

NASDAQ Market Pathfinders

Direct Data Feed Interface Specifications

Version: 1.00

Date Revised: November 11, 2010

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Note: This version of the NASDAQ Market Pathfinders service is designed to support symbols up to six characters only.

*As noted in [Data Technical News #2010-31](#), NASDAQ OMX released new versions of the NASDAQ Market Pathfinders to support expanded symbol fields in April 2010. When the feed was released, NASDAQ OMX notified direct data feed subscribers that they needed to migrate to the new NASDAQ Market Pathfinders (Version 1.1) data formats before year end. This version of the NASDAQ Market Pathfinders feed (Version 1.0) will be discontinued at the close of business on **December 31, 2010**.*

1 Product Description:

NASDAQ Market PathfindersSM (Pathfinders) is a direct data feed product offered by The NASDAQ Stock Market[®].

Pathfinders will cover the full range of issues including NASDAQ-, New York Stock Exchange (NYSE)-, NYSE Amex- and NYSE Arca- -listed securities.

Pathfinders provides aggregated real-time, intra-day data (based on trades) from the integrated NASDAQ system. It measures the market sentiment based on the aggregated, real-time trading decisions of NASDAQ market participants. The product is akin to the visible activity and audible noise that experienced floor traders use on a physical trading floor to detect changes in buying and selling interest, market direction, momentum, or liquidity.

The Pathfinders data feed constantly monitors the buying and selling of market participants to identify those that are aggressively taking a position (bullishly lengthening their position or bearishly shortening their position) over an extended period of time – we call these participants “Pathfinders”. NASDAQ does not reveal the identities of the Pathfinders but instead captures the sentiment of this group by indicating the number of Pathfinders bullish versus bearish and the total number shares bought versus sold by Pathfinders.

Market Pathfinders Data Feed includes the necessary data for computing the buying selling sentiment as defined by NASDAQ:

Feed Supplied Values (for the following time periods: 1 minute, 5 minutes, one hour):

- *Buy-side Market Participants* - Total # number of market participants with at least 75% of traded volume in a stock on the buy-side during the covered time period.
- *Actual Sell-side Market Participants* - Total # number of market participants with at least 75% of traded volume in a stock on the sell-side during the covered time period
- *Actual Buy Share Volume Executed* – total number of shares in buy trades.
- *Actual Sell Share Volume Executed* – total number of shares in sell trades.

Considerations:

- The Market Participant must trade the following minimum dollar volume for each time period in order to be considered a Pathfinder: 1 minute calculation, \$5,000; 5 minute calculation, \$25,000; 1 hour calculation, \$300,000. The dollar volume threshold should be a total for the Market Participant (total buy and sell) during the time interval. If the Market Participant did not trade at least the total dollar volume within the associated period, their volume is removed from the calculation.
- Issues will be included in the feed only when there are at least 3 Market Participants identified as Pathfinders on both the buy side and sell side of the issue.

2 Network Protocol Options

NASDAQ will offer the Pathfinders data feed protocol options

- [MoldUDP](#)

3 Architecture

Pathfinders 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 Pathfinders protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

4 Data Types

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

Numbers are given with 6 whole number places. The whole number portion is padded on the left with spaces.

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.

5 Message Formats

5.1 System Event Message

System Event Messages is used to signal key market or data feed control events.

System Event Message				
Name	Offset	Len	Value	Notes
Time Stamp	0	8	Numeric	The system time at which the message was disseminated. Time is in milliseconds since midnight (E.T.)
Message Type	8	1	"S"	S = System Event Message
Event Code	9	1	Alpha	See 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. This marks the beginning of all messages. [Note: Start of Messages typically go out around 7 AM]
"Q"	Start of Market Hours: This message is intended to signal to firms that market hour orders are now available for execution. This message is typically disseminated at 9:30 a.m., ET.
"M"	End of Market Hours: This message is intended to signal to firms that market hour orders are no longer available for execution. This message is typically disseminated at 4:00 p.m., ET.
"C"	<i>End of Messages.</i> This is always the last message sent in any trading day. This marks the end of all trading including after hours trading. [Note: End of Messages typically go out around 8 PM]

5.2 Data Messages

The data message type is used for distributing the actual data of the Market Pathfinders feed. This message is sent out for each issue in the NASDAQ execution system provided that the security had at least one trade reported during the stated time interval. See Appendix C for specific interval information and message examples.

