

# MRX and ISE Spread Feed

## Version 2.1

### Table Of Contents

1. Overview .....	2
2. Architecture .....	2
3. Data Types .....	2
4. Common Messages - System & Administrative Messages .....	3
4.1. System Event Message .....	3
4.2. Complex Strategy Directory Message .....	3
4.3. Strategy Trading Action Message .....	5
4.4. End of Replay Sequence Message (Only for SoupBINTCP) .....	5
5. Order Component .....	6
5.1. System & Administrative Messages .....	6
5.2. Complex Add Order Message .....	6
5.3. Complex Strategy Auction Message .....	7
6. Depth of Market Component .....	9
6.1. System & Administrative Messages .....	9
6.2. Complex Add Order Message .....	9
6.3. Modify Order Message .....	11
6.4. Complex Strategy Trade Message .....	15
6.5. Complex Strategy Auction Message .....	16
7. Top of Market Component .....	17
7.1. System & Administrative Messages .....	17
7.2. Strategy Best Bid AND Ask Update .....	18
7.3. Strategy Best Bid OR Ask Update .....	18
8. Trade Component .....	19
8.1. System & Administrative Messages .....	19
8.2. Complex Strategy Trade Report .....	20
9. Support .....	20
10. Document History .....	21
Appendix A .....	24

## 1. Overview

The Nasdaq MRX and ISE Spread Feed provides access to a set of four direct data feeds (components) in the Nasdaq MRX and ISE (MRX and ISE) systems offered by Nasdaq® that includes several views of complex order activity on MRX and ISE across four separate components (Order, Depth of Market Top of Market and Trade).

Each of the four components are provided on its own set of source IPs. General data feed information on system events and instrument definitions for complex strategies can be accessed within the set of source IPs for each component through a common set of message types allowing for flexibility based on individual consumption needs.

## 2. Architecture

Each of the four components 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.

The MRX and ISE options system offers the data feed and each of the four components 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 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. Negative prices will be indicated with a negative integer at the start of the price field.

## 4. Common Messages - System & Administrative Messages

The following messages are provided on each of the four components of the data feed.

- System Events
- Complex Strategy Directory Message
- Strategy Trading Action Message

### 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. Complex Strategy Directory Message

Whenever a complex order is added in the system for an underlying, the order is normalized and results in either the creation of a new complex strategy or is added to an existing strategy. A Complex Strategy Directory Message containing the strategy definition will be sent. For GTC strategies, these will be assigned each trading day and will not be persistent across trading days. The Strategy ID assigned for a new complex strategy is unique for a particular complex instrument for a trading session. Strategy IDs are independent of session Options IDs and uniqueness of the IDs across both complex and simple options is guaranteed.

- 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.

## Complex Strategy Message

Name	Offset	Length	Value	Notes	
Message Type	0	1	Alpha	"s" = Directory Message	
Tracking Number	1	2	Integer	Internal System Tracking Number	
Timestamp	3	8	Integer	Nanoseconds since midnight	
Strategy ID	11	4	Integer	Option ID assigned daily. Valid for trading day "V" = Vertical Spread "T" = Time Spread "D" = Diagonal Spread "S" = Straddle "G" = Strangle "C" = Combo	
Strategy Type	15	1	Alphanumeric	"R" = Risk Reversal "A" = Ratio Spread "B" = Box Spread "F" = Butterfly Spread "U" = Custom	
Underlying Symbol	16	13	Alphanumeric	Underlying Symbol for the strategy. All legs in this strategy belong to this Underlying	
Reserved	29	16	Alpha	Reserved for future use.	
Number of legs	45	1	Integer	Number of legs in the strategy Legs NOTE: Leg field offsets below are an equation, where "n" is the zero based leg number (0, 1, ...)	
Leg Information, legs repeated. N=0,	Option ID	25n + 46	4	Integer	Option ID for this leg, valid for the trading day. The same ID as the corresponding Option in the Options Directory Message. Zero (0) for Stock Leg.
	Security Symbol	25n + 50	8	Alphanumeric	Denotes the option root symbol (security symbol)
	Expiration Year	25n + 58	1	Integer	Last two digits of the year of the option expiration
	Expiration Month	25n + 59	1	Integer	Expiration Month of the option (1-12)
	Expiration Day	25n + 60	1	Integer	Day of the Month of expiration (1-31)
	Explicit Strike Price	25n + 61	4	Integer	Explicit strike price. Refer to Data Types for field processing notes. Zero (0) for Stock Leg.
	Option Type	25n + 65	1	Alpha	"C" = Call option "P" = Put option Blank (" ") for Stock Leg.
	Side	25n + 66	1	Alpha	Indicates the side of the leg: "B" = Leg is on Buy side "S" = Leg is on Sell side
	Leg Ratio	25n + 67	4	Integer	Leg Ratio

### 4.3. Strategy 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.

Whenever a strategy is created and assigned a Strategy ID, MRX and ISE will send a Strategy Trading Action Message with current trading state "T" (Trading) or "H" (Halted) soon after the Complex Strategy directory message is sent. Trading firms should assume that all strategies are eligible for trading. MRX and ISE will send out a Trading Action message with "H" (HALTED) when a strategy is halted for trading. Thereafter throughout the trading day the Trading Action message is used to relay changes in trading status for the strategy. Messages will be sent when the strategy is halted or is released for trading.

