NASDAQ OMX
BX Last Sale

For BX Trading Venue and BX Listing Market

NASDAQ OMX Global Data Products
805 Kind Farm Blvd
Rockville, MD 20850
+1 301 978 5307
12/5/2014

1 Overview

1.1 Product Description

BX Last Sale[SM] (BLS) is a direct data feed product offered by NASDAQ OMX to support the BX Trading and Listing Market upon launch. BLS covers the full range of issues including NASDAQ-, New York Stock Exchange (NYSE)-, NYSE Amex-, NYSE Arca-, BATS- and US regional exchange-listed securities. BLS provides real-time, intra-day trade data from the BX execution system.

Market data distributors may use the BLS data feed to update real-time stock tickers, portfolio trackers, trade alert programs, time and sale graphs, and other display systems.

For pricing and ordering information:

- Refer to Market Data section of the NASDAQ OMX Trader website.
- Contact the NASDAQ OMX Global Data Products Account Team at +1 301 978 5307 or +45 33 93 33 66.

1.2 Upcoming Product Enhancements

In addition, the BLS 2.0 feed is designed to support BX listing market functionality. NASDAQ OMX has filed with the U.S. Securities and Exchange Commission (SEC) to establish listing standards for the BX exchange. ***Please note items within this document that have been grayed out, although supported technologically, will not be implemented until the launch of the BX Listing Market.***

2 Network Protocol Options

For direct data feed subscribers, NASDAQ OMX BX will offer BLS in the following protocol options:

- SoupBinTCP
- MoldUDP64

For network support and ordering information, please refer to the NASDAQ Direct Data Products Specifications Page on the NASDAQ OMX Trader website.

3 Architecture

BLS will be made up of a series of sequenced messages. Each message is variable in length based on the message. The messages that make up the BLS protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

4 Data Types

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

Prices are integer fields, supplied with an associated precision. When converted to a decimal format, prices are in a 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.

Timestamps reflects the BX system time at which the outbound message was generated. BX states time as the number of milliseconds past midnight. The time zone is U.S. Eastern Time.

All alphanumeric fields are left-justified, ASCII fields. Padding spaces appear on the right as necessary.

5 Message Formats

5.1 System Event Message

System Event Messages is used to signal key market or data feed control events.

System Event Message				
Name	***Offset***	***Len***	***Value***	***Notes***
Time Stamp	0	4	Timestamp	Time Stamp
Message Type	4	1	Alphanumeric	S = System Event Message
Event Code	5	1	Alphanumeric	Denotes the type of event for which the message is being generated. The allowable values are: <table><tr><th>Code</th><th>Value</th></tr><tr><td>O</td><td>Start of Transmissions: Denotes that the BX Last Sale has started its daily transmission schedule.</td></tr><tr><td>Q</td><td>Start of Market Hours: Denotes the start of the regular US market session. Traditionally, only trade transactions reported during the regular market session are considered to be “last sale” eligible.</td></tr></table>

				S	Start of System Hours: This message indicates that NASDAQ is open and ready to start accepting orders.	
				M	End of Market Hours: Denotes the end of the regular US session.	
				E	End of System Hours: Indicates that NASDAQ is now closed and will not accept any new orders today.	
				C	End of Transmissions: Denotes that the BX Last Sale has ended its daily transmission schedule.	

5.2 Trade Report

The following message is used to relay BX execution system transactions that are reported for the current business day. Please note that BX only reports one-side of a trade execution on the BX Last Sale (BLS) feed and other data feed products.

<table>
<tr><th colspan="5">Trade Report Message</th></tr>
<tr><th>Name</th><th>Offset</th><th>Len</th><th>Type</th><th>Value/Description</th></tr>
<tr><td>Time Stamp</td><td>0</td><td>4</td><td>Timestamp</td><td>Denotes the time stamp of the BX system that generated the trade transaction.</td></tr>
<tr><td>Message Type</td><td>4</td><td>1</td><td>Alphanumeric</td><td>T = Trade Report</td></tr>
<tr><td>Market Center Identifier</td><td>5</td><td>1</td><td>Alphanumeric</td><td>Denotes the BX market system that generated the trade report message. The allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>B</td><td>BX execution system</td></tr>
<tr><td>L</td><td>Over the Counter Trade Reporting Facility (ORF)</td></tr>
</table></td></tr>
<tr><td>Issue Symbol</td><td>6</td><td>8</td><td>Alphanumeric</td><td>Denotes the security symbol for the issue of the security for which the trade report is being generated. For details on symbology, please refer to Appendix B.</td></tr>
<tr><td>Security Class</td><td>14</td><td>1</td><td>Alphanumeric</td><td>Indicates the primary listing market for the issue. Allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>Q</td><td>NASDAQ Listed Issue</td></tr>
<tr><td>N</td><td>NYSE Listed Issue</td></tr>
<tr><td>A</td><td>NYSE Amex Issue</td></tr>
<tr><td>P</td><td>NYSE Arca Issue</td></tr>
<tr><td>Z</td><td>BATS Listed Issue</td></tr>
<tr><td>B</td><td>BX-listed securities (Pending SEC approval of listing exchange)</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Trade Control Number</td><td>15</td><td>10</td><td>Alphanumeric</td><td>Indicates the BX system internal control number associated with the given trade transaction.

