NASDAQ GLIMPSE 5.0

1 Overview

A complement to the NASDAQ TotalView-ITCH real-time data feed product, NASDAQ GLIMPSE 5.0 is a point-to-point data feed connection that provides direct data feed customers with the current state of the NASDAQ execution system with full market participant attribution.   NASDAQ GLIMPSE 5.0 uses the same data formats as the TotalView-ITCH 5.0 data feed product.

2 Architecture

NASDAQ GLIMPSE 5.0 is a point-to-point data feed product comprised of a series of sequenced messages. Each message is variable in length based on the message type. The messages that make up the NASDAQ GLIMPSE 5.0 protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

NASDAQ currently offers the GLIMPSE 5.0 data feed in the SoupBinTCP protocol option only. Please note that GLIMPSE users must login to SoupBinTCP for sequence 1 to correctly receive data.

In the market data messages, instruments are identified by a stock locate code – a low lying integer employed with the intent of serving as an array index for rapidly looking up instrument details. The locate codes are dynamically assigned each day, starting with a value of 1, and communicated via the Stock Directory message. An instrument's locate code will not change intraday; however, there should be no expectation that the assignment will be the same across multiple days. The Stock Locate code appears all messages, and at the same position in all messages to support efficient filtering. A default value of 0 will be applied to messages which are not stock dependent.

3 Data Types

All integer fields are unsigned big-endian (network byte order) binary encoded numbers.

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

Prices are integer fields, supplied with an associated precision.. When converted to a decimal format, prices are in fixed point format, where the precision defines the number of decimal places. For example, a field flagged as Price (4) has an implied 4 decimal places. The maximum value of price (4) in TotalView-ITCH is 200,000.0000 (decimal, 77359400 hex).

Timestamps are represented as nanoseconds since midnight.

4 Message Formats

Upon logon to the NASDAQ GLIMPSE service, firms will receive the following data elements with the relevant system time stamp:

- Symbol Directory messages for all security symbols in the NASDAQ execution system;
- Trading Action messages with the current trading state value for active security symbol in the NASDAQ execution system;
- Add Order messages for all the displayable orders on the NASDAQ execution system at the time of login request;
- GLIMPSE Snapshot message that reflects the most recent order reference number reflected in the transmission.

Please note that NASDAQ GLIMPSE 5.0 uses the same Symbol Directory, Trading Action, and Add Order message formats as the NASDAQ TotalView-ITCH 5.0 data feed.

At the end of the spins, NASDAQ GLIMPSE will send a Snapshot message to denote where firms should begin processing real-time updates via the NASDAQ TotalView-ITCH product.

4.1 System Event Message

NASDAQ GLIMPSE product is designed to support the same system event messages as the NASDAQ TotalView-ITCH feed. On GLIMPSE, NASDAQ will send out system event messages for those events that that occurred up to the time of the GLIMPSE snapshot request.

SYSTEM EVENT MESSAGE				
Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	"S"	System Event Message.
Stock Locate	1	2	Integer	Always 0
Tracking Number	3	2	Integer	NASDAQ OMX internal tracking number
Timestamp	5	6	Integer	Nanoseconds since midnight.
Event Code	11	1	Alpha	See System Event Codes below.

NASDAQ supports the following event codes on a daily basis on the TotalView-ITCH 5.0 data feed.

SYSTEM EVENT CODES – DAILY	
Code	**Explanation**
"O"	*Start of Messages.* Outside of time stamp messages, the start of day message is 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 Market hours.* This message is intended to indicate that Market Hours orders are available for execution.
"M"	*End of Market hours.* This message is intended to indicate that Market Hours orders are no longer available for execution.
"E"	*End of System hours.* 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"	*End of Messages.* This is always the last message sent in any trading day.

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.

For NASDAQ GLIMPSE 5.0 / NASDAQ TotalView-ITCH 5.0, NASDAQ supports two variations of the Add Order message format.