#### 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	Nanoseconds since midnight
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message. Reflects the current trading state for the State derivative. The allowable values are: "H" = Halt in effect "T" = Continuous Trading
Current Trading State	15	1	Alphabetic	"I" = Pre-Open "O" = Opening Auction "R" = Re-Opening "X" = Closed

### 4.4. 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. Order Component

Advises participants that a new Complex order is resting on the book. Also Announces that a new complex auction order is in the market. For public (exposed) auctions, auction responses are also disclosed for a select set of auctions. Order updates are not provided and cannot be used to build the spread order book.

The Spread feed Order component supports the following messages:

- System Event Message
- Complex Strategy Directory Message
- Strategy Trading Action Message
- Announcements of new complex resting orders in the book
- Announcements of complex auctions

### 5.1. System & Administrative Messages

The system & administrative messages is a set of common messages that provides information on data feed system events and general instrument information for complex strategies. Format to each of these messages are provided through the following links:

- System Event Message
- Complex Strategy Directory Message
- Strategy Trading Action Message

### 5.2. Complex Add Order Message

A Complex Add Order message is generated for all the following situations whenever an order free from any display restrictions is reported by the matching engine. In all such cases the order size to be displayed is as reported by the matching engine:

New – Whenever a new order is entered, including GTC orders from the previous day

Partial Fill – Whenever the order is partially filled and if the order continues to be free of display restrictions Cancel – whenever an order is cancelled

#### Add Order Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"C" = Complex Strategy Order on Book
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Strategy ID	11	4	Integer	Strategy 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 OrderVolume	28	4	Integer	Volume available for execution.

### Add Order Message

Name	Offset	Length	Value	Notes
Order Status	32	1	Alpha	Indicates the current status of the order: "O" = Open "F" = Filled "C" = Cancelled
Order Type	33	1	Alpha	Indicates the type of order: "M" = Market "L" = Limit
Limit Price	34	4	Integer	Price of the order in fixed point format with 6 whole number places followed Integer by 4 decimal digits.
Time in Force	38	1	Alpha	Indicates duration of the order: "D" = Day Order "G" = Good till cancelled (GTC)
Order Capacity	39	1	Alpha	Indicates the order capacity: "C" = Customer Order "F" = Firm Order "M" = Nasdaq registered Market Maker "B" = Broker Dealer Oder "P" = Professional Order "O" = Other exchange registered market maker
Scope	40	1	Alpha	'L' = Local 'N' = National
Owner ID	41	6	Alpha	Attributable Order may provide Firm ID to disseminate with order; Spaces when not set
Giveup	47	6	Alpha	Attributable Order may provide Give-up to disseminate with order; Spaces when not set
CMTA	53	6	Alpha	Attributable Order may provide CMTA to disseminate with order; Spaces when not set

### 5.3. Complex Strategy Auction Message

This message is used to announce strategy auctions. The start of auction is announced, followed by possible updates on the auction, and announcing the end of the auction. Some fields, at the discretion of the originator of the Order, may be hidden. Possible hidden fields are: Scope, Owner ID, Giveup and CMTA. For the end of auction announcement most of the fields will be blanked or zeroed out. Refer to the message definition for more details.

### Complex Strategy Auction Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"a" = Complex Strategy Auction
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight.
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
Auction ID	15	4	Integer	Uniquely identifies the Auction for the trading day.

## Complex Strategy Auction Message

Name	Offset	Length	Value	Notes
Auction Type	19	1	Alpha	Type of Auction: 'E' = Complex Exposure 'P' = Price Improvement (PIM) Auction 'C' = Facilitation 'S' = Solicitation 'X' = Flex Auction
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 Event	24	1	Alpha	'S' = Start 'U' = Auction Update 'E' = End of Auction
Order Type	25	1	Alpha	Hidden Order Type will be set to blank space 'M' = Market 'L' = Limit
Side	26	1	Alpha	'B' = Buy 'S' = Sell
Price	27	4	Integer	Price in fixed point format with 6 whole number places followed by 4 decimal digits. Price will be '0' (masked) for Flex Auction of Auction Type 'X'.
Size	31	4	Integer	Size
Exec Flag	35	1	Alpha	N = None; A = AON
Order Capacity	36	1	Alpha	Indicates the order capacity: 'C' = Customer 'F' = Firm 'M' = Nasdaq registered Market Maker 'P' = Professional Customer 'B' = Broker Dealer 'O' = Other exchange registered Market Maker Order
Scope	37	1	Alpha	'L' = Local 'N' = National
Owner ID	38	6	Alpha	Attributable Order may provide Firm ID to disseminate with order; Alpha Spaces when not set
Giveup	44	6	Alpha	Attributable Order may provide Give-up to disseminate with order; Alpha Spaces when not set
CMTA	50	6	Alpha	Attributable Order may provide CMTA to disseminate with order; Alpha Spaces when not set
Response Price	56	4	Integer	Price of the aggregated auction responses in fixed point format with 6 whole number places followed by 4 decimal digits. The response, if shown (zero if not shown) is the best response on the contra side. Note, Response Price of 0 is a valid price for Exposure auctions if Response Size is not 0
Response Size	60	4	Integer	Size of the aggregated auction responses at the best price (zero if not shown)
Reserved	64	4	Alpha	Reserved for future use.