Please note that the Trade Control Number is specific to the BX host system reflected in the Market Center ID field. This number is used as a key field for trade cancellations and trade corrections.</td></tr>
<tr><td>Trade Price</td><td>25</td><td>4</td><td>Price (4)</td><td>Denotes the report price on the trade transaction.</td></tr>
<tr><td>Trade Size</td><td>29</td><td>4</td><td>Integer</td><td>Indicates the reported number of shares on the trade transaction.</td></tr>
<tr><td>Sale Condition Modifier</td><td>33</td><td>4</td><td>Alphanumeric</td><td>Sale condition modifier consists of four levels as defined below.</td></tr>
<tr><td>Sale Condition Modifier – Level 1</td><td>33</td><td>1</td><td>Alphanumeric</td><td>Used for Settlement Type information. Allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>@</td><td>Regular Settlement</td></tr>
<tr><td>C</td><td>Cash Settlement</td></tr>
<tr><td>N</td><td>Next Day Settlement</td></tr>
<tr><td>R</td><td>Seller Settlement</td></tr>
</table></td></tr>
</table>

<table>
<tr>
<td>Sale Condition Modifier – Level 2</td>
<td>34</td>
<td>1</td>
<td>Alphanumeric</td>
<td>For Reg NMS eligible securities, this sale condition level is used to define the trade through reason code. For the BX trading market, the allowable codes are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>F</td><td>Intermarket Sweep</td></tr>
<tr><td><space></td><td>Not applicable</td></tr>
</table>
For non-Reg NMS securities, this sale condition level is used to identify cross transactions. For BX-listed securities, the allowable codes are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>O</td><td>Opening Print</td></tr>
<tr><td>5</td><td>Re-Opening Print</td></tr>
<tr><td>6</td><td>Closing Print</td></tr>
<tr><td><space></td><td>Not applicable</td></tr>
</table>
</td>
</tr>
<tr>
<td>Sale Condition Modifier – Level 3</td>
<td>35</td>
<td>1</td>
<td>Alphanumeric</td>
<td>Used for Extended Hours or Sold Codes. Allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>T</td><td>Extended Hours Trade</td></tr>
<tr><td>U</td><td>Extended Hours Trade – Reported Late or Out of Sequence</td></tr>
<tr><td>L</td><td>Sold Last – Reported Late But In Sequence</td></tr>
<tr><td>Z</td><td>Sold – Out of Sequence</td></tr>
<tr><td><space></td><td>Not applicable</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>Sale Condition Modifier – Level 4</td>
<td>36</td>
<td>1</td>
<td>Alphanumeric</td>
<td>Used for special sale condition codes. Please note that this field is case sensitive. Allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>A</td><td>Acquisition</td></tr>
<tr><td>B</td><td>Bunched</td></tr>
<tr><td>D</td><td>Distribution</td></tr>
<tr><td>H</td><td>Price Variation Transaction</td></tr>
<tr><td>M</td><td>BX Official Close Price – for BX-listed securities only</td></tr>
<tr><td>P</td><td>Prior Reference Price</td></tr>
<tr><td>Q</td><td>BX Official Opening Price – for BX-listed securities only</td></tr>
<tr><td>S</td><td>Split Trade</td></tr>
<tr><td>W</td><td>Weighted Average Price</td></tr>
<tr><td>X</td><td>Cross Trade – For BX-listed securities only</td></tr>
<tr><td>o</td><td>Odd lot execution</td></tr>
<tr><td>x</td><td>Odd Lot Cross execution</td></tr>
<tr><td><space></td><td>Not applicable</td></tr>
</table>
</td>
</tr>
</table>

5.3 Trade Cancel/Error

The following message is used in the event that a BX trade transaction is cancelled on the same business day that it is reported.

