NASDAQ Options Depth at Price
Version 1.00

1. Overview

NASDAQ Options Depth at Price[SM] (DAP [SM]) is an options direct data feed product offered by The NASDAQ Stock Market[®], which features the following data elements:

o NASDAQ Price Level Data: For NASDAQ Options Market, NASDAQ aggregates the order and quotation depth at each price point.   For each price point, NASDAQ shows the aggregated number of contract available for all market participants at that price level.

o NASDAQ Last Sale Data: NASDAQ will also disseminate trade messages for option order executions that occur within the NASDAQ Options Market via DAP.

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 Administrative and market event messages including:

- Trading action messages to inform market participants when a specific security is halted or released for trading on the NASDAQ Options Market.

- Options Directory messages to be disseminated as part of its daily pre-opening process to relay basic option symbol and contract information for those securities traded on the NASDAQ Options Market.

- Security Open Message to be disseminated for each security as soon as the opening / closing auction process is completed to inform recipients that the option symbol denoted in the message is available for auto execution within the NASDAQ Options Market system.

2. Architecture

The DAP 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 non-control ASCII bytes. The messages that make up the DAP protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

NASDAQ plans to offer the DAP 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

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

NASDAQ DAP supports the following basic types of messages:

- o System Events

- o Administrative Data

    - o Options Directory Message

    - o Options Trading Action Message

    - o Options Security Open Message

- o NASDAQ Options market Price Levels

- o NASDAQ Options Trade Updates

- o NASDAQ Net Order Imbalance Indicators

Within the system event and administrative types, NASDAQ 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*
Timestamp	0	8	Numeric	Time at which the system event was generated. Time is represented as number of 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"	*Start of Messages.* This is always the first message sent in any trading day.
"S"	*Start of System Hours.* This message indicates that NASDAQ is open and ready to start accepting orders.
"Q"	*Start of Opening Process.* This message is intended to indicate that NASDAQ has started its opening auction process.
"N"	*Start of Normal Hours Closing Process* 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"	*Start of Late Hours Closing Process* - 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"	*End of System Hours.* This message indicates that NASDAQ options system is now closed.
"C"	*End of Messages.* This is always the last message sent in any trading day.

4.2 Administrative Data

4.2.1 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 $$$$$$dddddddd.
Underlying Symbol	40	6	Alphanumeric	Denotes the unique symbol assigned to the underlying security within NASDAQ Single Book Execution System.

4.2.2 Options Trading Action Message

NASDAQ uses this administrative message to indicate the current trading status of an index or equity option within the NASDAQ Options Market.

Prior to the start of system hours, NASDAQ will send out a Trading Action spin. In the spin, NASDAQ will send out a Trading Action message with the "T" (Trading Resumption) for all options contracts that are eligible for trading at the start of the NASDAQ Options Market system hours. If a security is absent from the pre-opening Trading Action spin, firms should assume that the security is being treated as halted in the NASDAQ Options platform at the start of the system hours. Please note that securities may be halted in the NASDAQ system 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 security. Messages will be sent when a stock is halted, is released for quotation, or is released for trading.

Trading Action Message				
Name	*Offset*	*Length*	*Value*	*Notes*
Timestamp	0	8	Numeric	Time at which the directory message was generated by the NASDAQ Options Market.
Message Type	8	1	Alphanumeric	H = Trading Action
Option Symbol	9	7	Alphabetic	NASDAQ-assigned indicator for issue for which the best bid and offer message is being generated. For details on NASDAQ symbology, please refer to Appendix B.
Current Trading State	16	1	Alphabetic	Reflects the current trading state for the options security in the NASDAQ Options Market. The allowable values are: H = Halt in effect T = Trading on NASDAQ

4.2.3 Security Open Message:

NASDAQ plans to disseminate the Security Open Message for each security as soon as the opening / closing auction process is completed. Upon receipt of the open state message, firms should be advised that the option symbol denoted in the message is now available for auto execution within the NASDAQ Options Market system. Upon receipt of the closed state message, firms should be advised that the option symbol is no longer eligible for auto-execution within the NASDAQ Options Market system.