### Complex Strategy Auction Message

Name	Offset	Length	Value	Notes
Number of Flex DAC Legs	68	1	Integer	Number of Flex DAC legs in the strategy Legs NOTE: Leg field offsets below are an equation, where “n” is the zero based leg number (0, 1, ...). In case of a non flex strategy, the field will be '0'.
Flex DAC Leg Information				
	Reserved	8n + 69	8	N/A

## 6. Depth of Market Component

Provides full complex order book updates through a series of order messages to track the life of a complex order. Also Announces that a new complex auction order is in the market. For public (exposed) auctions, auction responses are also disclosed for a select set of auctions.

The Spread feed Depth of Market component supports the following messages:

- System Events
- Complex Strategy Direction Message
- Strategy Trading Action Message
- Announcements of new resting orders in the book
- Announcements of auctions
- Announcements of trades/executions

### 6.1. System & Administrative Messages

The system & administrative messages is a set of common messages that provides information on data feed system events and general instrument information for complex strategies. Format to each of these messages are provided through the following links:

- System Event Message
- Complex Strategy Directory Message
- Strategy Trading Action Message

### 6.2. Complex Add Order Message

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

For bandwidth efficiency reasons, this message can be published in either short or long format.

#### Add Order Message – Short Form

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"r" = Add Order Message
Tracking Number	1	2	Integer	Internal system tracking number

**Add Order Message – Short Form**

Name	Offset	Length	Value	Notes
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
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 "S" = Sell "O" = Buy Market "P" = Sell Market When Side = O or P price can be ignored
Order Capacity	24	1	Alpha	Indicates whether this is a: "C" = Customer Order "F" = Firm Order "M" = Nasdaq registered Market Maker "B" = Broker Dealer Order "P" = Professional Order "O" = Other exchange registered market maker
Price	25	2	Integer	The display price of the new order being added to the book. The price will be zero for market orders NOTE: When converted to a decimal format, this price is in fixed point format with 3 whole number places followed by 2 decimal digits.
Volume	27	2	Integer	The total quantity of the new order being added to the book
Scope	29	1	Alpha	"L = Local" "N = National"
Reserved	30	3	Alpha	Reserved for future use

**Add Order Message – Long Form**

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"o" = Add Order Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
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 "S" = Sell "O" = Buy Market "P" = Sell Market When Side = O or P price can be ignored
Order Capacity	24	1	Alpha	"M" = Nasdaq registered Market Maker "B" = Broker Dealer Order "P" = Professional Order "O" = Other exchange registered market maker

### Add Order Message – Long Form

Name	Offset	Length	Value	Notes
Price	25	4	Integer	The display price of the new order being added to the book. The price will be zero for market orders NOTE: When converted to a decimal format, this price is in fixed point format with 6 whole number places followed by 4 decimal digits.
Volume	29	4	Integer	The total quantity of the new order being added to the book
Scope	33	1	Alpha	"L = Local" "N = National"
Reserved	34	3	Alpha	Reserved for future use

## 6.3. Modify Order Message

Modify messages always include the Reference Number of the order to which the update applies. The Reference Numbers on an order will change in the Replace messages. Depth of Market subscribers must track these Reference Number changes to know the current active Reference Number.

To determine the current display contracts for an order, Depth of Market subscribers must adjust the number of contracts stated in the Modify message from the original number of contracts stated in the Add/Replace message with the same reference number.

### 6.3.1. Single Side Executed Message

A "Side order" represents an order. This message is sent whenever a Side order is executed in whole or in part. It is possible to receive several Single Side Executed Messages for the same Side order if that Side order is executed in several parts. The multiple Single Side Executed Messages on the same order are cumulative. By combining the executions received separately via two types of Single Side Executed Messages and Trade Messages, it is possible to build a complete view of all non- auction executions that happen on The MRX and ISE Options Market. Auction execution information is available in one bulk print via the Trade Message. Note, in uncrossing situations, both sides of a combination strategy can be updated with a single side executed Message update.