<table>
<tr><th colspan="5">Trade Cancel/Error Message</th></tr>
<tr><th>Name</th><th>Offset</th><th>Len</th><th>Type</th><th>Value/Description</th></tr>
<tr><td>Time Stamp</td><td>0</td><td>4</td><td>Timestamp</td><td>Denotes the time stamp of the BX system that generated the trade cancel/error message.</td></tr>
<tr><td>Message Type</td><td>4</td><td>1</td><td>Alphanumeric</td><td>X = Trade Cancel/Error</td></tr>
<tr><td>Market Center Identifier</td><td>5</td><td>1</td><td>Alphanumeric</td><td>Denotes the BX market system that generated the trade report and cancel/error message. The allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>B</td><td>BX Execution System</td></tr>
<tr><td>L</td><td>Over the Counter Trade Reporting Facility (ORF)</td></tr>
</table></td></tr>
<tr><td>Issue Symbol</td><td>6</td><td>8</td><td>Alphanumeric</td><td>Denotes the security symbol for the issue for which the trade report is being generated. For details on symbology, please refer to Appendix B.</td></tr>
<tr><td>Security Class</td><td>14</td><td>1</td><td>Alphanumeric</td><td>Indicates the primary listing market for the issue. Allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>Q</td><td>NASDAQ Listed Issue</td></tr>
<tr><td>N</td><td>NYSE Listed Issue</td></tr>
<tr><td>A</td><td>NYSE Amex Issue</td></tr>
<tr><td>P</td><td>NYSE Arca Issue</td></tr>
<tr><td>Z</td><td>BATS Listed Issue</td></tr>
<tr><td>B</td><td>BX-listed securities (Pending SEC approval of listing exchange)</td></tr>
</table></td></tr>
</table>

Original Trade Control Number	15	10	Alphanumeric	Indicates the BX system internal control number associated with the given trade transaction. Please note that the Trade Control Number is specific to the BX host system reflected in the Market Center ID field.
Original Trade Price	25	4	Price (4)	Reported price for the transaction.
Original Trade Size	29	4	Integer	Reported number of shares for transaction.
Original Sale Condition Modifier	33	4	Alphanumeric	Defines the sale condition modifiers as reported on the original trade transaction.

5.4 Trade Correction

The following message is used in the event that a TRF trade transaction is corrected on the same business day that it is reported.

Trade Correction Message				
Name	***Offset***	***Len***	***Type***	***Value/Description***
Time Stamp	0	4	Timestamp	Denotes the time stamp of the BX system that generated the trade correction message.
Message Type	4	1	Alphanumeric	C = Trade Correction
Market Center Identifier	5	1	Alphanumeric	Denotes the BX market system that generated the trade report and cancel/error message. The allowable values are: Code | Value B | BX Execution System L | Over the Counter Trade Reporting Facility (ORF)
Issue Symbol	6	8	Alphanumeric	Denotes the BX-assigned issue symbol for which the trade correction message is being generated. For details on BX symbology, please refer to Appendix B.
Security Class	14	1	Alphanumeric	Indicates the primary listing market for the issue. Allowable values are:

<table>
<tr><td></td><td></td><td></td><td></td><td><table><tr><th>Code</th><th>Value</th></tr><tr><td>Q</td><td>NASDAQ Listed Issue</td></tr><tr><td>N</td><td>NYSE Listed Issue</td></tr><tr><td>A</td><td>NYSE Amex Issue</td></tr><tr><td>P</td><td>NYSE Arca Issue</td></tr><tr><td>Z</td><td>BATS Listed Issue</td></tr><tr><td>B</td><td>BX Listed Issue (Pending SEC approval of listing exchange)</td></tr></table></td></tr>
<tr><td>Original Trade Control Number</td><td>15</td><td>10</td><td>Alphanumeric</td><td>Indicates the BX internal control number associated with the given trade transaction.

Please note that the Trade Control Number is specific to the BX host system reflected in the Market Center ID field.</td></tr>
<tr><td>Original Trade Price</td><td>25</td><td>4</td><td>Price (4)</td><td>Reported price on the original trade transaction.</td></tr>
<tr><td>Original Trade Size</td><td>29</td><td>4</td><td>Integer</td><td>Reported number of shares on the original trade transaction.</td></tr>
<tr><td>Original Sale Condition Modifier</td><td>33</td><td>4</td><td>Alphanumeric</td><td>Indicates sale condition modifiers associated with the original transaction.</td></tr>
<tr><td>Corrected Trade Control Number</td><td>37</td><td>10</td><td>Alphanumeric</td><td>Indicates the BX internal control number associated with the adjusted trade transaction.

