PSX GLIMPSE[™] 5.0

ITCH is the revolutionary Nasdaq outbound protocol



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1 Overview

A complement to the Nasdaq PSX TotalView-ITCH real-time data feed product, Nasdaq PSX GLIMPSE[™] is a pointto-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 PSX GLIMPSE[™] uses the same data formats as the PSX TotalView-ITCH data feed product.

2 Architecture

Nasdaq PSX GLIMPSE[™] 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 PSX GLIMPSE[™] protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

Nasdaq PSX currently offers the PSX GLIMPSE[™] data feed in the SoupBinTCP protocol option only.

Please note that PSX 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 PSX TotalView-ITCH is 200,000.0000 (decimal, 77359400 hex).

Timestamps are represented as nanoseconds since midnight.

4 Message Formats

Upon logon to the Nasdaq PSX 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 PSX 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 PSX execution system at the time of login request;

• PSX GLIMPSE[™] Snapshot message that reflects the most recent order reference number reflected in the transmission.

Please note that Nasdaq PSX GLIMPSE[™] uses the same Symbol Directory, Trading Action, and Add Order message formats as the Nasdaq PSX TotalView-ITCH data feed.

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

4.1 System Event Message

PSX GLIMPSE[™] product is designed to support the same system event messages as the PSX TotalView-ITCH feed. On PSX GLIMPSE[™], PSX will send out system event messages for those events that occurred up to the time of the PSX 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 PSX internal tracking number		
Timestamp	5	6	Integer	Nanoseconds since midnight		
Event Code	11	1	Alpha	See System Event Codes below		

Nasdaq PSX supports the following event codes on a daily basis on the PSX TotalView-ITCH data feed.

System	Event Codes – Daily
Code "O"	Explanation 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 PSX 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 PSX 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.

4.2 Add Order Message

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

For Nasdaq PSX GLIMPSE[™] / Nasdaq PSX TotalView-ITCH, Nasdaq PSX supports two variations of the Add Order message format.

4.2.1 Add Order – No MPID Attribution

This message will be generated for unattributed orders accepted by the Nasdaq PSX system. (Note: If a firm wants to display a MPID for unattributed orders, Nasdaq PSX recommends that it use the MPID of "NSDQ".)

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 PSX 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.

4.2.2 Add Order with MPID Attribution

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

Add Order – MPID Attribution Message					
Name	Offset	Length	Value	Notes	
Message Type	0	1	"F"	Add Order – No MPID Attribution Message.	
Stock Locate	1	2	Integer	Locate code identifying the security	
Tracking Number	3	2	Integer	Nasdaq PSX 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" = sellorder.	
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	

4.3 Stock Directory

At the start of each PSX GLIMPSE[™] transmission, Nasdaq PSX will disseminate stock directory messages for all symbols in Nasdaq PSX 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.

Name	Offset	Length	Туре	Value/Des	cription			
Message Type	0	1	"R"	Stock Direc	Stock Directory Message			
Stock Locate	1	2	Integer	Locate Code	Locate Code uniquely assigned to the security symbol for the day.			
Tracking Number	3	2	Integer	Nasdaq PS	Nasdaq PSX 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 PSX execution system.				
Market Category 19 1		1	Alpha	Indicates Li	isting market or listing market tier for the issue			
				Code	Definition			
				Nasdaq-L	isted Instruments			
				Q	Nasdaq Global Select Market SM			
				G	Nasdaq Global Market SM			
				S	Nasdaq Capital Market®			
				Non-Naso	daq-Listed Instruments			
				N	New York Stock Exchange (NYSE)			
				А	NYSE American			
				Р	NYSE Arca			
				Z	BATS ZExchange			
				V	Investors' Exchange, LLC			
				<space></space>	Notavailable			

