Bruce Depth of Book

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Overview

Bruce Depth of Book is a direct data feed product offered by The Bruce ATS.

Architecture

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

The Bruce Depth of Book if offered in MoldUDP64 protocol.

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 remain 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.

Data Types

All integer fields are big endian (network byte order) binary encoded numbers. They are unsigned, unless otherwise noted.

All alphanumeric 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.

Timestamps reflect the system time when the outbound message was generated and are represented as the number of nanoseconds since the start of the unix epoch (January 1, 1970).

Message Formats

1.1 System Event Message

The System Event message is used to communicate key market or data feed handler events.

System Event Message

Name	Offset	Length	Value	Notes
Message Type	0	1	"S"	System Event Message
Stock Locate	1	2	Integer	Always 0
Timestamp	3	8	Timestamp	Time stamp
Event Code	11	1	Alphanumeric	Denotes the type of event for which the message is being generated.
				See list below for allowable values.

On a daily basis, Bruce will support the following event codes:

System Event Codes – Daily	
Code	**Explanation**
"O"	*Start of Transmission*: Denotes that Bruce Depth of Book has started its daily transmission schedule
"S"	*Start of System Hours*: Denotes that Bruce is open and ready to start accepting orders.
"Q"	*Start of Market Hours*: Denotes that Market Hours orders are available for execution.
"M"	*End of Market Hours*: Denotes that Market Hours orders are no longer available for execution.
"E"	*End of System Hours*: Denotes that Bruce is now closed and will not accept any new orders today.
"C"	*End of Transmissions*: Denotes that Bruce Depth of Book has completed its daily transmission schedule.

1.2 Administrative Messages

1.2.1 Stock Directory

At the start of each trading day, Bruce disseminates stock directory messages for all active symbols in its trading system.

Stock Directory				
Name	**Offset**	**Length**	**Type**	**Value/Description**
Message Type	0	1	"R"	Stock Directory Message
Stock Locate	1	2	Integer	Locate Code uniquely assigned to the security symbol for the day.
Timestamp	3	8	Timestamp	Time stamp
Stock	11	8	Alphanumeric	Denotes the security symbol for the issue in the execution system.
Market Category	19	1	Alphanumeric	Indicates Listing market or listing market tier for the issue

Code	Definition
A	NYSE ARCA
N	NYSE
P	**NYSE ARCA**
Q	NASDAQ
V	Investors' Exchange LLC
Z	CBOE BZX Exchange
<space>	Not available

Round Lot Size	20	4	Integer	Denotes the number of shares that represent a round lot for the issue
Authenticity	24	1	Alphanumeric	Flags whether an issue is treated by Bruce ATS as a live/production symbol or a test symbol

Code	Definition
P	Live/Production
T	Test

1.2.2 Stock Trading Action

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

Prior to the start of system hours, Bruce will send out a Trading Action spin in which Bruce Depth of Book will deliver a Stock Trading Action message with a *Trading State* of "T" for all securities that are eligible for trading at the start of the market 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 Bruce platform.

Afterwards, Bruce 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

- Released for trading

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
Timestamp	3	8	Timestamp	Time stamp
Stock	11	8	Alphanumeric	Denotes the security symbol for the issue in the execution system.
Trading State	19	1	Alphanumeric	Indicates the current trading state for the stock. Allowable values: "H" = Halted/Paused on the Bruce ATS "T" = Trading on the Bruce ATS

1.2.3 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.**

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

Bruce processes orders based on the most 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
Timestamp	3	8	Timestamp	Time stamp
Stock	11	8	Alphanumeric	Denotes the security symbol for the issue in the execution system.
Reg SHO Action	19	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

1.3 Add Order Message

An Add Order Message indicates that a new order has been accepted by Bruce and was added to the displayable book. The message includes a day unique Order Reference Number used by Bruce to track the order. Bruce will support two variations of the Add Order message format.

1.3.1 Add Order

This message will be generated for orders accepted by the Bruce ATS system and added to the book.

Add Order Message				
Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	"A"	Add Order
Stock Locate	1	2	Integer	Locate code identifying the security
Timestamp	3	8	Timestamp	Time stamp
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	Alphanumeric	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	Alphanumeric	Denotes the security symbol for the issue in the execution system.
Price	32	8	Price (4)	The display price of the new order

1.4 Modify Order Messages

Modify Order messages always include the Order Reference Number of the Add Order to which the update applies. To determine the current display shares for an order, subscribers must deduct the number of shares stated in the Modify message from the original number of shares stated in the Add Order message with the same reference number. Bruce Depth of Book may send multiple Modify Order messages for the same order reference number and the effects are cumulative. When the number of display shares for an order reaches zero, the order is dead and should be removed from the book.