Please note that the Trade Control Number is specific to the BX host system reflected in the Market Center ID field.</td></tr>
<tr><td>Corrected Trade Price</td><td>47</td><td>4</td><td>Price (4)</td><td>Indicates the price for the corrected trade transaction.</td></tr>
<tr><td>Corrected Trade Size</td><td>51</td><td>4</td><td>Integer</td><td>Indicates the number of shares for the corrected trade transaction.</td></tr>
<tr><td>Corrected Sale Condition Modifier</td><td>55</td><td>4</td><td>Alphanumeric</td><td>Denotes the sale condition modifiers associated with the corrected trade transaction.</td></tr>
</table>

5.5 Administrative Messages

To help firms create a full display, BX supports the following two administrative messages: (1) Trading Action and (2) Symbol Directory.

5.5.1 Stock Trading Action

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

Prior to the start of system hours, BX will send out a Trading Action spin. In the spin, BX will send out a Stock Trading Action message with the "T" (Trading Resumption) for all NASDAQ-, BX-, and other exchange-listed securities that are eligible for trading on the BX market 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 BX platform at the start of the system hours. Please note that securities may be halted in the BX system for regulatory or operational reasons.

After the start of system hours, BX 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, is released for quotation, or is released for trading.

<table>
<tr><th colspan="5">Trading Action Message</th></tr>
<tr><th>Name</th><th>Offset</th><th>Len</th><th>Type</th><th>Value/Description</th></tr>
<tr><td>Time Stamp</td><td>0</td><td>4</td><td>Timestamp</td><td>Time Stamp.</td></tr>
<tr><td>Message Type</td><td>4</td><td>1</td><td>Alphanumeric</td><td>H = Trading Action</td></tr>
<tr><td>Issue Symbol</td><td>5</td><td>8</td><td>Alphanumeric</td><td>Denotes the security symbol for which the trading action message is being generated. For details on symbology, please refer to Appendix B.</td></tr>
<tr><td>Security Class</td><td>13</td><td>1</td><td>Alphanumeric</td><td>Indicates the primary listing market for the issue. Allowable values are:
<table>
<tr><th>Code</th><th>Value</th></tr>
<tr><td>Q</td><td>NASDAQ Listed Issue</td></tr>
<tr><td>N</td><td>NYSE Listed Issue</td></tr>
<tr><td>A</td><td>NYSE Amex Issue</td></tr>
<tr><td>P</td><td>NYSE Arca Issue</td></tr>
<tr><td>Z</td><td>BATS Listed Issue</td></tr>
<tr><td>B</td><td>BX-listed securities (Pending SEC approval of listing exchange)</td></tr>
</table></td></tr>
</table>

Current Trading State	14	1	Alphanumeric	Reflects the current trading state for the issue. The allowable values are: Code / Value: 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
Reason	15	4	Alphanumeric	Reflects the Market Ops or MarketWatch code for the trading state change. Refer to Appendix C for current code list.

5.5.2 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 introduced 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***
Timestamp	0	4	Timestamp	Time at which the market participant position message was generated
Message Type	4	1	"Y"	Reg SHO Short Sale Price Test Restricted Indicator
Stock	5	8	Alphanumeric	Stock symbol right padded with spaces.
Reg SHO Action	13	1	Alphanumeric	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

5.5.3 Stock Directory

At the start of each trading day, BX disseminates stock directory messages for all active symbols in the BX 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 and BX-listed issues.

<table>
<tr><th colspan="5">STOCK DIRECTORY</th></tr>
<tr><th>Name</th><th>Offset</th><th>Length</th><th>Value</th><th>Notes</th></tr>
<tr><td>Timestamp</td><td>0</td><td>4</td><td>Timestamp</td><td>Time at which the directory message was generated. Refer to Data Types for field processing notes.</td></tr>
<tr><td>Message Type</td><td>4</td><td>1</td><td>“R”</td><td>Stock Directory Message</td></tr>
<tr><td>Stock</td><td>5</td><td>8</td><td>Alphanumeric</td><td>Denotes the security symbol for the issue in the NASDAQ execution system.</td></tr>
<tr><td>Market Category</td><td>13</td><td>1</td><td>Alphanumeric</td><td>Indicates Listing market or listing market tier for the issue

