

# NASDAQ TotalView-ITCH 3.2

*ITCH is the revolutionary NASDAQ OMX outbound protocol*

## 1 Overview

NASDAQ TotalView-ITCH<sup>SM</sup> is a direct data feed product offered by The NASDAQ Stock Market, LLC.

NASDAQ TotalView-ITCH 3.2 is being released in association of the equity symbology initiative and will support issue symbols up to 8 characters in total length.

NASDAQ TotalView-ITCH 3.2 features the following data elements (in ASCII number format) for all exchange-listed equities securities traded via the NASDAQ execution system:

- **Order level data with attribution:** For NASDAQ execution system, NASDAQ provides its full order depth using the standard TotalView-ITCH format. TotalView-ITCH 3.2 uses a series of messages of order messages to track the life of a customer order.<sup>1</sup> As an added feature, the TotalView-ITCH 3.2 message formats will support NASDAQ market participant attribution. TotalView-ITCH carries order level data for NYSE-, NYSE Amex- NYSE Arca- and BATS-listed securities as well as for NASDAQ-listed securities.
- **Trade messages:** To ensure that customers have complete information about NASDAQ order flow, TotalView-ITCH 3.2 supports a trade message to reflect a match of a non-displayable order in the NASDAQ system. TotalView-ITCH 3.2 also supports a separate trade message to reflect NASDAQ cross transactions.
- **Net Order Imbalance Data:** In the minutes leading up to the NASDAQ Opening and Closing Crosses as well as the NASDAQ Crosses for IPO and Halted / Paused Securities, NASDAQ disseminates the indicative clearing price and net order imbalance in the NASDAQ execution system. Because the calculation includes non-displayable as well as displayable order types, the Net Order Imbalance Indicator (NOII) is the best predictor of the NASDAQ opening and closing prices available to the public.
- **Administrative messages**, such trading actions and symbol directory messages:
  - Trading action messages are used to inform market participants when a security is halted/paused or released for trading.
  - Symbol Directory messages provide basic security data such as the market tier and Financial Status Indicator.
  - Market participant position message carries the Primary Market Maker status, Market Participant status and Market Maker mode fields used by some firms to comply with market regulations.
- **Event controls**, such as start of day, end of day and emergency market halt/resume.

## 2 Architecture

The TotalView-ITCH 3.2 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

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<sup>1</sup> TOTALVIEW-ITCH is an outbound market data feed only. The ITCH protocol does not support order entry. For information on NASDAQ order entry protocols, please refer to the [Trading Services section](#) of the NASDAQ OMX Trader website.

messages that make up the Totalview–ITCH 3.2 protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

NASDAQ offers the TotalView–ITCH 3.2 data feed in three protocol options:

- [SoupTCP3.0](#)
- [Compressed](#) via SoupTCP3.0
- [MoldUDP64](#)

### 3 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.

## 4 Message Formats

The TOTALVIEW-ITCH feed is composed of a series of messages that describe orders added to, removed from, and executed on NASDAQ as well as disseminate Cross and Stock Directory information.

### 4.1 Time Messages

For bandwidth efficiency reasons, NASDAQ will use separate time stamp messages for the TotalView-ITCH 3.2 product. The messages will be sequenced so that data feed recipients can apply the time stamps properly. The time stamp is broken into two separate messages: seconds and milliseconds.

#### 4.1.1 Seconds Message

This message is sent every second for which at least one TotalView-ITCH 3.2 message is being generated.

SECONDS MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"T"	Seconds Message.
Second	1	5	Numeric	Number of second since midnight.

#### 4.1.2 Milliseconds Message

This message is sent every millisecond for which at least one TotalView-ITCH 3.2 message is being generated.

MILLISECONDS MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"M"	Milliseconds Message.
Millisecond	1	3	Numeric	Number of milliseconds since last second.

## 4.2 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	"S"	System Event Message.
Event Code	1	1	Alpha	See System Event Codes below.

NASDAQ supports the following event codes on a daily basis on the TotalView-ITCH 3.2 data feed.

SYSTEM EVENT CODES – DAILY	
Code	Explanation
"O"	<i>Start of Messages.</i> Outside of time stamp messages, the start of day message is 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 Market hours.</i> This message is intended to indicate that Market Hours orders are available for execution.
"M"	<i>End of Market hours.</i> This message is intended to indicate that Market Hours orders are no longer available for execution.
"E"	<i>End of System hours.</i> It indicates that NASDAQ is now closed and will not accept any new orders today. It is still possible to receive Broken Trade messages and Order Delete messages after the End of Day.
"C"	<i>End of Messages.</i> This is always the last message sent in any trading day.

