

NASDAQ Market Velocity and Forces 2.0

**Direct Data Feed Interface Specifications
Version: 2.00
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1 Product Description

NASDAQ Market Velocity and Forces is a direct data feed product offered by The NASDAQ Stock Market®. Market Velocity and Forces measure pre-trade order activity in the NASDAQ Stock Market trading system to indicate the intensity and direction of trading interest before that activity results in trades and price movement. The products are akin to the visible activity and audible noise that experienced floor traders use on a physical trading floor to detect changes in market direction, momentum, or liquidity.

Market Velocity measures the intensity of the desire to trade using order messages entering NASDAQ trading systems, many of which do not show up in a traditional quote feed because they are immediately cancelled or routed and therefore never reside in the book. Market Forces categorizes those order messages by whether they are buy or sell orders to provide an indication of direction.

Both products are more effective than physical activity or audible noise on a trading floor because they can be precisely measured and benchmarked and because of filters that remove irrelevant messages (such as orders priced far from the inside market).

We set order type and price screens to include only appropriate, aggressively-priced orders in Market Velocity and Market Forces. We use 21-days of historical data to calculate an expected value for Market Velocity for each stock at each time of day.

Market Velocity and Forces Data Feed includes the necessary data for computing the Market Velocity and Market Forces as defined by NASDAQ:

Feed Supplied Values:

- *Actual Buy Order Share Volume* – total number of shares in buy orders
- *Actual Sell Order Share Volume* – total number of shares in sell orders
- *Expected Total Share Volume* – total number of expected shares in all orders

Feed Derived Values:

- *Actual Market Velocity* – total number of shares in all orders (sum buy and sell orders)
- *Expected Market Velocity* – same as Expected Total Share Volume
- *Velocity Ratio* – Ratio of actual to expected Velocity

- *Actual Buy Forces Volume* – same as Actual Buy Order Share Volume
- *Actual Sell Forces Volume* – same as Actual Sell Order Share Volume
- *Forces Ratio* – Ratio of buy Forces volume to total Forces volume (sum of buy Forces volume and sell Forces volume)

2 Network Protocol Options

NASDAQ will offer the Market Velocity and Forces 2.0 data feed protocol options only:

- [MoldUDP](#)

3 Architecture

The Market Velocity and Forces 2.0 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 Market Velocity and Forces 2.0 protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

4 Data Types

All numeric fields are composed of a string of ASCII coded digits, right justified and space filled on the left.

All alpha fields are left justified and padded on the right with spaces.

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.

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]
"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 Velocity and Forces feed. The format is as follows:

Data Message

Name	Offset	Len	Value	Notes
Time Stamp	0	8	Numeric	End Time of period being covered by this message. Time is in milliseconds since midnight (E.T.)
Message Type	8	1	"D"	Data Message
Data Type Code	9	1	Alpha	See Data Type Codes below.

Data Type Code	
Code	Notes
"V"	Velocity and Forces. This is message includes the data for deriving the Velocity and Forces ratios.

5.3 Velocity and Forces Message

This message is sent out for each issued covered, once a second. A message will not be sent out if all of the previous values in the previous message for a particular issue are identical.

Data Message				
Name	Offset	Len	Value	Notes
Time Stamp	0	8	Numeric	End Time of period being covered by this message. Time is in milliseconds since midnight (E.T.)
Message Type	8	1	"D"	Data Message
Data Type	9	1	"V"	See Data Type Codes below.
Issue	10	6	Alpha	Denotes the security symbol for the issue in the NASDAQ Single Book. Refer to Appendix B for NASDAQ Single Book stock symbol convention information.
Actual Buy Volume	16	10	Numeric	Total number of shares in buy orders during the covered period.
Actual Sell Volume	26	10	Numeric	Total number of shares in sell orders during the covered period.
Expected Total Volume	36	15	Numeric	Total number of expected shares in all orders during the covered period.

Data Type Code

Code	Notes
"V"	Velocity and Forces. This is message includes the data for deriving the Velocity and Forces ratios.

6 Support

- For general product support for the NASDAQ Velocity and Forces 2.0 data feed, please contact NASDAQ OMX Global Data Products at 301.978.5307 or dataproductions@nasdaqomx.com.
- For technical support for the NASDAQ Velocity and Forces data feed, please contact NASDAQ OMX Systems Engineering at devsupport@nasdaqomx.com.

Appendix A - Documentation Revision Control Log

Market Velocity and Forces Version 2.00

January 17, 2007: Internal Feedback Modifications

- Updated VF Message Offset fields. (Initially incorrect)
- Added timestamp field to Data and System messages (Initially incorrectly omitted)

January 16, 2007: Initial Velocity and Forces 2.0 specification

List of differences between NASDAQ MVF 2.0 and NASDAQ MVF 2006:

- Protocol is now run over MOLD, and supports MOLD rewind for missed data.
- Start of Day and End of Day messages are only generated once in the stream instead of three times.
- Control message identifier has been switched from 'C' to 'S'
- Start of Day identifier has been switched from 'I' to 'O'
- End of Day identifier has been switched from 'J' to 'C'
- Retransmission Requester has been removed.
- Message Sequence Number has been removed from the feed messages. They are included as a part of the transport protocol. For this release it is MOLD.
- Timestamp format has been changed from HHMMSSccc to milliseconds since Midnight.
- Velocity and Forces messages have been collapsed into a single message.
- Issue length has been changed from 11 bytes to 6 bytes ASCII, and follows the NASDAQ
- Symbols Convention included in Appendix B.
- Actual Volume, Velocity Ratio, and Forces Ratio have been removed, since they can be computed simply from the Actual Buy Volume, Actual Sell Volume, and Expected Volume.
- Reset Sequence Number has been removed.

Appendix B - Stock Symbol Convention

For bandwidth efficiency reasons, NASDAQ will support a 6-byte symbol field on its Velocity and Forces 2.0s data feed product.

For most classes of securities, this field length is sufficient to support the exchange-assigned symbol. For select NYSE- and Amex-listed securities with subordinate issue types, however, NASDAQ must modify the trading symbol to fit the allotted field size on the data feeds. For the current symbol convention matrix, please refer to the [Ticker Symbol Conversion for CQS Securities page](#) on the NASDAQ Trader website.

For NASDAQ-listed issues, NASDAQ currently restricts its symbol length to a maximum of 5 characters. For common stock issuances, NASDAQ will assign a symbol of 1 to 4 characters in length. For subordinate securities, NASDAQ 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](#).