<table>
<tr><th>Code</th><th>Definition</th></tr>
<tr><td colspan="2">NASDAQ-Listed Instruments</td></tr>
<tr><td>Q</td><td>NASDAQ Global Select Market^{SM}</td></tr>
<tr><td>G</td><td>NASDAQ Global Market^{SM}</td></tr>
<tr><td>S</td><td>NASDAQ Capital Market®</td></tr>
<tr><td colspan="2">Non-NASDAQ-Listed Instruments</td></tr>
<tr><td>N</td><td>New York Stock Exchange (NYSE)</td></tr>
<tr><td>A</td><td>NYSE MKT</td></tr>
<tr><td>P</td><td>NYSE Arca</td></tr>
<tr><td>Z</td><td>BATS Z Exchange</td></tr>
<tr><td><space></td><td>Not available</td></tr>
</table>
</td></tr>
<tr><td>Financial Status Indicator</td><td>14</td><td>1</td><td>Alphanumeric</td><td>For NASDAQ-listed issues, this field indicates when a firm is not in compliance with NASDAQ continued listing requirements.</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th>Code</th><th>Definition</th></tr>
<tr><td colspan="2">NASDAQ-Listed Instruments</td></tr>
<tr><td>D</td><td>Deficient</td></tr>
<tr><td>E</td><td>Delinquent</td></tr>
<tr><td>Q</td><td>Bankrupt</td></tr>
<tr><td>S</td><td>Suspended</td></tr>
<tr><td>G</td><td>Deficient and Bankrupt</td></tr>
<tr><td>H</td><td>Deficient and Delinquent</td></tr>
<tr><td>J</td><td>Delinquent and Bankrupt</td></tr>
<tr><td>K</td><td>Deficient, Delinquent and Bankrupt</td></tr>
<tr><td>C</td><td>Creations and/or Redemptions Suspended for Exchange Traded Product</td></tr>
<tr><td>N</td><td>Normal (Default): Issuer Is NOT Deficient, Delinquent, or Bankrupt</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>15</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>19</td><td>1</td><td>Alphanumeric</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</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td><table><tr><td></td><td>restrictions for this security. Odd and mixed lot orders are allowed.</td></tr></table></td></tr>
<tr><td>Issue Classification</td><td>20</td><td>1</td><td>Alphanumeric</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>21</td><td>2</td><td>Alphanumeric</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>23</td><td>1</td><td>Alphanumeric</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></table></td></tr>
<tr><td>Short Sale Threshold Indicator</td><td>24</td><td>1</td><td>Alphanumeric</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>25</td><td>1</td><td>Alphanumeric</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 FINRA Rule 5131(b).
<table><tr><td>Code</td><td>Definition</td></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</td></tr></table></td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td><table><tr><td></td><td>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>26</td><td>1</td><td>Alphanumeric</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>27</td><td>1</td><td>Alphanumeric</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 applicable</td></tr></table></td></tr>
<tr><td>ETP Leverage Factor</td><td>28</td><td>4</td><td>Integer</td><td>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.</td></tr>
<tr><td>Inverse Indicator</td><td>32</td><td>1</td><td>Alphanumeric</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</td></tr></table></td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td><table><tr><td></td><td>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>

5.5.4 Market-Wide Circuit Breaker (MWCB) Messaging

5.5.4.1 MWCB Decline Level Message

Informs data recipients what the daily MWCB breach points are set to for the current trading day.

MWCB Decline Level Message				
Name	***Offset***	***Length***	***Value***	***Notes***
Timestamp	0	4	Timestamp	Time at which the MWCB Decline Level message was generated
Message Type	4	1	“V”	Market wide circuit breaker Decline Level Message.
Level 1	5	8	Price (8)	Denotes the MWCB Level 1 Value.
Level 2	13	8	Price (8)	Denotes the MWCB Level 2 Value.
Level 3	21	8	Price (8)	Denotes the MWCB Level 3 Value.

5.5.4.2 MWCB Status Message

Informs data recipients when a MWCB has breached one of the established levels

MWCB Breach Message				
Name	***Offset***	***Length***	***Value***	***Notes***
Timestamp	0	4	Timestamp	Time at which the MWCB Breaker Status message was generated
Message Type	4	1	“W”	Market-Wide Circuit Breaker Status message
Breached Level	5	1	Alphanumeric	Denotes the MWCB Level that was breached. “1” = Level 1 “2” = Level 2 “3” = Level 3

6 Contact Information

Questions about the BLS entitlement and display guidelines may be directed to NASDAQ OMX Global Data products at +1 301 978 5307 or dataproducts@nasdaqomx.com.