Security Open Message				
Name	*Offset*	*Length*	*Value*	*Notes*
Timestamp	0	8	Numeric	Time at which the directory message was generated by the NASDAQ Options Market.
Message Type	8	1	Alphanumeric	O = Security Open
Option Symbol	9	7	Alphabetic	NASDAQ-assigned indicator for issue for which the best bid and offer message is being generated. For details on NASDAQ symbology, please refer to Appendix B.
Open State	16	1	Alphabetic	Reflects the current eligibility for auto execution of the options security in the NASDAQ Options Market. The allowable values are: Y = Open for auto execution N = Closed for auto execution

Please note that recipients should continue to process the Trading Action Spin message in order to determine if a contract is in a Halt state for the day. A security open message should **NOT** override the Trading action message indicating if an index or equity option is halted. Recipients should use both messages in tandem to indicate if the issue is halted and/or or open for auto execution.

4.3 NASDAQ Options Price Level Updates

NASDAQ disseminates a price level message whenever the aggregated position at a price level changes. Price levels will be generated whenever a contract is entered, canceled or executed for a certain price point.

When a firm receives the initial message for a given price point, it should add the price level to its display.

When a firm receives subsequent messages for a given price point, it should update the display to reflect the update.

When a firm sees the number of contracts fall to zero, it should remove the price level from display.

Price Level Updates				
Name	**Offset**	**Length**	**Value**	**Notes**
Timestamp	0	8	Numeric	Time that the DAP quote update was generated by the NASDAQ Options Market system
Message Type	8	1	"U"	DAP Quote Update
Market Side	9	1	Alpha	Denotes the side of the market associated with the update "B" = bid update "S" = offer/ask update
Option Symbol	10	7	Alphabetic	Denotes the options symbol used by NASDAQ for a particular instrument.
NASDAQ Quote Price	17	10	Price	Reflects the best price in the NASDAQ Options Market for the stated market side at the current time. Refer to Data Types for field processing notes.
NASDAQ Size	27	5	Numeric	Reflects the aggregated number of contracts in the NASDAQ Options Market being displayed at the DAP Quote Price.

4.4 Options Trade Report

The Options Trade Report message will be used to relay NASDAQ execution system transactions that are reported during the current business day. Please note that NASDAQ only reports one-side of a trade execution on the feed and other data feed products.

Options Last Sale Messages should be included in NASDAQ time-and-sales displays as well as volume and other market statistics.

Options Trade Report				
Name	**Offset**	**Length**	**Value**	**Notes**
Timestamp	0	8	Numeric	Time that the trade report message was generated by the NASDAQ Options Market system
Message Type	8	1	"T"	DAP Trade Report
Option Symbol	9	7	Alphabetic	Denotes the options symbol used by NASDAQ for a particular instrument.
Trade Control Number	16	10	Alphanumeric	Indicates the NASDAQ internal control number associated with the given options trade transaction.
NASDAQ Premium Price	26	10	Price	Reflects the transaction price for the option contract in the NASDAQ Options Market at the time of execution.
NASDAQ Transaction Volume	36	6	Numeric	Reflects the current number of contracts traded for an option in one trade by DAP.

4.5 Options Broken Trade Report

The following message is used in the event that a NASDAQ options trade transaction is broken on the same business day that it is reported.

OPTIONS Broken Trade Report				
Name	**Offset**	**Length**	**Value**	**Notes**
Timestamp	0	8	Numeric	Time that that the options trade was broken in the NASDAQ Options Market system.
Message Type	8	1	"X"	DAP Broken Trade Report
Option Symbol	9	7	Alphabetic	Denotes the options symbol used by NASDAQ for a particular instrument.
Original Trade Control Number	16	10	Alphanumeric	Indicates the internal control number associated with the given trade transaction in the NASDAQ Options Market system.
Original NASDAQ Premium Price	26	10	Price	Reported NASDAQ Premium Price of an option contract in the original trade report message on DAP.
Original NASDAQ Transaction Volume	36	6	Numeric	Reported number of contracts in the original trade report message on DAP.

4.6 Net Order Imbalance Indicator (NOII)

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

- o 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.
- o 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				
Name	*Offset*	*Length*	*Value*	*Notes*
Timestamp	0	8	Numeric	Time at which the NOII message was generated
Message Type	8	1	"I"	NOII Message
Options symbol information based on OPRA specifications				
Option Symbol	9	7	Alphabetic	Denotes the options symbol assigned by OPRA for a particular instrument. See Options Directory message for option contract details.
NOII data based on TV-Aggregated specifications				
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%

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

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

- o For technical support for NASDAQ data feeds, please contact NASDAQ Systems Engineering at devsupport@nasdaq.com.

Appendix A

Documentation Revision Control Log

November 30, 2007: Options DAP 1.00

NASDAQ released the initial Options DAP specification document to the public.