In the event of an emergency market condition (EMC), NASDAQ will also support the following event codes on TotalView-ITCH 3.2.

SYSTEM EVENT CODES – AS NEEDED	
Code	Explanation
"A"	<i>Emergency Market Condition – Halt:</i> This message is sent to inform NASDAQ market participants that the EMC is in effect. No trading is allowed during the EMC.
"R"	<i>Emergency Market Condition – Quote Only Period:</i> This message is sent to inform NASDAQ market participants that the EMC quotation only period is in effect.
"B"	<i>Emergency Market Condition – Resumption:</i> This message is sent to inform NASDAQ market participants that EMC is no longer in effect.

## 4.3 Stock Related Messages

### 4.3.1 Stock Directory

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

Name	Offset	Length	Value	Notes
Message Type	0	1	"R"	Stock Directory Message
Stock	1	8	Alpha	Denotes the security symbol for the issue in the NASDAQ execution system. Refer to Appendix B for stock symbol convention information.
Market Category	9	1	Alpha	Indicates Listing market or listing market tier for the issue  "N" = New York Stock Exchange (NYSE) "A" = NYSE Amex "P" = NYSE Arca "Q" = NASDAQ Global Select Market <sup>SM</sup> "G" = NASDAQ Global Market <sup>SM</sup> "S" = NASDAQ Capital Market <sup>®</sup> "Z" = BATS BZX Exchange
Financial Status Indicator	10	1	Alpha	For NASDAQ-listed issues, this field indicates when a firm is not in compliance with NASDAQ continued listing requirements.  "D" = Deficient "E" = Delinquent "Q" = Bankrupt "S" = Suspended "G" = Deficient and Bankrupt "H" = Deficient and Delinquent "J" = Delinquent and Bankrupt "K" = Deficient, Delinquent and Bankrupt  Space = Company is in compliance, if NASDAQ-listed issue  For NYSE, NYSE Amex and NYSE Arca issues, this field will also be space-filled. Redistributors should refer to SIAC feeds for code if needed.
Round Lot Size	11	6	Numeric	Indicates the number of shares that represent a round lot for the issue
Round Lots Only	17	1	Alpha	Indicates if NASDAQ system limits order entry for issue  "Y" = only round lots are accepted in this stock "N" = odd/mixed lots are allowed

### 4.3.2 Stock Trading Action

NASDAQ uses this administrative message to indicate the current trading status of a security to the trading community.

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\*

- Released for quotation
- Released for trading

\* The paused status will be disseminated for NASDAQ-listed securities only. Trading pauses on non-NASDAQ listed securities will be treated simply as a halt.

STOCK TRADING ACTION				
Name	Offset	Length	Value	Notes
Message Type	0	1	"H"	Stock Trading Action Message.
Stock	1	8	Alpha	Stock symbol right padded with spaces.
Trading State	9	1	Alpha	Indicates the current trading state for the stock. Allowable values:  "H" = Halted across all U.S. equity markets / SROs "P" = Paused across all U.S. equity markets / SROs (NASDAQ-listed securities only)* "Q" = Quotation only period for cross-SRO halt or pause "T" = Trading on NASDAQ
Reserved	10	1	Alpha	Reserved.
Reason	11	4	Alpha	Trading Action reason.

#### 4.3.3 Reg SHO Short Sale Price Test Restricted Indicator

In February 2011, the Securities and Exchange Commission (SEC) will implement changes to Rule 201 of the Regulation SHO (Reg SHO). For details, please refer to [SEC Release Number 34-61595](#). In association with the Reg SHO rule change, NASDAQ will introduce the following Reg SHO Short Sale Price Test Restricted Indicator message format.

For NASDAQ-listed issues, NASDAQ will support a full pre-opening spin of Reg SHO Short Sale Price Test Restricted Indicator messages indicating the Rule 201 status for all active issues. NASDAQ will also send the Reg SHO Short Sale Price Test Restricted Indicator message in the event of an intraday status change.

NASDAQ will process orders based on the most Reg SHO Restriction status value.