Financial Status Indicator	20	1	Alpha		listed issues, this field indicates when a firm is not ce with Nasdaq continued listing requirements
				Code	Definition
				Nasdaq-Li	sted Instruments
				D	Deficient
				E	Delinquent
				Q	Bankrupt
				S	Suspended
				G	Deficient and Bankrupt
				н	Deficient and Delinquent
				J	Delinquent and Bankrupt
				К	Deficient, Delinquent and Bankrupt
				С	Creations and/or Redemptions Suspended for Exchange Traded Product
				N	Normal (Default): Issuer Is NOT Deficient, Delinquent, or Bankrupt
				Non-Nasd	aq-Listed Instruments
				<space></space>	Not available. Firms should refer to SIAC feeds fo code if needed.
Round Lot Size	21	4	Integer	Denotes the the issue	e number of shares that represent a round lot for
Round Lots Only	25	1	Alpha	Indicates if	Nasdaq PSX system limits order entry for issue
				Code	Definition
				Y N	Nasdaq PSX system only accepts round lots Nasdaq PSX system does not have any order size restrictions for this security. Odd and mixed lot orders are allowed.
Issue Classification	26	1	Alpha		he security class for the issue as assigned by K. See Appendix for allowable values.
Issue Sub-Type	27	2	Alpha		ne security sub-type for the issue as assigned by K. See Appendix for allowable values.
Authenticity	29	1	Alpha	Nasdaq PS Please note	an issue or quoting participant record is set-up in K systems in a live/production, test, or demo state. That firms should only show live issues and quoting s on public quotation displays.
				Code	Definition
				Р	Live/Production
				т	Test

Short Sale Threshold	30	1	Alpha		a security is subject to mandatory close-out of under SEC Rule 203(b)(3).
Indicator				Code	Definition
				Y	Issue is restricted under SEC Rule 203(b)(3)
				N	Issue is not restricted
				<space></space>	Threshold Indicator not available
IPO Flag	31	1	Alpha	release. Th	the Nasdaq PSX security is set up for IPO is field is intended to help Nasdaq market firms comply with FINRA Rule 5131(b).
				Code	Definition
				Nasdaq-L	isted Instruments
				Y	Nasdaq PSX system only accepts round lots orders for this security.
				N	Nasdaq PSX system does not have any order size restrictions for this security. Odd and mixed lot orders are allowed.
				Non-Nasc	daq-Listed Instruments
				<space></space>	Notavailable
ULD Reference Price Tier	32	1	Alpha		hich Limit Up / Limit Down price band calculation is to be used for the instrument. Refer to <u>LULD</u> tails.
				Code	Definition
				1	Tier 1 NMS Stocks and select ETPs
				2	Tier 2 NMSStocks
				<space></space>	Notavailable
ETP Flag	33	1	Alpha	Indicates w (ETP):	hether the security is an exchange traded product
				Code	Definition
				Y	Instrument is an ETP
				N	Instrument is not an ETP
				<space></space>	Notavailable
ETP Leverage Factor	34	4	Integer	Tracks the i index.	ntegral relationship of the ETP to the underlying
				the ETP's Lo increase/do rounded to would repr	the underlying Index increases by a value of 1 and everage factor is 3, indicates the ETF will ecrease (see Inverse) by 3. Leverage Factor is the nearest integer below, e.g. leverage factor 1 esent leverage factors of 1 to 1.99. This field is use er 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 is an Inverse ETP	
				Ν	ETP is not an Inverse ETP	
					-	: An ETP Leverage Factor of 3 and an Inverse value of ites the ETP will decrease by a value of 3.

4.4 Stock Trading Action Message

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

In the PSX GLIMPSE[™] transmission, Nasdaq PSX will send out a Stock Trading Action message for only those Nasdaq, NYSE, and other regional exchanges 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 PSX GLIMPSE[™] transmission, however, the Trading Action state may reflect one of the other states outlined below.

If the PSX 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	on			
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 PSX 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 PSX
Reserved	20	1	Alpha	Reserved.
Reason	21	4	Alpha	Trading Action reason.

4.5 Reg SHO Short Sale Price Restricted Identifier

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 PSX will introduce the following Reg SHO Short Sale Price Test Restricted Indicator message format.

For Nasdaq-listed issues, Nasdaq PSX 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 PSX 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 PSX relays the Reg SHO Short Sale Price Test Restricted Indicator message when it receives an update from the primary listing exchange. Nasdaq PSX processes orders based on the most recent Reg SHO Restriction status value.

Reg SHO Restriction	Reg SHO Restriction						
Name	Offset	Length	Value	Notes			
Message Type	0	1	"Υ"	Reg SHO Short Sale Price Test Restricted Indicator			
Locate Code	1	2	Integer	Locate code identifying the security			
Tracking Number	3	2	Integer	Nasdaq PSX internal tracking 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			

4.6 Snapshot Message

The Snapshot message reflects the Nasdaq PSX TotalView-ITCH sequence number at the time that the Nasdaq PSX GLIMPSE[™] spin was requested.