The format is as follows:

Data Message				
Name	Offset	Len	Value	Notes
Time Stamp	0	8	Numeric	The system time at which the message was disseminated. Time is in milliseconds since midnight (E.T.)
Message Type	8	1	"D"	Data Message
Data Type	9	1	Alpha	Indicates the dissemination interval for Pathfinder message being disseminated. Allowable values are: "M" = 1 minute interval

				"F" = 5 minute interval "H" = 60 minute interval
Issue	10	6	Alpha	Denotes the security symbol for the issue in the NASDAQ execution system. Refer to Appendix B for stock symbol convention information.
<i>Buy-side Market Participants</i>	18	10	Numeric	Total # number of market participants with at least 75% of traded volume in a stock on the buy-side during the stated time interval. First message should disseminate at 09:31:00 and the last message at 16:01:10.
<i>Sell-side Market Participants</i>	28	10	Numeric	Total # number of market participants with at least 75% of traded volume in a stock on the sell-side during the stated time interval.
<i>Actual Buy Volume</i>	38	10	Numeric	Total # of shares in buy orders executed during the stated time interval.
<i>Actual Sell Volume</i>	48	10	Numeric	Total # of shares in sell orders executed during the stated time interval.

Note: If there are no calculation changes since the last message, the message will not disseminate. In situations where there are no longer Pathfinders for an issue in a given an interval, a message with values of zero message will be disseminated. There will not be subsequent messages for the issue unless there is an update to the calculation.

5.3 Administrative Messages

To help firms create a full display, NASDAQ supports the following two administrative messages: (1) Trading Action and (2) Symbol Directory.

5.3.1 Stock Trading Action

NASDAQ uses this administrative message to indicate the current trading status of a security to the trading community. This is ONLY for informational purposes. **Pathfinders' calculations should NOT include any issues that have been halted.**

Prior to the start of system hours, NASDAQ will send out a Trading Action spin. In the spin, NASDAQ will send out a Stock Trading Action message with the "T" (Trading Resumption) for all NASDAQ- and other exchange-listed securities that are eligible for trading at the start of the 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 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/paused, is released for quotation, or is released for trading.

Trading Action Message														
Name	Offset	Len	Type	Value/Description										
Time Stamp	0	8	Numeric	Time Stamp.										
Message Type	8	1	Alphanumeric	H = Trading Action										
Issue Symbol	9	6	Alphanumeric	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.										
Security Class	17	1	Alphabetic	Indicates the primary listing market for the issue. Allowable values are: <table border="1"> <thead> <tr> <th>Code</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Q</td> <td>NASDAQ Listed Issue</td> </tr> <tr> <td>N</td> <td>NYSE Listed Issue</td> </tr> <tr> <td>A</td> <td>NYSE Amex Listed Issue</td> </tr> <tr> <td>P</td> <td>NYSE Arca Listed Issue</td> </tr> </tbody> </table>	Code	Value	Q	NASDAQ Listed Issue	N	NYSE Listed Issue	A	NYSE Amex Listed Issue	P	NYSE Arca Listed Issue
Code	Value													
Q	NASDAQ Listed Issue													
N	NYSE Listed Issue													
A	NYSE Amex Listed Issue													
P	NYSE Arca Listed Issue													
Current Trading State	18	1	Alphabetic	Reflects the current trading state for the issue. The allowable values are: <table border="1"> <thead> <tr> <th>Code</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>Halted: Issue is subject to a regulatory or operational halt/pause in NASDAQ system</td> </tr> <tr> <td>Q</td> <td>Quotation Only: Stock has been released for quotation only</td> </tr> <tr> <td>T</td> <td>Actively Trading: Issue is open and eligible for quotation and trading.</td> </tr> </tbody> </table>	Code	Value	H	Halted: Issue is subject to a regulatory or operational halt/pause in NASDAQ system	Q	Quotation Only: Stock has been released for quotation only	T	Actively Trading: Issue is open and eligible for quotation and trading.		
Code	Value													
H	Halted: Issue is subject to a regulatory or operational halt/pause in NASDAQ system													
Q	Quotation Only: Stock has been released for quotation only													
T	Actively Trading: Issue is open and eligible for quotation and trading.													
Reason	19	4	Alphanumeric	Trading Action Reason Code. For list of allowable values, please refer to Appendix D										

5.3.2 Stock Directory

At the start of each trading day, NASDAQ disseminates stock directory messages for all active symbols in the NASDAQ system.