REG SHO RESTRICTION				
Name	Offset	Length	Value	Notes
Message Type	0	1	"Y"	Reg SHO Short Sale Price Test Restricted Indicator
Stock	1	8	Alpha	Stock symbol right padded with spaces.
Reg SHO Action	9	1	Alpha	Denotes the Reg SHO Short Sale Price Test Restriction status for the issue at the time of the message dissemination. Allowable values are:  "0" = No price test in place  "1" = Reg SHO Short Sale Price Test Restriction in effect due to an intra-day price drop in security  "2" = Reg SHO Short Sale Price Test Restriction remains in effect

#### 4.3.4 Market Participant Position

TOTALVIEW-ITCH 3.2 INTERFACE SPECIFICATION

At the start of each trading day, NASDAQ disseminates a spin of market participant position messages. The message provides the Primary Market Maker status, Market Maker mode and Market Participant state for each NASDAQ market participant firm registered in an issue. Market participant firms may use these fields to comply with certain marketplace rules.

Throughout the day, NASDAQ will send out this message only if NASDAQ Operations changes the status of a market participant firm in an issue.

<b>MARKET PARTICIPANT POSITION</b>				
<b>Name</b>	<b>Offset</b>	<b>Length</b>	<b>Value</b>	<b>Notes</b>
Message Type	0	1	"L"	Market Participant Position message
MPID	1	4	Alphabetic	Denotes the market participant identifier for which the position message is being generated
Stock	5	8	Alphanumeric	Denotes the security symbol for which the position is being generated
Primary Market Maker	13	1	Alphanumeric	Indicates if the market participant firm qualifies as a Primary Market Maker in accordance with NASDAQ marketplace rules  "Y" = primary market maker "N" = non-primary market maker
Market Maker Mode	14	1	Alphanumeric	Indicates the quoting participant's registration status in relation to SEC Rules 101 and 104 of Regulation M  "N" = normal "P" = passive "S" = syndicate "R" = pre-syndicate "L" = penalty
Market Participant State	15	1	Alphanumeric	Indicates the market participant's current registration status in the issue  "A" = Active "E" = Excused/Withdrawn "W" = Withdrawn "S" = Suspended "D" = Deleted

#### 4.4 Add Order Message

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

NASDAQ will support two variations of the Add Order message format.

##### 4.4.1 Add Order – No MPID Attribution

This message will be generated for unattributed orders in the NASDAQ execution system. (Note: If a firm wants to display a MPID for unattributed orders, NASDAQ recommends that it use the MPID of “NSDQ”.)

ADD ORDER MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	“A”	Add Order Message.
Order Reference Number	1	12	Numeric	The unique reference number assigned to the new order.
Buy/Sell Indicator	13	1	Alpha	The type of order being added. “B” = buy order. “S” = sell order.
Shares	14	6	Numeric	The total number of shares associated with the order being added to the book.
Stock	20	8	Alpha	The security symbol for which the order is being added.
Price	28	10	Numeric	The display price of the new order. Refer to Data Types for field processing notes.

##### 4.4.2 Add Order – MPID Attribution

This message will be generated for attributed orders and quotations entered into the NASDAQ execution system.

ADD ORDER – MPID ATTRIBUTION MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	“F”	Add Order Message.
Order Reference Number	1	12	Numeric	The unique reference number assigned to the new order.
Buy/Sell Indicator	13	1	Alpha	The type of order being added. “B” = buy order. “S” = sell order.
Shares	14	6	Numeric	The total number of shares associated with the order being added to the book.
Stock	20	8	Alpha	The security symbol for which the order is being added.
Price	28	10	Numeric	The display price of the new order. Refer to Data Types for field processing notes.
Attribution	38	4	Alpha	NASDAQ market participant identifier associated with the entered order.

## 4.5 Modify Order Messages

Modify Order messages always include the Order Reference Number of the Add Order to which the update applies. To determine the current display shares for an order, ITCH 3.2 subscribers must deduct the number of shares stated in the Modify message from the original number of shares stated in the Add Order message with the same reference number. NASDAQ may send multiple Modify Order messages for the same order reference number and the effects are cumulative. When the number of display shares for an order reaches zero, the order is dead and should be removed from the book.

### 4.5.1 Order Executed Message

This message is sent whenever an order on the book is executed in whole or in part. It is possible to receive several Order Executed Messages for the same order if that order is executed in several parts. The multiple Order Executed Messages on the same order are cumulative.