4.1.1 Add Order – No MPID Attribution

This message will be generated for unattributed orders accepted by the NASDAQ 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 – No MPID Attribution

				Message.
Stock Locate	1	2	Integer	Locate code identifying the security
Tracking Number	3	2	Integer	NASDAQ OMX internal tracking number
Timestamp	5	6	Integer	Nanoseconds since midnight.
Order Reference Number	11	8	Integer	The unique reference number assigned to the new order at the time of receipt.
Buy/Sell Indicator	19	1	Alpha	The type of order being added. "B" = buy order. "S" = sell order.
Shares	20	4	Integer	The total number of shares associated with the order being added to the book.
Stock	24	8	Alpha	Stock symbol, right padded with spaces
Price	32	4	Price (4)	The display price of the new order. Refer to Data Types for field processing notes.

4.1.2 Add Order with MPID Attribution

This message will be generated for attributed orders and quotations accepted by the NASDAQ system.

ADD ORDER – MPID ATTRIBUTION MESSAGE				
Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	"F"	Add Order with MPID Attribution Message.
Stock Locate	1	2	Integer	Locate code identifying the security
Tracking Number	3	2	Integer	NASDAQ OMX internal tracking number
Timestamp	5	6	Integer	Nanoseconds since midnight.
Order Reference Number	11	8	Integer	The unique reference number assigned to the new order at the time of receipt.
Buy/Sell Indicator	19	1	Alpha	The type of order being added. "B" = buy order. "S" = sell order.
Shares	20	4	Integer	The total number of shares associated with the order being added to the book.
Stock	24	8	Alpha	Stock symbol, right padded with spaces
Price	32	4	Price (4)	The display price of the new order. Refer to Data Types for field processing notes.
Attribution	36	4	Alpha	NASDAQ market participant identifier associated with the entered order.

Symbol Directory

At the start of each GLIMPSE transmission, NASDAQ will disseminate stock directory messages for all symbols in NASDAQ execution system for the current trading day.   Please note that the Symbol Directory spin may include halted issues.   Firms must process the Trading Action message for current trading state information.

STOCK DIRECTORY

Name	Offset	Length	Value	Notes
Message Type	0	1	"R"	Stock Directory Message
Stock Locate	1	2	Integer	Locate Code uniquely assigned to the security symbol for the day.
Tracking Number	3	2	Integer	NASDAQ OMX internal tracking number
Timestamp	5	6	Integer	Time at which the directory message was generated. Refer to Data Types for field processing notes.
Stock	11	8	Alpha	Denotes the security symbol for the issue in the NASDAQ execution system.
Market Category	19	1	Alpha	Indicates Listing market or listing market tier for the issue
Financial Status Indicator	20	1	Alpha	For NASDAQ-listed issues, this field indicates when a firm is not in compliance with NASDAQ continued listing requirements.

Market Category codes:

Code	Definition
NASDAQ-Listed Instruments	
Q	NASDAQ Global Select Market^{SM}
G	NASDAQ Global Market^{SM}
S	NASDAQ Capital Market$^{®}$
Non-NASDAQ-Listed Instruments	
N	New York Stock Exchange (NYSE)
A	NYSE MKT
P	NYSE Arca
Z	BATS Z Exchange
<space>	Not available

Financial Status Indicator codes:

Code	Definition
NASDAQ-Listed Instruments	
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
C	Creations and/or Redemptions Suspended for Exchange Traded Product
N	Normal (Default): Issuer Is NOT Deficient, Delinquent, or Bankrupt
Non-NASDAQ-Listed Instruments	
<space>	Not available. Firms should refer to SIAC feeds

				for code if needed.		
Round Lot Size	21	4	Integer	Denotes the number of shares that represent a round lot for the issue		
Round Lots Only	25	1	Alpha	Indicates if NASDAQ system limits order entry for issue		
					Code	Definition
					Y	NASDAQ OMX system only accepts round lots orders for this security.
					N	NASDAQ OMX system does not have any order size restrictions for this security. Odd and mixed lot orders are allowed.
Issue Classification	26	1	Alpha	Identifies the security class for the issue as assigned by NASDAQ. See Appendix for allowable values.		
Issue Sub-Type	27	2	Alpha	Identifies the security sub-type for the issue as assigned by NASDAQ. See Appendix for allowable values.		
Authenticity	29	1	Alpha	Denotes if an issue or quoting participant record is set-up in NASDAQ systems in a live/production, test, or demo state. Please note that firms should only show live issues and quoting participants on public quotation displays.		
					Code	Definition
					P	Live/Production
					T	Test
Short Sale Threshold Indicator	30	1	Alpha	Indicates if a security is subject to mandatory close-out of short sales under SEC Rule 203(b)(3).		
					Code	Definition
					Y	Issue is restricted under SEC Rule 203(b)(3)
					N	Issue is not restricted
					\<space\>	Threshold Indicator not available
IPO Flag	31	1	Alpha	Indicates if the NASDAQ security is set up for IPO release. This field is intended to help NASDAQ market participant firms comply with FINRA Rule 5131(b).		
					Code	**Definition**
					NASDAQ-Listed Instruments	
					Y	NASDAQ listed instrument is set up as a new IPO security
					N	NASDAQ listed instrument is not set up as a new IPO

