BX Options Glimpse for Depth of Market

Technical Specifications

Version 2.0
14 Jul 2020
Approved

Document History

Revision	Published	Author(s)	Summary of Changes
2.0	07.14.2020	J.Dinh	Updated to reflect BX Options Depth of Market 2.0 specifications.
1.10	11.30.2015	J.Dinh	Updated the Start of Messages (System Event Code "O") time to ~4:00 am. Updated the End of System Hours (System Event Code "E") time to ~5:15 pm to more accurately reflect current practice. Updated the End of Messages (System Event Code "C") time to ~5:20 pm to more accurately reflect current practice.
1.00	04.10.2012	J.Dinh	Initial version.

Contents

1 Overview

A complement to the NASDAQ OMX BX Options Depth of Market (BX Depth) real-time data feed product, NASDAQ OMX BX Options GLIMPSE (BX GLIMPSE) is a point-to-point data feed connection that provides direct data feed customers with the current state of the BX execution system. BX Options GLIMPSE uses the same data formats as the BX Depth data feed product.

2 Architecture

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

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

3 Data Types

All Alpha or Alphanumeric fields are left justified and padded on the right with spaces.

All Integer fields are unsigned big-endian (network byte order) binary encoded numbers unless otherwise specified. Integers may be 1, 2 or 4 bytes long.

Prices are 2 byte or 4 byte Integer fields. When a 4 byte price is converted to a decimal format, prices are in fixed point format with 6 whole number places followed by 4 decimal digits. When a 2 byte price is converted to a decimal format, prices are in fixed point format with 3 whole number places followed by 2 decimal digits.

4 Message Formats

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

- System Event messages;
- Derivative 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;
- Add Quote messages for all the displayable quotes on the BX execution system at the time of login request;
- GLIMPSE Snapshot message that reflects the BX Depth sequence number at the time that the BX GLIMPSE spin was requested.

Please note that BX Options GLIMPSE uses the same Derivative Directory, Trading Action, Add Order and Add Quote message formats as the BX Depth data feed.

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

4.1 System Event Message

The system event message type is used to signal a market or data feed handler event. The format is as follows:

System Event Message				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Message Type	0	1	Alpha	"S" = System Event Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Event Code	11	1	Alpha	Refer to System Event Codes below

System Event Codes		
CODE	EXPLANATION	WHEN (TYPICALLY)
"O"	Start of Messages. This is always the first message sent in any trading day.	After ~2:00am
"S"	Start of System Hours. This message indicates that the exchange is open and ready to start accepting orders.	7:00am
"Q"	Start of Opening Process. This message is intended to indicate that the exchange has started its opening auction process.	9:30:00am
"N"	End of Normal Hours Processing - This message is intended to indicate that the exchange will no longer accept any new orders or changes to existing orders for options that trade during normal trading hours.	4:00:00pm
"L"	End of Late Hours Processing - This message is intended to indicate that the exchange will no longer accept any new orders or changes to existing orders for options that trade during extended hours.	4:15:00pm
"E"	End of System Hours. This message indicates that the exchange system is now closed.	~5:15pm
"C"	End of Messages. This is always the last message sent in any trading day.	~5:20pm

4.2 Administrative Messages

4.2.1 Derivative Directory Message

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

Notes on the Derivative Directory Messages:

- The Derivative Directory Messages are sent once per symbol, typically before the "Start of System Hours" System Event. Should it be necessary, intra-day updates to this message will be sent as they occur. In the case of an intra-day update, for a given instrument Id, the canonical information for the option is invariant (will not change). The canonical information consists of Security Symbol, Expiration Year Month and Day, Strike Price and Option Type. Other attributes for the Option may change.
- Firms should note that they will only receive Derivative Directory messages for the symbol range associated with the matching engine serving that connection.
- The Underlying Symbol is in most cases the same as the industry standard ticker underlying. In rare cases, such as a special settlement symbol, the exchange assigns unique underlying symbols.
- If an Option is removed from the system intra-day, a new options directory message will be sent with "Tradable" field set to "N". Any Quotes sent for this removed Option will be rejected. All existing quotes for this option will be purged.

