BX GLIMPSE 5.0

1 Overview

1.1 Product Description

A complement to the BX TotalView-ITCH real-time data feed product, BX GLIMPSE 5.0 is a point-to-point data feed connection that provides direct data feed customers with the current state of the BX Order Book with full market participant attribution. BX GLIMPSE 5.0 uses the same Add Order messages as the BX TotalView-ITCH 5.0 data feed product.

1.2 Upcoming Enhancements

The BX GLIMPSE 5.0 will be released in the 4th Quarter 2013 and will feature the data feed enhancements detailed in Data Technical News #2013-33.

In addition, NASDAQ OMX has enhanced the BX GLIMPSE 5.0 feed to support Symbol Directory and Trading Action messages.

2 Architecture

BX 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 BX GLIMPSE 5.0 protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

BX 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 left justified and padded on the right with spaces.

Prices are integer fields. When converted to a decimal format, prices are in fixed point format with 6 whole number places followed by 4 decimal digits. The maximum price in GLIMPSE is 200,000.0000 (decimal, 77359400 hex).

Timestamps are represented as nanoseconds since midnight.

4 Message Formats

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

- Symbol Directory messages for all security symbols in the BX execution system;
- Trading Action messages with the current trading state value for active security symbol in the BX execution system;
- Add Order messages for all the displayable orders on the BX 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 BX GLIMPSE 5.0 uses the same Symbol Directory, Trading Action, and Add Order message formats as the BX TotalView-ITCH 5.0 data feed.

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

4.1 System Event Message

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

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 BX 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 BX 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 BX system and was added to the displayable book. The message includes a day-unique Order Reference Number used by BX to track the order.

For BX GLIMPSE 5.0 / BX TotalView-ITCH 5.0, BX 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 BX system.

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 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.
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.
Price	24	4	Integer	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 BX 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.

Price	24	4	Integer	The display price of the new order. Refer to Data Types for field processing notes.
Attribution	28	4	Alpha	BX market participant identifier associated with the entered order.

4.3 Symbol Directory

At the start of each trading day, NASDAQ OMX BX disseminates stock directory messages for all active symbols in the 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 feed.
Market Category	19	1	Alpha	Indicates Listing market or listing market tier for the issue "N" = New York Stock Exchange (NYSE) "A" = NYSE MKT "P" = NYSE Arca "Q" = NASDAQ Global Select Market℠ "G" = NASDAQ Global Market℠ "S" = NASDAQ Capital Market® "Z" = BATS BZX Exchange "B" = BX-Listing Market *Space* = Not available
Financial Status Indicator	20	1	Alpha	For NASDAQ-listed or BX-listed issues, this field indicates when a firm is not in compliance with NASDAQ or BX continued listing requirements.

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,

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<tr><td></td><td></td><td></td><td></td><td>
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<tr><td></td><td>Delinquent, or Bankrupt</td></tr>
<tr><td><space></td><td>Company is in compliance, if NASDAQ-listed or BX-listed issue</td></tr>
<tr><td colspan="2">Non-NASDAQ-Listed Instruments</td></tr>
<tr><td><space></td><td>Not available. Firms should refer to SIAC feeds for code if needed.</td></tr>
</table>
</td></tr>
<tr><td>Round Lot Size</td><td>21</td><td>4</td><td>Integer</td><td>Denotes the number of shares that represent a round lot for the issue</td></tr>
<tr><td>Round Lots Only</td><td>25</td><td>1</td><td>Alpha</td><td>Indicates if NASDAQ system limits order entry for issue

<table>
<tr><td>Code</td><td>Definition</td></tr>
<tr><td>Y</td><td>NASDAQ OMX system only accepts round lots orders for this security.</td></tr>
<tr><td>N</td><td>NASDAQ OMX system does not have any order size restrictions for this security. Odd and mixed lot orders are allowed.</td></tr>
</table>
</td></tr>
<tr><td>Issue Classification</td><td>26</td><td>1</td><td>Alpha</td><td>Identifies the security class for the issue as assigned by NASDAQ. See Appendix for allowable values.</td></tr>
<tr><td>Issue Sub-Type</td><td>27</td><td>2</td><td>Alpha</td><td>Identifies the security sub-type for the issue as assigned by NASDAQ. See Appendix for allowable values.</td></tr>
<tr><td>Authenticity</td><td>29</td><td>1</td><td>Alpha</td><td>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.

<table>
<tr><td>Code</td><td>Definition</td></tr>
<tr><td>P</td><td>Live/Production</td></tr>
<tr><td>T</td><td>Test</td></tr>
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</td></tr>
<tr><td>Short Sale Threshold Indicator</td><td>30</td><td>1</td><td>Alpha</td><td>Indicates if a security is subject to mandatory close-out of short sales under SEC Rule 203(b)(3).