					security
					Non-NASDAQ-Listed Instruments
					<space> Not available
LULD Reference Price Tier	32	1	Alpha		Indicates which Limit Up / Limit Down price band calculation parameter is to be used for the instrument. Refer to <u>LULD Rule</u> for details.
					Code / **Definition**
					1 / Tier 1 NMS Stocks and select ETPs
					2 / Tier 2 NMS Stocks
					<space> / Not applicable
ETP Flag	33	1	Alpha		Indicates whether the security is an exchange traded product (ETP):
					Code / **Definition**
					Y / Instrument is an ETP
					N / Instrument is not an ETP
					<space> / Not available
ETP Leverage Factor	34	4	Integer		Tracks the integral relationship of the ETP to the underlying index. Example: If the underlying Index increases by a value of 1 and the ETP's Leverage factor is 3, indicates the ETF will increase/decrease (see Inverse) by 3. Note: Leverage Factor of 1 indicates the ETP is NOT leveraged. This field is used for LULD Tier I price band calculation purposes.
Inverse Indicator	38	1	Alpha		Indicates the directional relationship between the ETP and underlying index. **Code** / **Definition** Y / ETP is an Inverse ETP N / ETP is not an Inverse ETP Example: An ETP Leverage Factor of 3 and an Inverse value of 'Y' indicates the ETP will decrease by a value of 3.

4.2 Stock Trading Action message

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

In the GLIMPSE transmission, NASDAQ will send out a Stock Trading Action message for only those NASDAQ, NYSE, NYSE Amex, NYSE Arca and BATS issues that were eligible for trading during the current trading session.

For most issues, the Trading Action state would be "T" (Trading Resumption) to reflect the issue was released for trading during the current market session.

If the issue was in a halted or paused state at the time of the GLIMPSE transmission, however, the Trading Action state may reflect one of the other states outlined below.

If the GLIMPSE transmission includes a Stock Directory message, but not a Stock Trading Action message, for an issue, firms may assume that the issue was placed in an operational or regulatory trading halt prior to the start of the current trading system.

STOCK TRADING ACTION				
Name	Offset	Length	Value	Notes
Message Type	0	1	"H"	Stock Trading Action Message.
Stock Locate	1	2	Integer	Locate code identifying the security
Tracking Number	3	2	Integer	NASDAQ OMX internal tracking number
Timestamp	5	6	Integer	Nanoseconds since midnight
Stock	11	8	Alpha	Stock symbol, right padded with spaces
Trading State	19	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	20	1	Alpha	Reserved.
Reason	21	4	Alpha	Trading Action reason.

Reg SHO Short Sale Price Test Restricted Indicator

In February 2011, the Securities and Exchange Commission (SEC) implemented 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 supports 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 also sends the Reg SHO Short Sale Price Test Restricted Indicator message in the event of an intraday status change.

For other exchange-listed issues, NASDAQ relays the Reg SHO Short Sale Price Test Restricted Indicator message when it receives an update from the primary listing exchange.

NASDAQ processes orders based on the most recent 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
Locate Code	1	2	Integer	Locate code identifying the security
Tracking	3	2	Integer	NASDAQ OMX internal tracking number

Number				
Timestamp	5	6	Integer	Nanoseconds since midnight
Stock	11	8	Alpha	Stock symbol, right padded with spaces
Reg SHO Action	19	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 Retail Price Improvement 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 Locate	1	2	Integer	Locate code identifying the security
Tracking Number	3	2	Integer	NASDAQ OMX internal tracking number
Timestamp	5	6	Integer	Nanoseconds since midnight.
Stock	11	8	Alpha	Stock symbol, right padded with spaces
Interest Flag	19	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

4.4 Snapshot message

The Snapshot message reflects the NASDAQ TotalView-ITCH 5.0 sequence number at the time that the NASDAQ GLIMPSE 5.0 spin was requested.