### Single Side Executed Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"t" = Single Side Order Executed Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
Order Reference Number	15	8	Integer	The unique reference number assigned to the new order. Order reference number is increasing, but not necessarily sequential.
Executed volume	23	4	Integer	The total quantity executed
Trade Condition	27	1	Alpha	The Trade Condition is the same as defined in the OPRA specification (OPRA terminology is either "Last Sale" or "Transaction"): <a href="https://www.opraplan.com/document-library">https://www.opraplan.com/document-library</a> Always refer to the <a href="https://www.opraplan.com">www.opraplan.com</a> website to ensure the possible Trade Conditions sent out by this feed, which are consistent with the Trade Conditions defined by OPRA.
Auction ID	28	4	Integer	Uniquely identifies the Auction for the trading day.
Cross Number	32	4	Integer	Trade Group Id. Ties together all trades of a given atomic transaction in the matching engine.
Match Number	36	4	Integer	Execution Id. Identifies the component of an execution. Unique for a given day.

### 6.3.2. Single Side Executed with Price Message

A “Side order” represents an order.

This message is sent whenever an incoming Side order is executed against the book in whole or in part at a price different from the initial display price. Since the execution price is different than the display price of the original Add/Replace, MRX and ISE includes a price field within this execution message. It is possible to receive multiple Single Side Executed and Single Side Executed with Price messages for the same Side order if that Side order is executed in several parts. The multiple Single Side Executed messages on the same Side order are cumulative.

These executions may be marked as non-printable. If the execution is marked as non-printed, it means that the contracts will be included into a later bulk print (e.g., in the case of auction executions). If a firm is looking to use the MRX and ISE Options Depth data in time- and sales displays or volume calculations, Nasdaq recommends that firms ignore messages marked as non- printable to prevent double counting.

#### Single Side Executed With Price Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"T" = Single Side Order Executed with Price Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
Order Reference Number	15	8	Integer	The unique reference number assigned to the new order. Order reference number is increasing, but not necessarily sequential.
Cross Number	36	4	Integer	Trade Group Id. Ties together all trades of a given atomic transaction in the matching engine.
Match Number	40	4	Integer	Execution Id. Identifies the component of an execution. Unique for a given day.
Reserved	31	1	Alpha	Not applicable for complex, will be conveyed as space " "
Price	32	4	Integer	The execution price. NOTE: When converted to a decimal format, this price is in fixed point format with 6 whole number places followed by 4 decimal digits.
Volume	36	4	Integer	The execution quantity.
Trade Condition	40	1	Alpha	The Trade Condition is the same as defined in the OPRA specification (OPRA terminology is either "Last Sale" or "Transaction"): <a href="https://www.opraplan.com/document-library">https://www.opraplan.com/document-library</a> Always refer to the <a href="https://www.opraplan.com">www.opraplan.com</a> website to ensure the possible Trade Conditions sent out by this feed, which are consistent with the Trade Conditions defined by OPRA.
Auction ID	41	4	Integer	Uniquely identifies the Auction for the trading day.

### 6.3.3. Single Side Replace Message

This message is sent whenever an order on the book is replaced. The replacement has a new sequence number and replaces the prior sequence number.

For bandwidth efficiency reasons, this message can be published in either short or long format.

#### Single Side Replace Message – Short Form

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"i" = Single Side Replace Message
Tracking Number	1	2	Integer	Internal system tracking number

**Single Side Replace Message – Short Form**

Name	Offset	Length	Value	Notes
Timestamp	3	8	Integer	Nanoseconds since midnight
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
Original Order Reference Number	15	8	Integer	The original reference number associated with the order being replaced.
New Order Reference Number	23	8	Integer	The new reference number associated with the new order
Price	31	2	Integer	The display price of the replaced order being added to the book. NOTE: When converted to a decimal format, this price is in fixed point format with 3 whole number places followed by 2 decimal digits
Volume	33	2	Integer	The total quantity of the replaced order being added to the book
Order Type	35	1	Alpha	'M' = Market 'L' = Limit
Scope	36	1	Alpha	"L = Local" "N = National"
Reserved	37	3	Alpha	Reserved for future use

**Single Side Replace Message – Long Form**

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"I" = Single Side Replace Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
Original Order Reference Number	15	8	Integer	The original reference number associated with the order being replaced.
New Order Reference Number	23	8	Integer	The new reference number associated with the new order
Price	31	4	Integer	The display price of the replaced order being added to the book. NOTE: When converted to a decimal format, this price is in fixed point format with 6 whole number places followed by 4 decimal digits
Volume	35	4	Integer	The total quantity of the replaced order being added to the book
Order Type	39	1	Alpha	'M' = Market 'L' = Limit
Scope	40	1	Alpha	"L = Local" "N = National"
Reserved	41	3	Alpha	Reserved for future use

#### 6.3.4. Single Side Delete Message

The message is sent when an order is being cancelled. All remaining contracts are no longer accessible so the side should be removed from the book.

##### Single Side Delete Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"D" = Single Side Order Delete Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Strategy ID Order Reference	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message
Order Reference Number	15	8	Integer	The order reference number associated with the cancelled order

#### 6.3.5. Single Side Update Message

This message is sent whenever an order is being updated for price and (or) contracts. The reference number associated with the order is unchanged.