By combining the executions received separately via two types of Order Executed Messages and Trade Messages, it is possible to build a complete view of all non-cross executions that happen on NASDAQ. Cross execution information is available in one bulk print via the Cross Trade Message.

ORDER EXECUTED MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"E"	Order Executed Message.
Order Reference Number	1	12	Numeric	The order reference number associated with the executed order.
Executed Shares	13	6	Numeric	The number of shares executed.
Match Number	19	12	Numeric	The NASDAQ generated day-unique Match Number of this execution. The match number is also referenced in the Trade Break Message.

### 4.5.2 Order Executed With Price Message

This message is sent whenever an order on the book is executed 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 Order, NASDAQ includes a price field within this execution message.

It is possible to receive multiple Order Executed and Order Executed With Price messages for the same order if that order is executed in several parts. The multiple Order Executed messages on the same order are cumulative.

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

ORDER EXECUTED WITH PRICE MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"C"	Order Executed Message.
Order Reference Number	1	12	Numeric	The reference number of the order that was executed.
Executed	13	6	Numeric	The number of shares executed.



Shares				
Match Number	19	12	Numeric	The NASDAQ generated day-unique Match Number of this execution. The match number is also referenced in the Trade Break Message.
Printable	31	1	Alpha	Indicates if the execution should be reflected on time and sale displays and volume calculations. "N" = non-printable "Y" = printable
Execution Price	32	10	Numeric	The price at which the order execution occurred. Refer to Data Types for field processing notes.

#### 4.5.3 Order Cancel Message

This message is sent whenever an order on the book is modified as a result of a partial cancellation.

ORDER CANCEL MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"X"	Order Cancel Message.
Order Reference Number	1	12	Numeric	The reference number of the order being canceled or reduced.
Canceled Shares	13	6	Numeric	The number of shares be removed from the display size of the order as the result of a cancellation.

#### 4.5.4 Order Delete Message

This message is sent whenever an order on the book is being cancelled. All remaining shares are no longer accessible so the order should be removed from the book.

ORDER DELETE MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"D"	Order Delete Message.
Order Reference Number	1	12	Numeric	The reference number of the order being canceled or reduced. References a previously sent Add Order Message.

#### 4.5.5 Order Replace Message

This message is sent whenever an order on the book has been cancel and replaced. All remaining shares from the original order are no longer accessible, and must be removed. The new order details are provided for the replacement, along with a new order reference number which will be used henceforth. The side, stock, and attribution (if any) remain the same as the original order, so they are not given in this message.

ORDER REPLACE MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"U"	Order Replace Message
Original Order	1	12	Numeric	The original reference number of the order

Reference Number				being replaced.
New Order Reference Number	13	12	Numeric	The new reference number for this order. Note that new reference numbers mean new time priority, so this order belongs below other orders at the same price in priority.
Shares	25	6	Numeric	The new total displayed quantity.
Price	31	10	Numeric	The new display price for the order. Refer to Data Types for field processing notes.

## 4.6 Trade Messages

### 4.6.1 Trade Message (Non-Cross)

The Trade Message is designed to provide execution details for normal match events involving non-displayable order types. (Note: There is a separate message for NASDAQ cross events.)

Since no Add Order Message is generated when a non-displayed order is initially received, NASDAQ cannot use the Order Executed message for all matches. NASDAQ therefore developed this message to indicate when a match occurs between non-displayable order types. A Trade Message is transmitted each time a non-displayable order is executed in whole or in part. It is possible to receive multiple Trade Messages for the same order if that order is executed in several parts. Trade Messages for the same order are cumulative.

Trade Messages should be included in NASDAQ 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 NASDAQ execution system display.

Effective December 6, 2010, NASDAQ OMX will populate the Order Reference Number field within the Trade (Non-Cross) message as zero. For the binary versions of the TotalView-ITCH data feeds, the field will be null-filled bytes (which encodes sequence of zero).

TRADE MESSAGE (NON-CROSS)				
Name	Offset	Length	Value	Notes
Message Type	0	1	"P"	Trade Message Identifier
Order Reference Number	1	12	Numeric	The unique reference number assigned to the order on the book being executed.  Effective December 6, 2010, NASDAQ OMX will populate the Order Reference Number field within the Trade (Non-Cross) message as zero. For the binary versions of the TotalView-ITCH data feeds, the field will be null-filled bytes (which encodes sequence of zero).
Buy/Sell Indicator	13	1	Alpha	The type of non-display order on the book being matched. "B" =buy order "S" =sell order  <b>Effective 07/14/2014, this field will always be "B" regardless of the resting side.</b>
Shares	14	6	Numeric	The number of shares being matched in this execution.
Stock	20	8	Alpha	The security symbol associated with the match execution.
Price	28	10	Numeric	The match price of the order. Refer to Data Types for field processing notes.