Market data redistributors should process this message to populate the Financial Status Indicator (required display field) and the Market Category (recommended display field) for NASDAQ-listed issues.

Stock Directory Message																				
Name	Offset	Len	Type	Value/Description																
Time Stamp	0	8	Numeric	Time Stamp.																
Message Type	8	1	Alphanumeric	R = Stock Directory																
Issue Symbol	9	6	Alphanumeric	NASDAQ-assigned indicator for issue for which the directory message is being generated. For details on NASDAQ symbology, please refer to Appendix B.																
Market Category	17	1	Alphanumeric	Denotes the listing market for the issue. The allowable values are: <table border="1"> <thead> <tr> <th>Code</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>N</td> <td>NYSE</td> </tr> <tr> <td>A</td> <td>NYSE Amex</td> </tr> <tr> <td>P</td> <td>NYSE Arca</td> </tr> <tr> <td>Q</td> <td>NASDAQ Global Select Market</td> </tr> <tr> <td>G</td> <td>NASDAQ Global Market</td> </tr> <tr> <td>S</td> <td>NASDAQ Capital Market</td> </tr> <tr> <td><Space></td> <td>Not available</td> </tr> </tbody> </table>	Code	Value	N	NYSE	A	NYSE Amex	P	NYSE Arca	Q	NASDAQ Global Select Market	G	NASDAQ Global Market	S	NASDAQ Capital Market	<Space>	Not available
Code	Value																			
N	NYSE																			
A	NYSE Amex																			
P	NYSE Arca																			
Q	NASDAQ Global Select Market																			
G	NASDAQ Global Market																			
S	NASDAQ Capital Market																			
<Space>	Not available																			

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Financial Status Indicator	18	1	Alphanumeric	<p>For NASDAQ-listed issues, this field indicates when a firm is not in compliance with NASDAQ continued listing requirements.</p> <p>The allowable values are:</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>D</td> <td>Deficient</td> </tr> <tr> <td>E</td> <td>Delinquent</td> </tr> <tr> <td>Q</td> <td>Bankrupt</td> </tr> <tr> <td>G</td> <td>Deficient and Bankrupt</td> </tr> <tr> <td>H</td> <td>Deficient and Delinquent</td> </tr> <tr> <td>J</td> <td>Delinquent and Bankrupt</td> </tr> <tr> <td>K</td> <td>Deficient, Delinquent, and Bankrupt</td> </tr> <tr> <td><space></td> <td> Company is in compliance with NASDAQ listing standards OR Issue is not listed on NASDAQ </td> </tr> </tbody> </table>	Code	Value	D	Deficient	E	Delinquent	Q	Bankrupt	G	Deficient and Bankrupt	H	Deficient and Delinquent	J	Delinquent and Bankrupt	K	Deficient, Delinquent, and Bankrupt	<space>	Company is in compliance with NASDAQ listing standards OR Issue is not listed on NASDAQ
Code	Value																					
D	Deficient																					
E	Delinquent																					
Q	Bankrupt																					
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K	Deficient, Delinquent, and Bankrupt																					
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6 Support

- For general product support for the NASDAQ Pathfinder data feed, please contact NASDAQ OMX Global Data Products at +1 301 978 5307 or dataproductions@nasdaqomx.com.
- For technical support for the NASDAQ Pathfinder data feed, please contact NASDAQ OMX Global Software Development at devsupport@nasdaqomx.com.

Appendix A - Documentation Revision Control Log

November 11, 2010 – NASDAQ Market Pathfinders – Version 1.00

NASDAQ OMX fixed a documentation error related to the Stock Trading Action message (introduced in July 2010). NASDAQ OMX also added a reminder of the non-symbology-compliant data feed shutdown on December 31, 2010.