##### Single Side Update Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"P" = Single Side Order Update message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
Order Reference Number	15	8	Integer	The reference number associated with the update for an order.
Change Reason	23	1	Alpha	'U' - User
Price	24	4	Integer	Will always be the original display price of the replaced order being added to the book. NOTE: When converted to a decimal format, this price is in fixed point format with 6 whole number places followed by 4 decimal digits
Volume	28	4	Integer	The total quantity of the replaced order being added to the book
Order Type	32	1	Alpha	'M' = Market 'L' = Limit

## 6.4. Complex Strategy Trade Message

This Options Trade Message is designed to provide execution details for normal match events involving non-displayable order types. Since no Add Order Message is generated when a non-displayed order is initially received, MRX and ISE cannot use the Modify Order message for all matches. MRX and ISE therefore developed this message to indicate when a match occurs between non-displayable order types. This message is transmitted each time a non-displayable order is executed in whole or in part. It

is possible to receive multiple messages for the same Side order if that order is executed in several parts. Trade Messages for the same Side order are cumulative. These messages should be included in MRX and ISE time-and-sales displays as well as volume and other market statistics. Since Trade Messages do not affect the book, however, they may be ignored by firms just looking to build and track the MRX and ISE Options System display.

All Flex Trades will be reported using Trade message.

### Trade Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"q" = Trade Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Strategy ID	11	4	Integer	ID of the Strategy, as defined in the Complex Strategy Integer Message.
Cross Number	15	4	Integer	Trade Group Id. Ties together all trades of a given atomic transaction in the matching engine.
Match Number	19	4	Integer	Execution Id. Identifies the component of an execution. Unique for a given day.
Reserved	23	4	Integer	Not applicable for complex, will be set to zero "0"
Cross Type	27	1	Alpha	'E' = Complex Exposure Auction 'O' = Opening Auction 'R' = Re-opening Auction 'P' = Price Improvement (PIM) Auction 'C' = Facilitation 'S' = Solicitation 'X' = Flex Auction 'N' = None
Price	28	4	Integer	The execution Price
Volume	32	4	Integer	The number of contracts executed
Trade Condition	36	1	Alpha	The Trade Condition is the same as defined in the OPRA specification (OPRA terminology is either "Last Sale" or "Transaction"): <a href="https://www.opraplan.com/document-library">https://www.opraplan.com/document-library</a> Always refer to the <a href="https://www.opraplan.com">www.opraplan.com</a> website to ensure the possible Trade Conditions sent out by this feed, which are consistent with the Trade Conditions defined by OPRA.
Auction ID	37	4	Integer	Uniquely identifies the Auction for the trading day.
Reserved	41	1	Alpha	Not applicable for complex, will be conveyed as space " "
Trade Type	42	1	Alpha	Trade Type Identifier "E" = Electronic Trade
Reserved	43	16	Alpha	Reserved for future use.

All Flex Trades will be reported using Trade message.

## 6.5. Complex Strategy Auction Message

This message is used to announce strategy auctions. The start of auction is announced, followed by possible updates on the auction, and announcing the end of the auction. Some fields, at the discretion of the originator of the Order, may be hidden. Possible hidden fields are: Scope, Owner ID, Giveup and CMTA. For the end of auction announcement most of the fields will be blanked or zeroed out. Refer to the message definition for more details.

**Complex Strategy Auction Message**

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"a" = Complex Strategy Auction
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight.
Strategy ID	11	4	Integer	Integer ID of the Strategy, as defined in the Complex Strategy Message.
Auction ID	15	4	Integer	Uniquely identifies the Auction for the trading day.
Auction Type	19	1	Alpha	Type of Auction: 'E' = Complex Exposure 'P' = Price Improvement (PIM) Auction 'C' = Facilitation 'S' = Solicitation 'X' = Flex Auction
Auction Duration	20	4	Integer	User defined field for Auction Duration. In Milliseconds between 3,000 and 300,000
Auction Event	24	1	Alpha	'S' = Start 'U' = Auction Update 'E' = End of Auction
Order Type	25	1	Alpha	Hidden Order Type will be set to blank space 'M' = Market 'L' = Limit
Side	26	1	Alpha	Indicates the side of the order: "B" = Buy "S" = Sell
Price	27	4	Integer	Price in fixed point format with 6 whole number places followed by 4 decimal digits. Price will be '0' (masked) for Flex Auction of Auction Type 'X'.
Size	31	4	Integer	Size
Exec Flag	35	1	Alpha	N = None; A = AON
Order Capacity	36	1	Alpha	Indicates the order capacity: 'C' = Customer 'F' = Firm 'M' = Nasdaq registered Market Maker 'P' = Professional Customer 'B' = Broker Dealer 'O' = Other exchange registered Market Maker Order
Scope	37	1	Alpha	'L' = Local 'N' = National
Owner ID	38	6	Alpha	Attributable Order may provide Firm ID to disseminate with order; Spaces when not set
Giveup	44	6	Alpha	Attributable Order may provide Give-up to disseminate with order; Spaces when not set



## Complex Strategy Auction Message

Name	Offset	Length	Value	Notes
CMTA	50	6	Alpha	Attributable Order may provide CMTA to disseminate with order; Spaces when not set
Response Price	56	4	Integer	Price of the aggregated auction responses in fixed point format with 6 whole number places followed by 4 decimal digits. The response, if shown (zero if not shown) is the best response on the contra side. Note, Response Price of 0 is a valid price for Exposure auctions if Response Size is not 0
Response Size	60	4	Integer	Size of the aggregated auction responses at the best price (zero if not shown).
Reserved	64	4	N/A	Reserved for future use
Number of Flex DAC Legs	68	1	Integer	Number of flex legs in the strategy Legs NOTE: Leg field offsets below are an equation, where “n” is the zero based leg number (0, 1, ...). In case of a non flex strategy, the field will be '0'.
Flex DAC Leg Information				
	Reserved	8n + 69	8	N/A

\*Auction Duration will be population 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'.