Match Number	38	12	Numeric	The NASDAQ generated session-unique Match Number for this trade. The Match Number is referenced in the Trade Break Message.
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#### 4.6.2 Cross Trade Message

Cross Trade message indicates that NASDAQ has completed its cross process for a specific security. NASDAQ sends out a Cross Trade message for all active issues in the system following the Opening, Closing and EMC cross events. Firms may use the Cross Trade message to determine when the cross for each security has been completed. (Note: For the halted / paused securities, firms should use the Trading Action message to determine when an issue has been released for trading.)

For most issues, the Cross Trade message will indicate the bulk volume associated with the cross event. If the order interest is insufficient to conduct a cross in a particular issue, however, the Cross Trade message may show the shares as zero.

To avoid double counting of cross volume, firms should not include transactions marked as non-printable in time-and-sales displays or market statistic calculations.

CROSS TRADE MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"Q"	Cross Trade Message
Shares	1	9	Numeric	The number of shares matched in the NASDAQ Cross.
Stock	10	8	Alpha	The security symbol associated with the cross trade message.
Cross Price	18	10	Numeric	The price at which the cross occurred. Refer to Data Types for field processing notes.
Match Number	28	12	Numeric	The NASDAQ generated day-unique Match Number of this execution.
Cross Type	40	1	Alpha	The NASDAQ cross session for which the message is being generated. "O" = NASDAQ Opening Cross. "C" = NASDAQ Closing Cross. "H" = Cross for IPO and halted / paused securities. "I" = NASDAQ Cross Network: Intraday Cross and Post-Close Cross

#### 4.7 Broken Trade / Order Execution Message

The Broken Trade Message is sent whenever an execution on NASDAQ is broken. An execution may be broken if it is found to be "clearly erroneous" pursuant to [NASDAQ's Clearly Erroneous Policy](#). A trade break is final; once a trade is broken, it cannot be reinstated.

Firms that use the ITCH feed to create time-and-sales displays or calculate market statistics should be prepared to process the broken trade message. If a firm is only using the ITCH feed to build a book, however, it may ignore these messages as they have no impact on the current book.

BROKEN TRADE MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"B"	Broken Trade Message.
Match Number	1	12	Numeric	The NASDAQ Match Number of the execution that was broken. This refers to a Match Number from a previously transmitted Order Executed

				Message, Order Executed With Price Message, or Trade Message.
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#### 4.8 Net Order Imbalance Indicator (NOII)

NASDAQ disseminates NOII data at 5-second intervals in the minutes leading up to the [NASDAQ Opening Cross](#), [NASDAQ Closing Cross](#) and [NASDAQ IPO/Halt Cross](#).

- For the standard NASDAQ Opening Cross, NOII messages will be disseminated during the two minutes leading up to the start of market hours.
- For the NASDAQ Opening Cross for IPO and halted / paused securities, NOII messages will be disseminated during the quote only period. The first NOII message will be disseminated approximately five seconds after the Stock Trading Action message with the "Q" or "R" action value is disseminated.
- For the NASDAQ Closing Cross, NOII messages will be disseminated during the ten minutes leading up to the end of market hours.

NOII MESSAGE				
Name	Offset	Length	Value	Notes
Message Type	0	1	"I"	NOII Message
Paired Shares	1	9	Numeric	The total number of shares that are eligible to be matched at the Current Reference Price.
Imbalance Shares	10	9	Numeric	The number of shares not paired at the Current Reference Price.
Imbalance Direction	19	1	Alpha	The market side of the order imbalance.  "B" = buy imbalance "S" = sell imbalance "N" = no imbalance "O" = Insufficient orders to calculate
Stock	20	8	Alpha	The security symbol for which the NOII message is being generated
Far Price	28	10	Numeric	A hypothetical auction-clearing price for cross orders only.
Near Price	38	10	Numeric	A hypothetical auction-clearing price for cross orders as well as continuous orders.
Current Reference Price	48	10	Numeric	The price at which the NOII shares are being calculated.
Cross Type	58	1	Alpha	The type of NASDAQ cross for which the NOII message is being generated  "O" = NASDAQ Opening Cross "C" = NASDAQ Closing Cross "H" = Cross for IPO and halted / paused securities
Price Variation Indicator	59	1	Alpha	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%

				"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
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#### 4.9 Retail Price Interest Indicator (RPII)

Identifies a retail interest indication of the Bid, Ask or both the Bid and Ask for NASDAQ-listed securities.

