Price	30	4	Integer	Price for the auction; hidden prices are set to zero. Will represent imbalance price for opening auctions. Price will be '0' (masked) for Flex Auction of Auction Type 'X'.
Imbalance Volume	34	4	Integer	Imbalance volume for opening auction. Will be 0 for other auctions
Exec Flag	38	1	Alpha	N = None; A = AON
Order Capacity	39	1	Alpha	Indicates whether this is a: 'C' = Customer Order 'F' = Firm Order 'M' = Nasdaq registered Market Maker Order 'B' = Broker Dealer Order 'P = Professional Order 'O' = Other exchange registered Market Maker Order 'J' = JBO (Joint Back Office, only PHLX) Will be blank space when not applicable for certain Auction Types
Owner ID	40	6	Alpha	Block Auction may provide Owner ID; Spaces when not set
Giveup	46	6	Alpha	Block Auction may provide Giveup; Spaces when not set
CMTA	52	6	Alpha	Block Auction may provide CMTA; Spaces when not set
Reserved	58	16	Alpha	Reserved for future use.

4.5. End of Replay Sequence Message (Only for SoupBINTCP)

The End of replay Sequence message reflects the sequence number at the time replay of existing messages is complete.

The firms can then use this sequence number to resume on the real time Mold channel.

End of Replay Sequence Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"M" = End of Replay Sequence Message
Sequence Number	1	20	Alpha Numeric	Sequence number once the replay is complete. Use this sequence number to resume on the real time Mold channel.

Note: This field is ASCII representation of the sequence number.

5. Support

- For general product support for Nasdaq data feeds, please contact Nasdaq Market Data at clientsuccess@nasdaq.com.

6. Document History

Revision	Published	Author(s)	Summary of Changes
Version 2.0	March 16, 2022		Initial Draft
Version 2.01	June 16, 2022		Updated the Trading Action Message with the following enumerations added to the Current Trading State Field: Correction to offsets on Add Order Message starting with Time in Force to CMTA fields - "B"=Buy Side Suspended - "S" =Sell-Side Suspended Updated notes on Auction Message and notes for specific fields. The following additions/updates were made: - For AuctionEvent = 'E' (End of auction) Quantity, Side, Price, Imbalance volume, Order Capacity, Owner ID, Giveup and CMTA will be presented as spaces or 0 depending on the field type. - AuctionEvent: When AuctionType = "O", "R", or "I" this AuctionEvent will always be presented as "U" - Order Capacity: Will be blank space when not applicable for certain Auction Types - Owner ID: Block Auction may provide Owner ID; Spaces when not set - Giveup: Block Auction may provide Giveup; Spaces when not set - CMTA: Block Auction may provide CMTA; Spaces when not set - Added Exec Flag field and updated message offsets
Version 2.01	July 20, 2022		Updated section 4.4 – Auction Message - Changed verbiage in paragraph from AuctionType = "F" to AuctionType = "I".
Version 2.01	October 18, 2022		Clarifying the enumerations for AuctionEvent in case of Exposure Auctions in the Auction Message.
Version 2.01	November 3, 2022		Clarifying the enumerations for AuctionType in the Auction message
Version 2.02	January 9, 2023		Version updated to 2.02. Clarifying the Data Types: Added "2 byte Price Fields are unsigned
Version 2.02	March 31st		- GEMX will adopt Order Feed v2.02 during the Replatform scheduled to complete November 13, 2023
Version 2.02	April 1, 2024		- ISE will adopt Order Feed v2.02 during the Replatform scheduled to complete September 23, 2024.
Version 2.1	August 30, 2024		- Converting the SoupBINTCP Protocol option to a replay without support for Live Market Data - Adding the End of Replay Sequence Message only for SoupBINTCP.
Version 2.1	October 2nd, 2024		Derivative Directory Message - Message type changed to 'm' - Increase symbol size from 6 characters to 8 characters. - Add reserved field of 16 characters in preparation for Phase 2. Auction Message - Message type changed to 'J' - New enum for CrossType "X" for "Flex Auction" - Added Auction duration of 4 characters - Add reserved field of 16 characters

Revision	Published	Author(s)	Summary of Changes
Version 2.1	January 9, 2025		Appendix A • Flex Symbology table added Auction Message • Added the following note in Price field "Price will be '0' (masked) for Flex Auction of Auction Type 'X'."
Version 2.1	May, 7, 2025		• Replaced the title to align with the title used for replatform • PHLX to adopt the options orders feed v2.1 during the replatform
Version 2.1	September 15, 2025		• the order capacity messages have been edited to include JBO = Joint Back Office (only PHLX)

Appendix A

Flex Symbology

Underlying Security	Lead Character	Settlement Type	Exercise Style
Index	1	AM	American
Index	2	AM	European
Index	3	PM	American
Index	4	PM	European
Equity/ETF	1	PM	American
Equity/ETF	2	PM	European
ETF Cash	3	PM	American
ETF Cash	4	PM	European