

NASDAQ Options NOIView Version 1.00

1. Overview

NASDAQ Options NOIViewSM is a direct data feed product offered by NASDAQ[®] that features the following data elements:

- o Net Order Imbalance Data: In the minutes leading up to the NASDAQ Auction events, NASDAQ disseminates the indicative clearing price and net order imbalance in the [NASDAQ Options Market](#). Because the calculation includes non-displayable as well as displayable order types, the net order imbalance indicator (NOII) is the best predictor of the Auction event, such as the NASDAQ opening and closing prices, available to the public.
- o Options Directory: NASDAQ disseminates an option directory message as part of its daily pre-opening process to relate basic option symbol and contract information to its market participants.

2. Architecture

The Options NOIView feed is made up of a series of sequenced messages. Each message is variable in length based on the message type and is composed of non-control ASCII bytes. The messages that make up the Options NOIView protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

NASDAQ offers the Options NOIView data feed in three protocol options:

Protocol Option	Number of Outbound Channels
SoupTCP	Single outbound channel for all securities
Compressed via SoupTCP	Single outbound channel for all securities
MoldUDP	Single outbound channel for all securities

Please note that, for each data center connection, Options NOIView messages will be disseminated via a single outbound data channel.

3. Data Types

All numeric fields are represented in ASCII digits and are right-justified. Padding spaces appear on the left as necessary.

Prices are given in decimal format with 6 whole number places followed by 4 decimal digits. The whole number portion is padded on the left with spaces; the decimal portion is padded on the right with zeros. The decimal point is implied by position; it does not appear inside the price field.

Timestamp reflects the NASDAQ system time at which the outbound message was generated. NASDAQ states time as the number of milliseconds past midnight. The time zone is U.S. Eastern Time.

All alpha fields are left-justified. Padding spaces appear on the right as necessary.

4. Message Formats

Options NOIView supports three basic types of messages:

- o System Events
- o NASDAQ Net Order Imbalance Indicators
- o Option Directory

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
Timestamp	0	8	Numeric	Time at which the system event was generated. Time is represented as number of seconds and milliseconds past midnight, Eastern Time (ET).
Message Type	8	1	"S"	System Event Message
Event Code	9	1	Alpha	Refer to System Event Codes below

SYSTEM EVENT CODES	
Code	Explanation
"O"	<i>Start of Messages.</i> This is always the first message sent in any trading day.
"S"	<i>Start of System Hours.</i> This message indicates that NASDAQ is open and ready to start accepting orders.
"Q"	<i>Start of Opening Process.</i> This message is intended to indicate that NASDAQ has started its opening auction process.
"X"	<i>Clear NOII - Opening Auction Data.</i> This message signals that firms may clear NOII cache for the regular Opening Auction.
"N"	<i>Start of Normal Hours Closing Process</i> This message is intended to indicate that NASDAQ will no longer accept any new orders or changes to existing orders for options participating in the normal hours close process.
"L"	<i>Start of Late Hours Closing Process</i> - This message is intended to indicate that NASDAQ will no longer accept any new orders or changes to existing orders for options participating in the late hours close process.
"E"	<i>End of System Hours.</i> This message indicates that NASDAQ options system is now closed.
"C"	<i>End of Messages.</i> This is always the last message sent in any trading day.

OPTIONS NOVIEW INTERFACE SPECIFICATIONS

4.2. Options Directory Message

At the start of each trading day, NASDAQ disseminates directory messages for all symbols eligible for the auction process in the NASDAQ option system.