<table>
<tr><td>Code</td><td>Definition</td></tr>
<tr><td>Y</td><td>Issue is restricted under SEC Rule 203(b)(3)</td></tr>
<tr><td>N</td><td>Issue is not restricted</td></tr>
<tr><td><space></td><td>Threshold Indicator not available</td></tr>
</table>
</td></tr>
<tr><td>IPO Flag</td><td>31</td><td>1</td><td>Alpha</td><td>Indicates if the NASDAQ security is set up for IPO release. This field is intended to help NASDAQ market participant firms comply with</td></tr>
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<tr><td></td><td></td><td></td><td></td><td>FINRA Rule 5131(b).<table><tr><th>Code</th><th>Definition</th></tr><tr><td colspan="2">NASDAQ-Listed Instruments</td></tr><tr><td>Y</td><td>NASDAQ listed instrument is set up as a new IPO security</td></tr><tr><td>N</td><td>NASDAQ listed instrument is not set up as a new IPO security</td></tr><tr><td colspan="2">Non-NASDAQ-Listed Instruments</td></tr><tr><td><space></td><td>Not available</td></tr></table></td></tr>
<tr><td>LULD Reference Price Tier</td><td>32</td><td>1</td><td>Alpha</td><td>Indicates which Limit Up / Limit Down price band calculation parameter is to be used for the instrument. Refer to LULD Rule for details.<table><tr><th>Code</th><th>Definition</th></tr><tr><td>1</td><td>Tier 1 NMS Stocks and select ETPs</td></tr><tr><td>2</td><td>Tier 2 NMS Stocks</td></tr><tr><td><space></td><td>Not available</td></tr></table></td></tr>
<tr><td>ETP Flag</td><td>33</td><td>1</td><td>Alpha</td><td>Indicates whether the security is an exchange traded product (ETP):<table><tr><th>Code</th><th>Definition</th></tr><tr><td>Y</td><td>Instrument is an ETP</td></tr><tr><td>N</td><td>Instrument is not an ETP</td></tr><tr><td><space></td><td>Not available</td></tr></table></td></tr>
<tr><td>ETP Leverage Factor</td><td>34</td><td>4</td><td>Integer</td><td>Tracks the integeral 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.</td></tr>
<tr><td>Inverse Indicator</td><td>38</td><td>1</td><td>Alpha</td><td>Indicates the directional relationship between the ETP and underlying index.<table><tr><th>Code</th><th>Definition</th></tr><tr><td>Y</td><td>ETP is an Inverse ETP</td></tr><tr><td>N</td><td>ETP is not an Inverse ETP</td></tr></table>Example: An ETP Leverage Factor of 3 and an Inverse value of 'Y' indicates the ETP will decrease by a value of 3.</td></tr>
</table>

4.4 Stock Trading Action message

Administrative messages are used to indicate the current trading status of a security to the trading community.

In the GLIMPSE transmission, BX will send out a Stock Trading Action message for only those NASDAQ, NYSE, NYSE MKT, 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 state at the time of the GLIMPSE transmission, however, the Trading Action state could be one of the other Trading States listed 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
Trading State	11	1	Alpha	Indicates the current trading state for the stock. Allowable values: "H" = Halted or paused on across all U.S. equity markets "Q" = Quotation only period for cross-market halt or pause "T" = Trading on BX
Reserved	12	1	Alpha	Reserved.
Reason	13	4	Alpha	Trading Action reason.

4.5 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
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

Reg SHO Action	11	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 BX TotalVIew-ITCH 5.0 sequence number at the time that the BX GLIMPSE 5.0 spin was requested.

To maintain a real-time order display, firms should begin to process real-time BX TotalView-ITCH 5.0 messages beginning with the sequence number stated in this BX 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	BX TotalView-ITCH 5.0 sequence number when the BX GLIMPSE 5.0 snapshot was taken. To keep the order book current, firms should process real-time BX TotalView-ITCH 5.0 messages beginning with the message sequence number reflected in this snapshot message. Note: While BX 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

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

- For technical support for BX data feeds, please contact NASDAQ OMX Systems Engineering at devsupport@nasdaqomx.com.

Appendix A

Documentation Revision Control Log

August 2, 2013: BX GLIMPSE Version 5.00
Released a new version of the 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: BX 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 8, 2013: BX GLIMPSE Version 4.1
NASDAQ OMX removed the Trading Action State, "P", from the Stock Trading Message.

November 6, 2012: BX GLIMPSE Version 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: BX GLIMPSE Version 4.1
NASDAQ OMX updated the Market Category message to include the code "Z" for BATS-listed securities.

July 14, 2010: BX GLIMPSE Version 4.1
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: BX GLIMPSE Version 4.1
NASDAQ OMX added a new Trading State code value of "V" to the Stock Trading Action message to denote a NASDAQ Volatility Guard trading pause.

May 25, 2010: BX GLIMPSE Version 4.1
NASDAQ OMX updated the definition of the Trading State "H" value to indicate Halted / Paused for single security trading pause situations

January 26, 2010: BX GLIMPSE Version 4.1
Released a new version of the BX 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.
- Added Symbol Directory and Trading Action message types.

January 7, 2010: BX GLIMPSE Version 4.00
NASDAQ OMX releases initial BX GLIMPSE 4.0 specifications to public