1.4.1 Order Executed Message

This message is sent whenever an order on the book is executed in whole or in part. It is possible to receive several Order Executed Messages for the same order reference number if that order is executed in several parts. The multiple Order Executed Messages on the same order are cumulative.

Order Executed Message				
Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	"E"	Order Executed Message
Stock Locate	1	2	Integer	Locate code identifying the security
Timestamp	3	8	Timestamp	Time stamp
Order Reference Number	11	8	Integer	The reference number of the order being executed
Executed Shares	19	4	Integer	The number of shares executed
Match Number	23	8	Integer	The Bruce generated day unique Match Number of this execution. The Match Number is also referenced in the Trade Break Message

1.4.2 Order Cancel Message

This message is sent whenever an order on the book is modified as a result of a partial cancellation.

Order Cancel Message				
Name	**Offset**	**Length**	**Value**	**Notes**
Message Type	0	1	"X"	Order Cancel Message
Stock Locate	1	2	Integer	Locate code identifying the security
Timestamp	3	8	Timestamp	Time stamp
Order Reference Number	11	8	Integer	The reference number of the order being partially canceled
Cancelled Shares	19	4	Integer	The number of shares being removed from the order

1.4.3 Order Delete Message

This message is sent whenever an order on the book is being cancelled. All remaining shares are no longer

accessible so the order must be removed from the book.

Order Delete Message

Name	Offset	Length	Value	Notes
Message Type	0	1	"D"	Order Delete Message
Stock Locate	1	2	Integer	Locate code identifying the security
Timestamp	3	8	Timestamp	Time stamp
Order Reference Number	11	8	Integer	The reference number of the order being deleted

1.4.5. Order Replace Message

This message is sent whenever an order on the book has been cancel-replaced. All remaining shares from the original order are no longer accessible and must be removed. The new order details are provided for the replacement, along with a new order reference number which will be used henceforth. Since the side, stock symbol cannot be changed by an Order Replace event, these fields are not included in the message. Firms should retain the side and stock symbol from the original Add Order message.

Order Replace Message

Name	Offset	Length	Value	Notes
Message Type	0	1	"U"	Order Replace Message
Stock Locate	1	2	Integer	Locate code identifying the security
Timestamp	3	8	Timestamp	Time stamp
Original Order Reference Number	11	8	Integer	The original order reference number of the order being replaced
New Order Reference Number	19	8	Integer	The new reference number for this order at time of replacement
				Please note that Bruce will use this new order reference number for all subsequent updates
Shares	27	4	Integer	The new total displayed quantity
Price	31	8	Price (4)	The new display price for the order

1.5 Trade Messages

1.5.1   Trade Correction Message

In the rare case that an adjustment to previously communicated trade / order execution, the Trade Correction Message will be used to communicate the required updates.

Trade Correction Messages should be included in Bruce time-and-sales displays as well as volume and other market statistics. Since Trade Correction Messages do not affect the book, however, they may be ignored by firms just looking to build and track the Bruce execution system display.

Trade Correction Message

Name	Offset	Length	Value	Notes
Message Type	0	1	"C"	Trade Correction Message
Stock Locate	1	2	Integer	Locate code identifying the security
Timestamp	3	8	Timestamp	Time stamp
Match Number	11	8	Integer	The Bruce match number of original execution
New Match Number	19	8	Integer	The Bruce match number assigned to the adjusted execution
Shares	27	4	Integer	The shares associated with the adjusted execution
Price	31	8	Price (4)	The price associated with the adjusted execution

1.5.2   Trade Break Message

The Broken Trade Message is sent whenever an execution on the Bruce ATS is broken. A trade break is final; once a trade is broken, it cannot be reinstated.

Firms that use the feed to create time---and---sales displays or calculate market statistics should be prepared to process the broken trade message. If a firm is only using the feed to build a book, however, it may ignore these messages as they have no impact on the current book.

Trade Break Message

Name	Offset	Length	Value	Notes
Message Type	0	1	"B"	Trade Break Message
Stock Locate	1	2	Integer	Locate code identifying the security
Timestamp	3	8	Timestamp	Time stamp
Match Number	11	8	Integer	The Bruce match number of the execution that was broken

5 Support

Questions about the Bruce Depth of Book entitlement and specification document may be directed to
Clientsuccess@nasdaq.com.

Appendices

Appendix A - Documentation Version Control Log

March 1, 2025: Bruce Depth of Book
Initial version

Appendix B – Stock Symbol Convention

For all exchange-listed issues, Bruce currently restricts its symbol length to a maximum of 8 characters, using the Nasdaq symbology for representing the root symbol plus any additional suffixes. For details on the symbology, please refer to the Ticker Symbol Convention page on the Nasdaq Trader website.