Retail Interest Message				
Name	Offset	Length	Value	Notes
Message Type	0	1	"N"	Retail Interest message
Stock	1	8	Alpha	Denotes the security symbol for the issue in the NASDAQ execution system. Refer to Appendix B for stock symbol convention information.
Interest Flag	9	1	Alpha	"B" = RPI orders available on the buy side "S" = RPI orders available on the sell side "A" = RPI orders available on both sides (buy and sell) "N" = No RPI orders available

## 5 Support

- For general product support for NASDAQ data feeds, please contact NASDAQ OMX Global Data Products at +1 301 978 5307 or [dataprodcts@nasdaqomx.com](mailto:dataprodcts@nasdaqomx.com).
- For technical support for NASDAQ data feeds, please contact NASDAQ OMX Global Software Development at [devsupport@nasdaqomx.com](mailto:devsupport@nasdaqomx.com).

## Appendix A

### Documentation Revision Control Log

#### June 12, 2014: NASDAQ TotalView-ITCH Version 3.2

Released a new version of TotalView-ITCH documentation to support the following change:

- Per [Data Technical News #2014-17](#), Revised the Buy/Sell Indicator value in the Trade Message (Non-Cross) to “Always ‘B’ regardless of resting side”

#### March 9, 2013: NASDAQ TotalView-ITCH Version 3.2

Released a new version of the TotalView-ITCH documentation to support the following change:

- Added the following Trading Action Reason Code for LULD to reflect when the National Best Bid is below the lower price band and/or the National Best Offer is above than the upper price band and the NMS Stock is not in a Limit State.
  - LUDS - Volatility Trading Pause – Straddle Condition

#### January 9, 2013: NASDAQ TotalView-ITCH Version 3.2

Released a new version of the TotalView-ITCH documentation to support the following changes:

- Added the following Trading Action Reason Code:
  - MWC0 - Market Wide Circuit Breaker Halt – Carry over from previous day
- Removed the Trading State, “R”, from the Stock Trading Action message.

#### January 8, 2013: NASDAQ TotalView-ITCH Version 3.2

Released a new version of the TotalView-ITCH documentation to support the following changes:

- Modified the Retail Price Interest Indicator Message. Changed the message type from “G” to “N”.

#### November 6, 2012: NASDAQ TotalView-ITCH Version 3.2

Released a new version of the TotalView-ITCH documentation to support the following changes:

- Added the “P” value to the Trading State in the Stock Trading Message.
- Modified the values for the Trading Action Reason Codes. Added the following codes:
  - LUDP - Volatility Trading Pause
  - MWC1 - Market Wide Circuit Breaker Halt – Level 1
  - MWC2 - Market Wide Circuit Breaker Halt – Level 2
  - MWC3 - Market Wide Circuit Breaker Halt – Level 3
  - MWCQ - Market Wide Circuit Breaker Resumption
- Removed the Trading Action values related to the Volatility Guard Program. Removed Trading State, “V”. Eliminated Trading Action Reason Codes, V1 and V2.
- Added Retail Price Interest Indicator Message

#### November 1, 2011: NASDAQ TotalView-ITCH Version 3.2

NASDAQ OMX added a new Market Category code in Symbol Directory messages for the BATS BZX Exchange to distinguish BATS-listed issues. New market category code is “Z”.

#### October 6, 2010: NASDAQ TotalView-ITCH Version 3.2

NASDAQ OMX added a note to Trade (Non-Cross) message format stating that the Order Reference Number would be zero for all transactions as of December 6, 2010.

#### July 2, 2010: NASDAQ TotalView-ITCH Version 3.2

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

#### May 25, 2010: NASDAQ TotalView-ITCH Version 3.2

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

**January 26, 2010: NASDAQ TotalView-ITCH Version 3.2**

Released a new version of the TotalView-ITCH documentation to support the following changes:

- Increased length of the symbol field from 6 characters to 8 characters in multiple message formats in support of the equity symbology initiative.
- Modified the values for the Market Category field in Symbol Directory messages to delineate among NYSE-, NYSE Amex- and NYSE Arca-listed issues.
- Added note to Appendix B to reflect that NASDAQ OMX is reviewing its stock symbol conventions to determine if changes are needed.