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

Name	Offset	Length	Value	Notes
Message Type	0	1	"G"	End of Snapshot message
Sequence Number	1	20	Numeric	PSX TotalView-ITCH sequence number when the PSX GLIMPSE™ snapshot was taken.
				To keep the order book current, firms should process real- time PSX TotalView-ITCH 5.0 messages beginning with the message sequence number reflected in this snapshot message
				Note: While PSX TotalView-ITCH is a binary data feed, the SoupBINTCP protocol uses ASCII characters for the sequence number in the logon request message format.

4.7 Operational Halt

The Exchange uses this message to indicate the current Operational Status of a security to the trading community. An Operational Halt means that there has been an interruption of service on the identified security impacting only the designated Market Center. These Halts differ from the "Stock Trading Action" message types since an Operational Halt is specific to the exchange for which it is declared, and does not interrupt the ability of the trading community to trade the identified instrument on any other market place.

Nasdaq uses this administrative message to indicate the current trading status of the three market centers operated by Nasdaq.

Operational Halt				
Name	Offset	Length	Туре	Value/Description
Message Type	0	1	"h"	Operational Halt
Stock Locate	1	2	Integer	Locate code uniquely assigned to the security symbol for the day.
Tracking Number	3	2	Integer	Nasdaq internal tracking number
Timestamp	5	6	Integer	Time at which the Operational Halt message was generated. Refer to Data Types for field processing notes.
Stock	11	8	Alpha	Denotes the security symbol for the issue in Nasdaq execution system
Market Code	19	1	Alpha	"Q": Nasdaq
				"В": ВХ
				"X": PSX
Operational	20	1	Alpha	"H": Operationally Halted on the identified Market
Halt Action				"T": Operational Halt has been lifted and Trading resumed

*PSX GLIMPSE[™] will distribute the "Operational Halt" message on a last seen basis. A recipient of GLIMPSE[™] should expect to receive a message value of "Operationally Halted" message while an Operational Halt is ongoing, OR, a "Trading Resumed" message value at any point after Operational Halt has been resolved. If an Operational Halt has not been declared during a trading day, then the recipient should expect to receive no "Operational Halt" message as part of the response.

5 Support

• For general product support for Nasdaq PSX data feeds, please contact <u>Clientsuccess@nasdaq.com.</u>

Appendix A

Documentation Revision Control Log

July 15, 2022: PSX GLIMPSE™ Version 5.00

Due to the launch of non-integer leverage factors, updated the Value/Description field of ETP Leverage Factor from section 4.3 page 7.

May 3, 2018: PSX GLIMPSE™ Version 5.00

Nasdaq made the decision to fall back to the previous version number to avoid customer confusion related to different sequencing between the version number of the product specifications and the version number of the actual product code.

March 3, 2018: PSX GLIMPSE™ Version 5.1

Released a new version of PSX GLIMPSE[™] documentation to add a new Operational Halt message (Section 4.7) to indicate the current Operational Status of a security to the trading community.

September 12, 2017: PSX GLIMPSE™ Version 5.00

Nasdaq added a new Market Category code in the Symbol Directory messages for the Investors' Exchange, LLC to distinguish IEX-listed issues. New market category code is "V".

October 1, 2013: PSX GLIMPSE™ Version 5.00

Released a new version of PSX TotalView-ITCH documentation to support the following change: Added stock symbol to several market data messages

August 2, 2013: PSX GLIMPSE™ Version 5.00

Released a new version of the PSX TotalView-ITCH 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: PSX GLIMPSE™ Version 5.00

Nasdaq PSX 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 8, 2013: PSX GLIMPSE™ 4.1

Nasdaq PSX removed the Trading Action State, "P", from the Stock Trading Message.

November 6, 2012: PSX GLIMPSE[™] 4.1

Released a new version of the GLIMPSE[™] documentation to support the following changes:

Added the "P" value to the Trading State in the Stock Trading Message. Removed the Trading State "V" related to the Volatility Guard Program.

November 1, 2011: PSX GLIMPSE™ 4.1

Nasdaq PSX updated the Market Category message to include the code "Z" for BATS-listed securities.

July 14, 2010: PSX GLIMPSE™ 4.1

Nasdaq PSX 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 : PSX GLIMPSE[™] 4.1

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

March 26, 2010 : PSX GLIMPSE[™] 4.1

Inclusion of EMC (Emergency Market Conditions) System Event Codes

February 26, 2010 : PSX GLIMPSE™ 4.1

Initial release of PSX documentation