## 7. Top of Market Component

Best Bid and Offer (BBO) Quotations for complex strategies: The options system will calculate and disseminate its best bid and offer position, with aggregated size, based on displayable order and quote interest for the options strategies. The BBO is shown when complex instruments are pre-open and open trading states.

The Spread feed Top of Market component supports the following messages:

- System Events
- Complex Strategy Directory Messages
- Strategy Trading Action Messages
- Best bid and offer update

### 7.1. System & Administrative Messages

The system & administrative messages is a set of common messages that provides information on data feed system events and general instrument information for complex strategies. Format to each of these messages are provided through the following links:

- System Event Message
- Complex Strategy Directory Message
- Strategy Trading Action Message

## 7.2. Strategy Best Bid AND Ask Update

The options system will continuously calculate its best bid and ask position for active strategies on the options market during the trading day. Whenever the best bid and ask position changes on both sides, the options system will send its best bid and ask update via the data feed for the affected security. A change in bid or ask implies a change in price and/or sizes. The quote will reflect the highest price displayable in the options system for buy orders/quotes and the lowest price displayable in the options system for sell orders/quotes. Customer and ProCust sizes are displayed as well. Strategy Best Bid and Ask will only update after a complex strategy is open.

If only one side of the quote changes, Best Bid OR Ask Update message will be sent for bandwidth efficiency reasons. The Quote Condition applies to both the bid and ask sides.

### Best Bid AND Ask Update

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"E" = Best bid AND ask update
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Strategy ID	11	4	Integer	Integer ID of the strategy, as defined in the Strategy Directory Message.
Quote Condition	15	1	Alpha	<space> = regular quote/autox eligible
Bid Market Size	16	4	Integer	The aggregate market size on Bid side.
Bid Price	20	4	Integer	Best bid price in fixed point format with 6 whole number places followed by 4 decimal digits
Bid Size	24	4	Integer	Aggregated number of contracts on the bid side being displayed in the options market at the current time. Does not include the market size.
Bid Cust Size	28	4	Integer	Customer quantity on the bid side.
Bid ProCust Size	32	4	Integer	Customer professional quantity on the bid side.
Bid DNTT Size	36	4	Integer	Aggregated Bid DNTT (Do not Trade Through) Limit Size
Bid DNTT Market Size	40	4	Integer	The aggregated DNTT (Do Not Trade Through) Market Size on Bid Size.
Ask Market Size	44	4	Integer	Aggregate market quantity on Ask side.
Ask Price	48	4	Integer	Best ask price in fixed point format with 6 whole number places followed by 4 decimal digits
Ask Size	52	4	Integer	Aggregated number of contracts on the ask side being displayed in the options market at the current time. Does not include the market size.
Ask Cust Size	56	4	Integer	Customer quantity on the ask side.
Ask ProCust Size	60	4	Integer	Customer professional quantity on the ask side.
Ask DNTT Size	64	4	Integer	Aggregated Ask DNTT (Do not Trade Through) Limit Size
Ask DNTT Market Size	68	4	Integer	The aggregated DNTT (Do Not Trade Through) Market Size on Ask Size. This message is transmitted in the "Q" group only.

## 7.3. Strategy Best Bid OR Ask Update

The options system will continuously calculate its best bid and offer position for active strategies on the options market during the trading day. Whenever the best bid or ask position changes on one side but not the other side, the options system will send its best bid or ask update via this feed for the affected security. A change in bid or ask implies a change in price and/or size. The quote will reflect the highest price displayable in the options system for buy orders/quotes and the lowest price displayable in the options system for sell orders/quotes.

For the bid or ask update received, the data feed recipient firm should adjust the quotation bid or ask side only for the market side indicated in the message. Implicitly the opposite side has the same price and size as previously displayed.

If both bid and ask change as one update, the Best Bid AND Ask Update message will be sent, displaying both sides of the quote simultaneously.

Strategy Best Bid OR Ask will only update after a complex strategy is open.