Questions about BLS transmissions may be directed to NASDAQ OMX Development Support Team at devsupport@nasdaqomx.com.

Appendix A – Last Sale Processing

SEC Vendor Display Rule
The Securities and Exchange Commission (SEC) has established certain display standards for market data vendors. For more information, please contact the SEC directly.

BLS carries only trade transactions executed on the BX system. Since BLS is not a consolidated trade data feed, it should not be used to feed market data displays that are subject to the SEC Vendor Display Rule.

Issue Statistic Calculations
BLS only provides raw trade data from the BX execution system. If needed, firms should create their own algorithms for issue- and market center-level statistics. To help in the process, BX offers the following guidelines.

a) Last Sale and Volume Calculation
Within the market data industry, the term "last sale" has been widely used in conjunction with the SEC Vendor Display Rule. "Last Sale" is typically used to denote the most recent round or mixed lot trade transaction reported by a market center with an eligible sale condition code for the regular U.S. market session. For consolidated BX displays, firms should use the time stamp field from the Trade Report message to determine the proper trade sequence order for last sale calculations as well as time and sales displays.

To facilitate a "Last Sale" calculation, BLS includes the sale condition modifier for the BX execution system transactions. The Sale Condition Modifier field consists of four levels. A trade should only be applied to the high, low, last sale, and volume calculations if all four sales condition modifiers so allow.

Condition – Level 1 denotes the settlement type of the transaction. If a transaction has a special settlement code, firms should not include transaction in high, low, or last sale price calculations. If the transaction has a regular settlement type, firms should process the next levels to determine proper processing.

Code	Value	High/Low	Last Sale	Volume
@	Regular Settlement	Yes, if other levels do not overrule	Yes, if other levels do not overrule	Yes, if other levels do not overrule
C	Cash Settlement	No	No	Yes
N	Next Day Settlement	No	No	Yes
R	Seller Settlement	No	No	Yes

Sale Condition – Level 2
For Reg NMS eligible securities, this sale condition level is used to define the trade through reason code. For the BX trading market, the allowable codes are:

Code	Value	High/Low	Last Sale	Volume
F	Intermarket Sweep Order	Yes	Yes	Yes
<space>	Not applicable	See other levels	See other levels	See other levels

For non-Reg NMS securities, this sale condition level is used to identify cross transactions. For the BX listed securities, the allowable codes are:

Code	Value	High/Low	Last Sale	Volume
O	Opening Print	Yes	Yes	Yes
5	Re-Opening Print	Yes	Yes	Yes
6	Closing Print	Yes	Yes	Yes
<space>	Not applicable	See other levels	See other levels	See other levels

Sale Condition – Level 3 indicates if the transaction was reported during regular market hours with a "sold" code or during the extended trading hours session. For the ORF system, the "sold" code is used to indicate that a trade occurred during normal market hours but was reported more than 90 seconds after execution. Historically, only trades that occur during normal market hours and in proper sequence are included in the "last sale" calculation.

Code	Value	High/Low	Last Sale	Volume
T	Extended Hours Trade	No	No	Yes
U	Extended Hours Trade – Reported Late or Out of Sequence	No	No	Yes
L	Sold Last – Reported Late But In Sequence	Yes	Yes	Yes
Z	Sold – Out of Sequence	Yes	No (except if first regular market trade of day)	Yes
<space>	Not applicable	See other levels	See other levels	See other levels

Sale Condition – Level 4 indicates special trading situations.

For the BX execution system, this sale condition level is used to denote when a trade record contains the BX Official Opening Price or BX Official Closing Price values.

Since BX also reports the underlying cross execution transaction to the tape, the BX Opening and Closing report volume should not be included in the daily volume calculation.

For the Cross Trade (X) modifiers, firms should defer to the Level 2 and Level 3 sale condition codes to determine whether to include the trade in the high, low, and last sale calculation statistics.

As outlined in the table below, BX also observes special processing rules for the Prior Reference Price (P), Weighted Average Price (W), and Odd Lot Execution (o) codes.