**July 8, 2009: NASDAQ TotalView-ITCH Version 3.10**

NASDAQ updated NOII section to reflect the fact that NASDAQ now supports opening and closing crosses for the full range of U.S. exchange-listed equities. NASDAQ also update the order reference number definition in the Add Order messages to reflect the fact that day and GTC orders are held for dissemination until the opening cross is completed so some order reference numbers may be disseminated out of sequential order.

**October 28, 2008: NASDAQ TotalView-ITCH Version 3.10**

NASDAQ fixed offset errors for the Symbol Directory and Order Replace message formats.

**October 20, 2008: NASDAQ TotalView-ITCH Version 3.10**

NASDAQ releases TotalView-ITCH 3.1 specifications to the public. This document included the following format modifications from earlier versions of the ITCH feed.

- Expanded Order Reference Number and Match ID field size in all Order and Trade related messages to 12 bytes (from 9 bytes)
- Added Order Replace message
- Updated protocol references to reflect new network support documentation associated with ITCH 3.1

**September 16, 2008: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ corrected a few corporate references in the TotalView-ITCH 3.0 specifications document. No material changes were made.

**June 10, 2008: NASDAQ-TotalView-ITCH Version 3.00**

NASDAQ modified the TotalView-ITCH 3.0 specifications document to add new codes for emergency market condition (EMC) situations:

- Section 4.2 – System Event Message. Added the following three codes for EMC situations.
  - A = Emergency market condition – halt
  - R = Emergency market condition – quote only period
  - B = Emergency market condition – resumption
- Section 4.6.2 – Cross Trade message: Added cross type of “E” for EMC situations. Also added processing note to indicate that NASDAQ will begin to generate a cross trade message for all active issues in the system beginning in the third quarter of 2008.

**March 5, 2008: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ modified the TotalView-ITCH 3.0 specifications document to reflect a change in the Message Type value for the new Market Participant Position message format to be added to data stream on or about April 21, 2008:

- Section 4.3.3 – Market Participant Position. The message type value for this message should be “L”.

**January 16, 2008: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ modified the TotalView-ITCH 3.0 specifications document to reflect the following new message format to be added to data stream on or about April 21, 2008:

- Section 4.3.3 – Market Participant Position. This message is designed to provide Primary Market Maker status, Market Participant status and Market Maker mode fields used by some firms to comply with market regulations.

**April 30, 2007: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ modified the TotalView-ITCH 3.0 specifications document to reflect the following changes:

- Section 4 – For clarity reasons, the Data Type field was updated for all formats to delineate between alphabetic and alphanumeric fields.
- Section 4.3.1 – Within the Issue Directory message format, NASDAQ updated the code list for the Market Category field to denote that space is an allowable value. The Market Category field may be space filled if the security symbol is associated with a test issue OR if NASDAQ Operations adds a production issue to its online systems intra-day.

**February 15, 2007: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ modified the TotalView-ITCH 3.0 specifications document to reflect the following changes:

- 4.3.2 – Stock Trading Action. Updated document to reflect actual system processing rules for pre-opening trading action spin.
- Appendix B – Stock Symbol Convention. Updated document to reflect the most current URL links to NASDAQ symbology matrices.

**October 2, 2006: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ modified the TotalView-ITCH 3.0 specifications document to reflect the following changes:

- Section 4.1 – Timestamp. Added sentence to address sequencing of second and millisecond timestamps.
- Corrected the numbering in remainder of section 4.

**August 22, 2006: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ modified the TotalView-ITCH 3.0 specification document to reflect the following changes:

- Section 4.2 – System Events: Updated the explanations for the “O”, “Q”, “M” and “M” events to more accurately reflect the feed processing.
- Appendix B – Stock Symbol Conversion: Please contact NASDAQ Systems Engineering for up-to-date symbol suffix matrix.

**July 11, 2006: NASDAQ TotalView-ITCH Version 3.00**

NASDAQ releases TotalView-ITCH 3.0 specifications to the public. This document included the following format modifications from earlier versions of the ITCH feed.