#### Best Bid OR Ask Update Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	Strategy Best bid OR ask update: "c" = Quote update bid side "d" = Quote update ask side
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Strategy ID	11	4	Integer	Integer ID of the strategy, as defined in the Strategy Directory Message.
Quote Condition	15	1	Alpha	<space> = regular quote/autox eligible
Market Size	16	4	Integer	The aggregate market size on Bid or Ask side.
Price	20	4	Integer	Best bid or ask price in fixed point format with 6 whole number places followed by 4 decimal digits
Size	24	4	Integer	Aggregated number of contracts on the bid or ask side being displayed in the options market at the current time. Does not include the market size.
Cust Size	28	4	Integer	Customer quantity on the bid or ask side.
ProCust Size	32	4	Integer	Customer professional quantity on the bid or ask side.
DNTT Size	36	4	Integer	Aggregated DNTT (Do Not Trade Through) Limit Size
DNTT Market Size	40	4	Integer	The aggregated DNTT (Do Not Trade Through) Market Size on Bid or Ask Size. This message is transmitted in the "Q" group only

## 8. Trade Component

Displays last trade information along with opening price, cumulative volume, high and low prices for the day. The Spread feed Trade component supports the following messages:

- System Events
- Complex Strategy Directory Messages
- Strategy Trading Action Messages
- Trade Report

### 8.1. System & Administrative Messages

The system & administrative messages is a set of common messages that provides information on data feed system events and general instrument information for complex strategies. Format to each of these messages are provided through the following links:

- System Event Message
- Complex Strategy Directory Message
- Strategy Trading Action Message

## 8.2. Complex Strategy Trade Report

The Complex Strategy message is used to real time trade information. The format is as follows:

### Complex Strategy Trade Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alpha	"R" = Complex Strategy Trade Report Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	The time, expressed as the number of nanoseconds after midnight.
Strategy ID	11	4	Integer	Integer ID of the option, as defined in the Complex Strategy Directory Message.
Cross ID	15	4	Integer	Indicates the internal control number (cross id) associated with the given options trade transaction
Trade Condition	19	1	Integer	The Trade Condition is the same as defined in the OPRA specification (OPRA terminology is either "Last Sale" or "Transaction"): <a href="https://www.opraplan.com/document-library">https://www.opraplan.com/document-library</a> Always refer to the <a href="https://www.opraplan.com">www.opraplan.com</a> website to ensure the possible Trade Conditions sent out by this feed, which are consistent with the Trade Conditions defined by OPRA.
Price	20	4	Integer	Reflects the transaction (premium) price on the execution.
Volume	24	4	Integer	Current number of contracts traded for an option in one trade.
Reserved	28	16	Alpha	Reserved for future use.

## 9. Support

- For general product support for Nasdaq data feeds, please contact Nasdaq Market Data at [Clientsuccess@nasdaq.com](mailto:Clientsuccess@nasdaq.com).

## 10. Document History

Revision	Published	Author(s)	Summary of Changes
Version 2.0	March 16, 2022		<ul style="list-style-type: none"> <li>Initial Draft</li> <li>Edits to table of contents and section formats and add page breaks to each section.</li> <li>Language edits to the overview section.</li> <li>Complex Strategy Message Updates: <ul style="list-style-type: none"> <li>Butterfly Spread enumeration from "Y" to "F" in the Strategy Field</li> <li>Notes to Expiration Month Field</li> <li>Notes to Explicit Strike Price Field to indicate Zero (0) for Stock Leg</li> <li>Removed "N" = N/A enumeration from Option Type Field and added Blank (" ") = Stock Leg</li> <li>Correction to offsets starting with Explicit Strike Price Side fields</li> </ul> </li> <li>Order Feed Component Updates: <ul style="list-style-type: none"> <li>Removed "R" = Re-notification enumeration from Order Status field on Add Order Message</li> <li>Correction to offsets on Add Order Message starting with Owner ID to CMTA Fields</li> <li>Complex Strategy Auction Message enumeration for Side Field updated to 'B' = Buy and 'S' = Sell</li> <li>Removed Joint Back Office (JBO) from 'F' enumeration under Complex Strategy Auction Message Order Capacity Field</li> <li>Correction to offset on Complex Strategy Auction Message for Response Price and Response Size Fields</li> <li>Added Exec Flag Field to Auction Message</li> </ul> </li> <li>Depth Feed Component Updates: <ul style="list-style-type: none"> <li>Updated the "O" and "P" enumerations on the Add Order Message (Short &amp; Long Form) Side Field.</li> <li>Changed Message Type for Order Replace Message <ul style="list-style-type: none"> <li>Short Form from "U" to "I".</li> </ul> </li> <li>Changed Message Type for Order Replace Message <ul style="list-style-type: none"> <li>Long Form from "U" to "L".</li> </ul> </li> <li>Updated placement of Strategy ID field in Trade Message. Updated other field names and offsets accordingly.</li> <li>Added Exec Flag Field to Auction Message</li> </ul> </li> <li>Top of Market Component Updates: <ul style="list-style-type: none"> <li>Correction to Bid NTT Market Size and Ask NTT Market Size Field name to DNTT for Do Not Trade Through on Best Bid AND Ask Update Message and Best Bid OR Ask Update Message. Notes updated accordingly</li> </ul> </li> </ul>
Version 2.01	June 16, 2022		
Version 2.01	July 19, 2022		<ul style="list-style-type: none"> <li>Updated Message Type enumerations in the following sections: <ul style="list-style-type: none"> <li>Section 6.3.1 Single Side Executed Message</li> <li>Enumeration change from "E" → "W"</li> <li>Section 6.3.2 Single Side Executed with Price Message</li> <li>Enumeration change from "C" → "Z"</li> </ul> </li> </ul>
	September 30, 2022		<ul style="list-style-type: none"> <li>Updated Message Type enumeration in the following section: <ul style="list-style-type: none"> <li>Section 6.3.5 Single Side Update Message</li> </ul> </li> <li>Enumeration change from "G" → "P"</li> </ul>