- The Minimum Price Variation (MPV) has the following values:
  - “E” – All prices are in penny increments
  - “S” – Prices below $3.00 are in increments of $0.05, prices above $3.00 are in increments of $0.10
  - “P” – Prices below $3.00 are in increments of $0.01, prices above $3.00 are in increments of$0.05

Derivative Directory Message				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Message Type	0	1	Alpha	“R” = Directory Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Instrument ID	11	4	Integer	Option ID assigned daily. Valid for trading day
Security Symbol	15	6	Alphanumeric	Denotes the security symbol.
Expiration Year	21	1	Integer	Last two digits of the year of the option expiration
Expiration Month	22	1	Integer	Expiration Month (1-12)
Expiration Date	23	1	Integer	Day of the Month of expiration (1-31)
Explicit Strike Price	24	4	Integer	Explicit strike price. Refer to Data Types for field processing notes.
Option Type	28	1	Alpha	“C” = Call option “P” = Put option “N”= N/A
Underlying Symbol	29	13	Alphanumeric	Denotes the unique symbol assigned to the underlying security.
Closing Type	42	1	Alphabetic	Denotes which System Event is used to trigger the instrument closing process. “N” = Normal Hours “L” = Late Hours
Tradable	43	1	Alpha	Denotes whether or not this instrument is tradable at the exchange. The allowable values are: “Y” = Instrument is tradable “N” = Instrument is not tradable
MPV	44	1	Alpha	Minimum Price Variation for instrument. See Notes below for further explanation: “E” = penny Everywhere “S” = Scaled “P” = penny Pilot

Derivative Directory Message				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
ISIN	45	12	Alphanumeric	International Securities Identification Number for instrument **Not supported on BX Options. Always set to '0'**
Tick Size Table ID	57	2		Tick Size ID for instrument **Not supported on BX Options. Always set to '0'**
Price notation	59	1	Alpha	The price notation of the order book. **Not supported on BX Options. Always set to '0'**
Volume notation	60	1	Alpha	The Volume notation of the order book **Not supported on BX Options. Always set to '0'**
Financial Product	61	2	Integer	Type of Financial Product **Not supported on BX Options. Always set to '0'**
Market segment Id	63	1	Alpha	Market identifier **Not supported on BX Options. Always set to '0'**
Trading Currency	64	3	Alpha	Currency of the trading instrument **Not supported on BX Options. Always set to '0'**
MIC	67	4	Alpha	Market Identifier Code identifying the Exchange. **Not supported on BX Options. Always set to '0'**
Instrument Long Name	71	16	Alpha	Instrument long name **Not supported on BX Options. Always set to '0'**

4.2.2 Trading Action Message

BX uses this administrative message to indicate the current trading status of an index or equity option within the BX Options Market.

In the GLIMPSE transmission, BX will send out a Trading Action spin. In the spin, BX will send out an Option Trading Action message with the "T" (Trading Resumption) for all options contracts that are eligible for trading during the current trading session.

For most options, the Trading State would be "T" (Trading Resumption) to reflect the option was released for trading during the current market session.

If the symbol was in a halted state at the time of the GLIMPSE transmission, the Trading State will reflect with the code 'H' as outlined below.

If an option is temporarily suspended on buy or sell side (i.e. all buy orders or all sell orders in a given symbol are not executable), a trading action message with state 'B' (for buy side) or 'S' (for sell side) will be sent.

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

Trading Action Message				
Field Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	Alpha	"H" = Trading Action Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Instrument Id	11	4	Integer	Option ID assigned daily. Valid for trading day
Current Trading State	15	1	Alphabetic	Reflects the current trading state for the derivative. The allowable values are: "H" = Halt in effect "B" = Buy Side Trading Suspended –i.e. Buy orders are not executable) "S" = Sell Side Trading Suspended –i.e. Sell orders are not executable) "I" = Pre Open "O" = Opening Auction "R" = Re-Opening "T" = Continuous Trading "X" = Closed

4.3 Add Order Message

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

For bandwidth efficiency reasons, BX Options GLIMPSE / BX Depth can publish this message in either short or long format.

Add Order Message – Short Form				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Message Type	0	1	Alpha	"a"=Add Order Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Instrument Id	11	4	Integer	Option ID assigned daily, valid for trading day
Order Reference Number	15	8	Integer	The unique reference number assigned to the new order. The order reference number is Increasing, but not necessarily sequential.