To maintain a real-time order display, firms should begin to process real-time NASDAQ TotalView-ITCH 5.0 messages beginning with the sequence number stated in this NASDAQ GLIMPSE 5.0 snapshot message.

END OF SNAPSHOT MESSAGE				
Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	"G"	End of Snapshot message
Sequence number	1	20	Numeric	NASDAQ TotalView-ITCH 5.0 sequence number when the NASDAQ GLIMPSE 5.0 snapshot was

				taken.
				To keep the order book current, firms should process real-time NASDAQ TotalView-ITCH 5.0 messages beginning with the message sequence number reflected in this snapshot message.
				Note: While TotalView-ITCH 5.0 is a binary data feed, the SoupBINTCP protocol uses ASCII characters for the sequence number in the logon request message format.

5 Support

o For general product support for NASDAQ data feeds, please contact NASDAQ OMX Global Data Products at +1 301 978 5307 or dataproducts@nasdaqomx.com.

o For technical support for NASDAQ data feeds, please contact NASDAQ OMX Global Software Development at devsupport@nasdaqomx.com.

Appendix A

Documentation Revision Control Log

October 1, 2013: NASDAQ GLIMPSE Version 5.00
Released a new version of Glimpse documentation to support the following change:
- Added stock symbol to several market data messages

August 2, 2013: NASDAQ GLIMPSE Version 5.00
Released a new version of the Glimpse documentation to support the following change:
- Revised Timestamp format
- Moved positioning of the Symbol Locate and Tracking Number fields, and updated field offsets accordingly

July 10, 2013: NASDAQ GLIMPSE Version 5.00
NASDAQ OMX released a new version of the Glimpse documentation to support the following changes:
- Incorporation of Symbol Locator Codes
- Added Enhanced Symbol Directory
- Addition of an internal tracking number to multiple messages

January 9, 2013: NASDAQ GLIMPSE Version 4.10
NASDAQ OMX removed the Trading State, "R", from the Stock Trading Action message.

January 8, 2013: NASDAQ GLIMPSE Version 4.10
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 GLIMPSE Version 4.10
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.
- Removed Trading State, "V", related to the Volatility Guard Program
- Added the Retail Price Interest Indicator Message

November 1, 2011: NASDAQ GLIMPSE Version 4.10
NASDAQ OMX updated the Market Category to include the BATS Listings Market.

November 4, 2010: NASDAQ GLIMPSE Version 4.10
NASDAQ OMX updated the Regulation SHO definition to reflect the SEC new implementation date.

July 14, 2010: NASDAQ GLIMPSE Version 4.10
NASDAQ OMX added a new Regulation SHO Short Sale Price Test Restricted Indicator message format to be introduced in the fourth quarter of 2010.

July 2, 2010: NASDAQ GLIMPSE Version 4.10
NASDAQ OMX added new Action Trading code(s) to the Stock Trading Action message for the NASDAQ Volatility Guard trading pause.

January 26, 2010: NASDAQ GLIMPSE Version 4.10
NASDAQ updated the length of the symbol field from 6 characters to 8 characters.to match the NASDAQ TotalView-ITCH 5.0 product offering.

January 22, 2010: NASDAQ GLIMPSE Version 4.00
NASDAQ added stock directory and stock trading action message types to the GLIMPSE specification

July 28, 2009: NASDAQ GLIMPSE Version 4.00
NASDAQ corrected the system event message formats to match TotalView-ITCH 4.0.

July 20, 2009: NASDAQ GLIMPSE Version 4.00
NASDAQ modified system event processing to include a wider range of TotalView-ITCH codes.

May 20, 2009: NASDAQ GLIMPSE Version 4.00
NASDAQ adds a statement about the user logon procedure for GLIMPSE in section 2.

April 28, 2009: NASDAQ GLIMPSE Version 4.00
NASDAQ releases initial GLIMPSE 4.0 specifications to public.