Revision	Published	Author(s)	Summary of Changes
Version 2.02	January 9, 2023		Version updated to 2.02. Clarifying the Data Types: Added "2 byte Price Fields are unsigned positive numbers. 4 byte Price fields are signed positive numbers."
Version 2.02	April 6, 2023		Corrected the Data Types: Changed "4 byte price fields are signed positive numbers." to "4 byte price fields are signed numbers".
Version 2.02	April 1, 2024		ISE will adopt Spread feed v2.0 during the replatform scheduled to complete on September 23,2024.
Version 2.1	August 30, 2024		<p>Converting the SoupBINTCP Protocol option to a replay without support for Live Market Data</p> <p>Adding the End of Replay Sequence Message only for SoupBINTCP.</p>
Version 2.1	October 2nd, 2024		<p>Complex Strategy Directory Message</p> <ul style="list-style-type: none"> <li>• Message type changed to 's'</li> <li>• Increase symbol size from 6 characters to 8 characters.</li> <li>• Add reserved field of 16 characters</li> </ul> <p>Complex Add Order Message</p> <p>Short Form</p> <ul style="list-style-type: none"> <li>• Message type changed to 'r'</li> <li>• Add new field "Scope" of 1 character</li> <li>• Add reserve field of 3 characters</li> </ul> <p>Long Form</p> <ul style="list-style-type: none"> <li>• Message type changed to 'R'</li> <li>• Add new field "Scope" of 1 character</li> <li>• Add reserve field of 3 characters</li> </ul> <p>Single Side Executed Message</p> <ul style="list-style-type: none"> <li>• Message type changed to 't'</li> <li>• Add new field "Trade Condition" of 1 character</li> <li>• Add new field "Auction ID" of 4 characters</li> </ul> <p>Single Side executed with Price Message</p> <ul style="list-style-type: none"> <li>• Message type changed to 'T'</li> <li>• Add new field "Trade Condition" of 1 character</li> <li>• Add new field "Auction ID" of 4 characters</li> </ul> <p>Single Side Replace Message - Short Form</p> <ul style="list-style-type: none"> <li>• Message type changed to 'i'</li> <li>• Add new field "Scope" of 1 characters</li> <li>• Add new field "Reserved" of 3 characters</li> </ul> <p>Single Side Replace Message - Long Form</p> <ul style="list-style-type: none"> <li>• Message type changed to 'I'</li> <li>• Add new field "Scope" of 1 characters</li> <li>• Add new field "Reserved" of 3 characters</li> </ul> <p>Complex Strategy Trade Message</p> <ul style="list-style-type: none"> <li>• Message type changed to 'q'</li> <li>• New entry in Notes Column for Cross Type row 'X' = Flex Auction</li> <li>• Add new field "Trade condition" of 1 character</li> <li>• Add new field "Auction ID" of 4 characters</li> <li>• Add new reserved field of 16 characters</li> <li>• Added a note at the end of the table</li> <li>• Add new line at the end of the description</li> </ul>

Revision	Published	Author(s)	Summary of Changes
			<p>Complex Strategy Auction Message</p> <ul style="list-style-type: none"> <li>• Message type changed to 'a'</li> <li>• New entry in Notes Column for Auction Type field 'X' = Flex Auction</li> <li>• Add new field "Auction Duration" of 4 characters</li> <li>• Add new reserved field of 4 characters</li> <li>• Add new field "Number of Flex DAC Legs" of 1 character</li> <li>• Add new reserve field of 8 characters in a subtable named "Flex DAC Leg Information"</li> <li>• Added a note at the end of the table</li> </ul> <p>Complex Strategy Trade Report</p> <ul style="list-style-type: none"> <li>• Message type changed to 'R'</li> <li>• Add reserved field of 16 characters</li> </ul>
			<p>Add Order Message - Long Form</p> <ul style="list-style-type: none"> <li>• Message type changed from "R" to "o"</li> </ul> <p>Appendix A</p> <ul style="list-style-type: none"> <li>• Flex Symbology table added</li> </ul>
			<p>Complex Strategy Auction Message (Depth and Order Component)</p> <ul style="list-style-type: none"> <li>• Added the following note in Price field</li> <li>• Price will be 'O' (masked) for Flex Auction of Auction Type 'X'.</li> </ul>
Version 2.1	December 19, 2024		
Version 2.1	January 9, 2025		

## 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