Add Order Message – Short Form				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Market Side	23	1	Alpha	The type of order being added. "B" = Buy "S" = Sell "X" = Buy AON "Y" = Sell AON
Order Capacity	24	1	Alpha	Indicates Order Capacity **Not supported on BX Options. Always set to '0'**
Price	25	2	Integer	The display price of the new order being added to the book. **NOTE:** When converted to a decimal format, this price is in fixed point format with 3 whole number places followed by 2 decimal digits.
Volume	27	2	Integer	The total quantity of the new order being added to the book.
Rank	29	2	Integer	Order Rank on the book. **Not supported on BX Options. Always set to '0'**

Add Order Message - Long Form				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Message Type	0	1	Alpha	"A"=Add Order Message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Instrument Id	11	4	Integer	Option Id assigned daily, valid for trading day.
Order Reference Number	15	8	Integer	The unique reference number assigned to the new order. The order reference number is Increasing, but not necessarily sequential.
Market Side	23	1	Alpha	The type of order being added. "B" = Buy "S" = Sell "X" = Buy AON "Y" = Sell AON
Order Capacity	24	1	Alpha	Indicates Order Capacity **Not supported on BX Options. Always set to '0'**
Price	25	4	Integer	The display price of the new order being added to the book. **NOTE:** When converted to a decimal format, this price is in fixed point format with 6 whole number places followed by 4 decimal digits.
Volume	29	4	Integer	The total quantity of the new order being added to the

Add Order Message - Long Form				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
				book.
Rank	33	2	Integer	Order Rank on the book. **Not supported on BX Options. Always set to '0'**

4.4 Add Quote Message

An Add Quote Message indicates that a new quote has been accepted by the BX Option system and was added to the displayable book. The message includes the latest unique Bid/Ask Reference Numbers used by BX to track the quote.

For bandwidth efficiency reasons, BX Options GLIMPSE / Depth can publish this message in either short or long format.

Add Quote Message – Short Form				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Message Type	0	1	Alpha	"j" = New Quote message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Instrument Id	11	4	Integer	Options Id assigned daily, valid for trading day.
Bid Reference Number	15	8	Integer	The bid reference number associated with the new quote.
Ask Reference Number	23	8	Integer	The ask reference number associated with the new quote
Bid Price	31	2	Integer	The display bid price of the new quote. **NOTE:** When converted to a decimal format, this price is in fixed point format with 3 whole number places followed by 2 decimal digits.
Bid Size	33	2	Integer	The bid quantity of the new quote.
Ask Price	35	2	Integer	The display ask price of the new quote. **NOTE:** When converted to a decimal format, this price is in fixed point format with 3 whole number places followed by 2 decimal digits.

Add Quote Message – Short Form				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Ask Size	37	2	Integer	The ask quantity of the new quote.

Add Quote Message – Long Form				
NAME	**OFFSET**	**LENGTH**	**VALUE**	**NOTES**
Message Type	0	1	Alpha	"J" = New Quote message
Tracking Number	1	2	Integer	Internal system tracking number
Timestamp	3	8	Integer	Nanoseconds since midnight
Instrument Id	11	4	Integer	Options Id assigned daily, valid for trading day.
Bid Reference Number	15	8	Integer	The bid reference number associated with the new quote.
Ask Reference Number	23	8	Integer	The ask reference number associated with the new quote
Bid Price	31	4	Integer	The display bid price of the new quote. **NOTE:** When converted to a decimal format, this price is in fixed point format with 6 whole number places followed by 4 decimal digits.
Bid Size	35	4	Integer	The bid quantity of the new quote.
Ask Price	39	4	Integer	The display ask price of the new quote. **NOTE:** When converted to a decimal format, this price is in fixed point format with 6 whole number places followed by 4 decimal digits.
Ask Size	43	4	Integer	The ask quantity of the new quote.

5 Snapshots Message

The Snapshot message reflects the BX Options Depth of Market sequence number at the time that the BX GLIMPSE spin was requested.

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

Snapshot Message				
Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	Alpha	“M” = End of Snapshot message
Sequence Number	1	20	Numeric	BX Depth sequence number when the BX GLIMPSE snapshot was taken. To keep the order book current, firms should process real-time BX Depth messages beginning with the message sequence number reflected in this snapshot message. Note: While BX Depth is a binary data feed, the SoupBinTCP protocol uses ASCII characters for the sequence number in the logon request message format.

6 Support

- For general product support for Nasdaq data feeds, please contact Nasdaq Global Information Services at +1 301 978 307 or dataproducts@nasdaq.com.
- For technical support for Nasdaq data feeds, please contact Nasdaq Systems Engineering at devsupport@nasdaq.com.