Code	Value	High/Low	Last Sale	Volume
A	Acquisition	Yes	Yes	Yes
B	Bunched	Yes	Yes	Yes
D	Distribution	Yes	Yes	Yes
H	Price Variation Trade	No	No	Yes
M	BX Official Close Price	Yes for BX market center only or BX system-wide displays No for BX/ FINRA TRF only displays	Yes (for BX market center only or BX system-wide displays only)	No
o	Odd lot execution	No	No	Yes*
P	Prior Reference Price	Yes	No (except if first regular market trade of day)	Yes

Code	Value	High/Low	Last Sale	Volume
Q	BX Official Opening Price	Yes for BX market center only or BX system-wide displays No for BX/ FINRA TRF only displays	No	No
S	Split Trade	Yes	Yes	Yes
W	Weighted Average Price	No	No	Yes
X	Cross Trade – For BX-listed securities only	Yes (if sent with an eligible Level 2 modifier)	Yes (if sent with an eligible Level 2 modifier)	Yes
x	Odd Lot Cross Trade	No	No	Yes
<space>	Not applicable	See other levels	See other levels	See other levels

b) Last Trade Calculation

The term "Last Trade" is more widely applied within the market data industry. Many firms use the term "last trade" to refer to the most recent trade transaction reported in sequence. In addition to the "last sale" codes, many firms include odd lots and extended trading hour executions in the "last trade" price calculations.

c) Net Change Calculation

BLS does not include a net change indicator field. Data feed recipient must perform their own calculation for last sale eligible and last trade eligible transactions. The formula should be as follows:

Net Change for Issue Symbol = Current Trade Price - Adjusted Previous Close Price

To obtain the Adjusted Previous Close, firms will need to apply dividends to the previous day's closing price value. NASDAQ OMX offers several products to support the BX and NASDAQ-listed securities:

- For NASDAQ-listed securities, firms may obtain dividend information via the NASDAQ Daily List product page on the NASDAQ OMX Trader website.
- For BX-listed securities, firms may obtain dividend information via the BX Daily List product on the NASDAQ OMX Trader website.

For NYSE-, NYSE Amex-, NYSE Arca and BATS-listed securities, firms should contact the listing exchange directly to inquire about corporate action data delivery options.

Dividend adjustments are typically applied to the closing price on the day prior to ex-date and reflected on the ex-date, the next business day. Cash dividends of $0.01 or greater should be subtracted from the closing price. For stock dividends, the closing price should be divided by the dividend amount.

Appendix B - Stock Symbol Convention

For NASDAQ-listed issues, NASDAQ OMX currently restricts its symbol length to a maximum of 8 characters. For common stock issuances, NASDAQ, PSX and BX will only assign root symbols of 1 to 4 characters in length with possible fifth and or sixth character denoting a suffix. In certain instances, a dot "." delimiter may be applied to symbols after the root and between the suffix eg., XXXX.A. 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 and or six character symbol suffixes, please refer to Ticker Symbol Convention page on the NASDAQ OMX Trader website.

For NYSE-, NYSE MKT- and NYSE Arca-listed securities with subordinate issue types, please refer to Ticker Symbol Convention page 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 BX-listed issues, NASDAQ OMX BX acts as the primary market and has the authority to institute a trading halt 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 all issue types, NASDAQ and/or BX may also halt trading for operational reasons.

NASDAQ and/or BX will send out a trading action message to inform its market participants when the trading status of an issue changes. For informational purposes, NASDAQ and BX also attempt to provide the reason for each trading action update. For bandwidth efficiency reasons, NASDAQ and BX use 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 Affect
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 and BX-Listed Securities)
IPOE	IPO Security — Positioning Window Extension (NASDAQ and BX-Listed Securities)
<space>	Reason Not Available

For the current list of regulatory halts, please refer to the Trading Halts page on the NASDAQ OMX Trader website.

Appendix D - Issue Classification Values
Identifies the security class for the issue as assigned by NASDAQ

CODES FOR ISSUE CLASSIFICATION VALUES	
Code	**Value**
A	American Depositary Share
B	Bond
C	Common Stock
F	Depository Receipt
I	144A
L	Limited Partnership
N	Notes
O	Ordinary Share
P	Preferred Stock
Q	Other Securities
R	Right
S	Shares of Beneficial Interest
T	Convertible Debenture
U	Unit
V	Units/Benif Int
W	Warrant