- Moved the timestamp from the individual messages to separate seconds and milliseconds messages for bandwidth and processing efficiency reasons.
- Added the following new messages to be consistent with TotalView-Aggregated feed:
  - Stock Directory
  - Net Order Imbalance Indicator



- Replaced Halt/Resume message with Stock Trading Action message to be more consistent with other NASDAQ data feeds.
- Updated Add Order messages in the following ways:
  - Updated Add Order (A) message to remove the display field. Firms should process all orders for NASDAQ quotation displays.
  - Added new Add Order – MPID Attribution (F) message as the NASDAQ execution system will support market participant attribution at the order level.
- Updated Modify Order messages in the following ways:
  - Updated Order Executed message to support Printable field. Printable field will be used to denote cross transactions.
  - Added new Order Executed With Price Message (C) for situations where the execution price is different from the display price of an order. This message is intended to reflect situations where there was price improvement with the NASDAQ system.
  - Added new Order Delete (D) message format to reflect when an order is cancelled in full. This change was done for bandwidth efficiency reasons.
- Added Cross Trade (Q) message to reflect bulk transactions such as the NASDAQ Crosses.

**February 24, 2006: NASDAQ TotalView-ITCH Version 2.0a**

- Replaced all references to INET to NASDAQ.
- Added attribution to “Add Order”. This will be the first variable length message in ITCH. It was done to save bandwidth by not sending MMIDs for non-attributed orders.
- Added Halt/Resume message.

**March 17, 2004: ITCH Version 2.00**

- Replaced all references to Island (ISLD) with Inet ATS (INET).

**December 21, 2000: ITCH Version 2.00**

- Corrected the definition for price fields in the spec to match the actual behavior. Price fields are padded on the left with spaces, not zeros.

**November 5, 2001 – ITCH Version 2.0**

- Changed price field format to 6 whole number digits followed immediately by 4 decimal digits. The decimal point was no longer included in the field but implied by position. This reduced the bandwidth of the stream significantly and makes for much easier parsing and processing of price values.
- Changed timestamps to be stated as milliseconds past midnight rather than hundredths of seconds past midnight.
- Replaced the End of Session System event with the End of Day System Event. Although the messages looked identical, the semantics were different. The old End of Session System Event told subscribers that there would be no more messages during that session. The new End of Day System Event indicated that there are no more orders today, but there may still be more messages like Cancels on open orders and Breaks on previously executed orders.
- Removed language about any orders remaining on the book at the end of the session being dead. INET automatically cancels all open orders at the end of the day, so firms should not have any left-over orders on the book at the end of the session.
- Reduced the size of all shares fields from 9 digits to 6 digits.
- Removed Contra Broker Code from the Order Executed and Trade messages.

**January 19, 2000 – ITCH Version 1.00**

- Removed implementation ideas from document.
- Moved all session management to a higher-level protocol. ITCH now only specifies the actual messages concerning orders added and executed on the INET book.
- Added the Broken Trade Message to let you know when an execution is broken.
- Added the Print Message to enable people to build INET time-and-sales, INET last trade, and INET volume services.
- Removed the Timeout “why” for canceled orders.
- Removed the Text Message type.

- Increased the precision of timestamps to hundredths of seconds.
- Added Match Number to all executions.

**May 12, 1998 – ITCH Version 0.22**

- Added the Display field to the Add Order Message. This field denotes if the order is displayable in INET quote to the NASDAQ SIP under the SEC order handling rules.

**November 20, 1997 – ITCH Version 0.21**

- Changed documentation to show that the Fixed Rewind Request Message type is "W" . Earlier document should the type as "R" in error.
- Changed documentation for Login Request Message to note that a firm's connection would expire if it failed to log in within 30 seconds of initial login.
- Fixed the description of the Sequence Number field in the Heartbeat Message. The Sequence number should be the next expected sequence number, even during a rewind.

**October 1, 1997 – ITCH Version 0.20**

- Released initial product specification, in draft format, to a few developers for comment.

## 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 restrict 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 CQS 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 Effect
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
LUDP	Volatility Trading Pause
LUDS	Volatility Trading Pause – Straddle Condition
MWC1	Market Wide Circuit Breaker Halt – Level 1
MWC2	Market Wide Circuit Breaker Halt – Level 2
MWC3	Market Wide Circuit Breaker Halt – Level 3
MWC0	Market Wide Circuit Breaker Halt – Carry over from previous day
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 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
MWCQ	Market Wide Circuit Breaker Resumption
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