July 2, 2010 – NASDAQ Market Pathfinders – Version 1.00

NASDAQ OMX added new Action Trading code(s) to the Stock Trading Action message for the NASDAQ Volatility Guard trading pause.

May 26, 2010 – NASDAQ Market Pathfinders – Version 1.00

NASDAQ added two new Trading Action Reason code values (T5 and T7) for single security trading pause situations.

September 24, 2008 – NASDAQ Market Pathfinders – Version 1.00

Initial documentation released to public.

Appendix B - Stock Symbol Convention

NASDAQ OMX is in the process of revising its stock symbol suffix plan to accommodate root symbols of up to 5 characters across U.S. equity exchanges. Once the new plan is confirmed, NASDAQ OMX will post a Data Technical News item on the NASDAQ OMX Trader website with details.

Until further notice, NASDAQ OMX will follow its current practice.

For NYSE-, NYSE Amex- and NYSE Arca-listed securities with subordinate issue types, please refer to the [Ticker Symbol Conversion for CQS Securities page](#) on the NASDAQ OMX Trader website.

For NASDAQ-listed issues, NASDAQ OMX currently restricts its symbol length to a maximum of 5 characters. For common stock issuances, NASDAQ and BX will assign a symbol of 1 to 4 characters in length. For subordinate securities, NASDAQ and BX will assign a 5 character symbol for which the last character relays information about the issue class or issue type. For the current list of fifth character symbol suffixes, please refer to [Current List of Fifth Character Symbol Suffixes for NASDAQ-listed Issues](#) on the NASDAQ OMX Trader website.

Appendix C – Trading Action Reason Codes

For NASDAQ-listed issues, NASDAQ acts as the primary market and has the authority to institute a trading halt or trading pause in an issue due to news dissemination or regulatory reasons.

For non-NASDAQ-listed issues, NASDAQ abides by any regulatory trading halts and trading pauses instituted by the primary or listing market as appropriate.

For both issue types, NASDAQ may also halt trading for operational reasons. NASDAQ will send out a trading action message to inform its market participants when the trading status of an issue changes. For informational purposes, NASDAQ also attempts to provide the reason for each trading action update. For bandwidth efficiency reasons, NASDAQ uses a 4-byte code for the reason on its outbound data feeds.

REASON CODES FOR TRADING HALT ACTIONS	
Code	Value
T1	Halt News Pending
T2	Halt News Disseminated
T5	Single Security Trading Pause In Affect
T6	Regulatory Halt — Extraordinary Market Activity
T8	Halt ETF
T12	Trading Halted; For Information Requested by Listing Market
H4	Halt Non-Compliance
H9	Halt Filings Not Current
H10	Halt SEC Trading Suspension
H11	Halt Regulatory Concern
O1	Operations Halt; Contact Market Operations
IPO1	IPO Issue Not Yet Trading
M1	Corporate Action
M2	Quotation Not Available
<space>	Reason Not Available

REASON CODES FOR QUOTATION/TRADING RESUMPTION ACTIONS	
Code	Value
T3	News and Resumption Times
T7	Single Security Trading Pause / Quotation Only Period
R4	Qualifications Issues Reviewed/Resolved; Quotations/Trading to

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	Resume
R9	Filing Requirements Satisfied/Resolved; Quotations/Trading To Resume
C3	Issuer News Not Forthcoming; Quotations/Trading To Resume
C4	Qualifications Halt ended; Maintenance Requirements Met; Resume
C9	Qualifications Halt Concluded; Filings Met; Quotes/Trades To Resume
C11	Trade Halt Concluded By Other Regulatory Auth.; Quotes/Trades Resume
R1	New Issue Available
R2	Issue Available
IPOQ	IPO Security Released for Quotation (NASDAQ Securities Only)
IPOE	IPO Security — Positioning Window Extension (NASDAQ Securities Only)
<space>	Reason Not Available

For the current list of regulatory halts, please refer to the [Trading Halts page](#) on the NASDAQ Trader website.