Appendix E - Issue Sub-Type Values

CODES FOR ISSUE CLASSIFICATION VALUES	
Code	**Value**
A	Preferred Trust Securities
AI	Alpha Index ETNs
B	Index Based Derivative
C	Common Shares
CB	Commodity Based Trust Shares
CF	Commodity Futures Trust Shares
CL	Commodity-Linked Securities
CM	Commodity Index Trust Shares
CO	Collateralized Mortgage Obligation
CT	Currency Trust Shares
CU	Commodity-Currency-Linked Securities
CW	Currency Warrants
D	Global Depositary Shares
E	ETF-Portfolio Depositary Receipt
EG	Equity Gold Shares
EI	ETN-Equity Index-Linked Securities
EN	Exchange Traded Notes
EU	Equity Units
F	HOLDRS
FI	ETN-Fixed Income-Linked Securities
FL	ETN-Futures-Linked Securities
G	Global Shares
I	ETF-Index Fund Shares
IR	Interest Rate
IW	Index Warrant
IX	Index-Linked Exchangeable Notes
J	Corporate Backed Trust Security
L	Contingent Litigation Right
LL	Identifies securities of companies that are set up as a Limited Liability Company (LLC)
M	Equity-Based Derivative
MF	Managed Fund Shares
ML	ETN-Multi-Factor Index-Linked Securities
MT	Managed Trust Securities
N	NY Registry Shares
O	Open Ended Mutual Fund
P	Privately Held Security
PP	Poison Pill
PU	Partnership Units
Q	Closed-End Funds
R	Reg-S
RC	Commodity-Redeemable Commodity-Linked Securities

RF	ETN-Redeemable Futures-Linked Securities
RT	REIT
RU	Commodity-Redeemable Currency-Linked Securities
S	SEED
SC	Spot Rate Closing
SI	Spot Rate Intraday
T	Tracking Stock
TC	Trust Certificates
TU	Trust Units
U	Portal
V	Contingent Value Right
W	Trust Issued Receipts
WC	World Currency Option
X	Trust
Y	Other
Z	Not Applicable

Appendix F – Documentation Version Control Log

December 5, 2014: BLS Version 2.00
The BLS Specification was updated to include missing Issue Sub-Type Codes (Appendix E):
- AI – Alpha Indexes ETNs
- CO – Collateralized Mortgage Obligation
- EU – Equity Units
- F – HOLDRS
- IR – Interest Rate
- IW – Index Warrant
- J – Corporate Backed Trust Security
- PP – Poison Pill
- Q – Closed -End Funds
- RT – REIT
- SC – Spot Rate Closing
- SI – Spot Rate Intraday
- WC – World Currency Option
- X – Trust
- Y – Other
- Z – NA

October 1, 2013: BLS Version 2.00
The BLS Specification was updated to reflect the following changes:
- Conversion to a binary format

August 2, 2013: BLS Version 2.00
The BLS Specification was updated to reflect the following changes:
- Removed internal tracking number from multiple messages
- Inclusion of the Appendices for Issue Classification and Issue Sub-Type
- Updated offsets in the Symbol Directory Message
- Updated offsets and lengths in the MWCB Decline Level Message

July 10, 2013: BLS Version 2.00
The BLS Specification was updated to reflect the following changes:
- Added Enhanced Symbol Directory
- Added Market-Wide Circuit Breaker (MWCB) Messaging
  - MWCB Decline Level Message
  - MWCB Status Message
- Addition of an internal tracking number to multiple messages
- Addition of 'C' to the Financial Status Indicator field in the Symbol Directory Message
- Addition of 'x' Sale Condition Level 4

April 23, 2013: BLS Version 1.1
NASDAQ OMX added the following Event Codes in the System Event Message:
- S - Start of System Hours: This message indicates that NASDAQ is open and ready to start accepting orders.
- E - End of System Hours: Indicates that NASDAQ is now closed and will not accept any new orders today.

March 11, 2013: BLS Version 1.1

NASDAQ OMX 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: BLS Version 1.1
NASDAQ OMX added the following Trading Action Reason Code:

- MWC0 - Market Wide Circuit Breaker Halt – Carry over from previous day

January 8, 2013: BLS Version 1.1
NASDAQ OMX removed the Trading Action State, "P", from the Stock Trading Message.

November 6, 2012: BLS Version 1.1
Released a new version of the BLS 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 Stat, "V", related to the Volatility Guard Program.

November 2, 2011: BLS Version 1.1
NASDAQ OMX added a new Market Center code, "Z", for BATS-listed securities to the Market Category and Security Class fields.

July 14, 2010: BLS Version 1.1
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: BLS Version 1.1
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: BLS Version 1.1
NASDAQ added two new Trading Action Reason code values (T5 and T7) for single security trading pause situations.

January 26, 2010: BLS Version 1.1
Released a new version of the BLS 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 note to Appendix B to reflect that NASDAQ OMX is reviewing its stock symbol conventions to determine if changes are needed.