OPTIONS DIRECTORY				
Name	Offset	Length	Value	Notes
Timestamp	0	8	Numeric	Time at which the directory message was generated. Refer to Data Types for field processing notes.
Message Type	8	1	"R"	Directory Message
Option Symbol	9	7	Alphabetic	Denotes the options symbol used by NASDAQ for a particular instrument. Under the current symbology model, NASDAQ uses the same symbol as OPRA for its outbound data feed.
Options Closing Type	16	1	Alphabetic	Denotes which System Event is used to trigger the option closing process. "N" = Normal Hours "L" = Late Hours
Option Type	17	1	Alphabetic	Denotes the type of option "P" = Put "C" = Call
Expiration Year	18	4	Numeric	Denotes the year that the put or call option is set to expire.
Expiration Month	22	2	Numeric	Denotes the month that the put or call option is set to expire.
Expiration Day	24	2	Numeric	Denotes the day of the month when the put or call option is set to expire.
Explicit Strike Price	26	14	Numeric	Denotes the Explicit Strike Price associated with the put or call option. The price format is \$\$\$\$\$\$ddddddd.
Underlying Symbol	40	6	Alphanumeric	Denotes the unique symbol assigned to the underlying security within NASDAQ Single Book Execution System.

OPTIONS NOIVIEW INTERFACE SPECIFICATIONS

4.3. Net Order Imbalance Indicator (NOII)

NASDAQ disseminates NOII data at 5-second intervals in the minutes leading up to the NASDAQ Auction events.

- For the NASDAQ Opening Auction, NASDAQ will begin the dissemination of NOII messages for a put or a call option two minutes prior to the start of opening process event.
- For the NASDAQ Closing Auction, NASDAQ will begin the dissemination of NOII messages for a put or a call option ten minutes prior to the start of the associated closing process event.

NOII MESSAGE				
<i>Name</i>	<i>Offset</i>	<i>Length</i>	<i>Value</i>	<i>Notes</i>
Timestamp	0	8	Numeric	Time at which the NOII message was generated
Message Type	8	1	"I"	NOII Message
<i>Options symbol information based on OPRA specifications</i>				
Option Symbol	9	7	Alphabetic	Denotes the options symbol assigned by OPRA for a particular instrument. See Options Directory message for option contract details.
<i>NOII data based on TV-Aggregated specifications</i>				
Paired Shares	16	9	Numeric	Indicates the total number of shares that are eligible to be matched at the Current Reference Price.
Imbalance Shares	25	9	Numeric	Number of shares not paired at the Current Reference Price.
Imbalance Direction	34	1	Alphabetic	Indicates the market side of the imbalance "B" = buy imbalance "S" = sell imbalance "N" = no imbalance "O" = insufficient orders to calculate
Far Price	35	10	Numeric/ Price	A hypothetical auction-clearing price for cross orders only. Refer to Appendix D for processing notes.
Near Price	45	10	Numeric/ Price	A hypothetical auction-clearing price for cross orders as well as continuous orders.
Current Reference Price	55	10	Numeric/ Price	Indicates price at which the NOII shares are being calculated.
Cross Type	65	1	Alphabetic	Denotes the type of NASDAQ cross for which the NOII message is being generated "O" = Open Cross "C" = Close Cross
Price Variation Indicator	66	1	Alphanumeric	This field indicates the absolute value of the percentage of deviation of the Near Indicative Clearing Price to the nearest Current Reference Price. "L" = Less than 1% "1" = 1 to 1.99%

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NOII MESSAGE				
Name	Offset	Length	Value	Notes
				"2" = 2 to 2.99% "3" = 3 to 3.99% "4" = 4 to 4.99% "5" = 5 to 5.99% "6" = 6 to 6.99% "7" = 7 to 7.99% "8" = 8 to 8.99% "9" = 9 to 9.99% "A" = 10 to 19.99% "B" = 20 to 29.99% "C" = 30% or greater Space = Cannot be calculated

5. Support

- For general product support for NASDAQ data feeds, please contact NASDAQ Market Data Distribution at 301.978.5307 or mktdatasvc@nasdaq.com.
- For technical support for NASDAQ data feeds, please contact NASDAQ Systems Engineering at devsupport@nasdaq.com.

OPTIONS NOVIEW INTERFACE SPECIFICATIONS