XDP INTEGRATED FEED CLIENT SPECIFICATION

NYSE Arca Integrated
Global OTC Integrated

Version	Date
1.15b	July 24, 2015

PREFACE

DOCUMENT HISTORY

The following table provides a description of all changes to this document.

VERSION NO.	DATE	CHANGE DESCRIPTION
1.7	05/21/12	Updated references to NYSE MKT
	08/14/2012	Rebranded with new NYSE Technologies template
1.8	04/08/2013	Addition of ArcaEdge Integrated Feed messages
1.9	05/07/2013	Removal of ArcaEdge Integrated Feed messages. Removal of Add Order Attributed Messages and removal of Add Refresh Order Attributed Messages.
1.10	05/28/2013	Removal of ArcaEdge Integrated Feed Messages. Addition of Add Order Attributed Messaged and Add Refresh Order Attributed Messages.
1.11	06/13/2013	Removal of ReasonCode fields from Execution Message Msg Type '103'
1.12	08/30/2013	Message Type 105 amended to state that total volume could be negative
1.13	09/12/2013	Addition of '9' – Corrected Last Sale Price in Table 11, TradeCond2. Updated the description "I" in Table 11, TradeCon4 to Odd Lot Trade
1.13a	10/01/2013	Section 1.5 Trading Sessions: amended all times listed as 4:15pm to 4:00pm
1.13b	03/26/2014	Added note to Attributed Add Order Message and Attributed Add Order Refresh message stating these are future enhancements.
1.13c	11/03/2014	Removed future enhancement notes from Attr Add, Attr Add Refresh Fixed imbalance times Removed references to NYSE & NYSE MKT (these are moving to v 2.0)
1.14	02/04/2015	Addition of support for Global OTC
1.15	06/18/2015	For OTC, renamed Unsolicited to Flags, converted it to a bit field; added Flags to Attributed messges (107 & 108)
1.15a	07/10/2015	Updated legal disclaimer for Global OTC on title page
1.15b	07/24/2015	Corrected publication times

REFERENCE MATERIAL

The following lists the associated documents, which either should be read in conjunction with this document or which provide other relevant information for the user:

- XDP Common Client Specification
- SFTI US Technical Specification
- SFTI US Customer Guide
- NYSE Symbology

CONTACT INFORMATION

Service Desk

- Telephone: +1 212 383 3640 (International)
- Telephone: 866 873 7422 (Toll free, US only)
- Email: service.desk@nyx.com

FURTHER INFORMATION

For additional information about the product, visit the XDP Integrated Feed Product Page

For updated capacity figures, visit our capacity pages at: http://www.nyxdata.com/capacity

For details of IP addresses, visit our IP address pages at: http://www.nyxdata.com/ipaddresses

For a full glossary, visit: http://www.nyxdata.com/glossary/

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1. XDP INTEGRATED FEED ORDER BOOK INFORMATION

1.1 OVERVIEW

The XDP Integrated feed provides a raw feed of the Exchange's order book for all traded securities. Traders will see the complete depth of book, all trade events, the stock security status, and stock imbalances. All of the data is sent in the order in which it occurs in the Matching Engine.

All message types defined in this document appear only in the main publication channels, except:

- The Imbalance and Add Order Refresh message types also appear in the Refresh channels.
- The Stock Summary message appears only in a dedicated Stock Summary channel.

1.2 PUBLICATION TIMES

Table 1 Normal Trading Days (all times are EST)

MSGTYPE	DESCRIPTION	NYSE ARCA	GLOBAL OTC
100	Add Order Message	4:00am – 8:00pm	3:30am – 4:15pm
107	Order Book Attributed Add Order Message	–	3:30am – 4:15pm
101	Modify Order Message	4:00am – 8:00pm	3:30am – 4:15pm
102	Delete Order Message	4:00am – 8:00pm	3:30am – 4:15pm
103	Execution Message	4:00am – 8:00pm	8:00am –4:15pm
105	Imbalance Message	8:30am-Stock Open, 3:45pm- 4pm	3:30am - Stock Open, 3:00pm-4pm
106	Order Book Add Order Refresh Message	4am – 8pm	3:30am – 4:15pm
108	Order Book Attributed Add Order Refresh Message	–	3:30am – 4:15pm
220	Trade Message	4:00am – 8:00pm	3:30am – 4:15pm
221	Trade Cancel or Bust Message	4:00am – 8:00pm	3:30am – 4:15pm
222	Trade Correction Message	4:00am – 8:00pm	3:30am – 4:15pm
223	Stock Summary Message	4:00am – 8:00pm	3:30am – 4:15pm

Table 2 Early Closing Days (all times are EST)

MSGTYPE	DESCRIPTION	NYSE ARCA	GLOBAL OTC
100	Add Order Message	4am – 1pm	3:30am – 1:15pm
107	Order Book Attributed Add Order Message	–	3:30am – 1:15pm
101	Modify Order Message	4am – 1pm	3:30am – 1:15pm
102	Delete Order Message	4am – 1pm	3:30am – 1:15pm
103	Execution Message	4:00am – 1pm	3:30am – 1:15pm

MSGTYPE	DESCRIPTION	NYSE ARCA	GLOBAL OTC
105	Imbalance Message	8:30am-Stock Open, 12:45pm -1pm	3:30am – Stock Open, 12pm – 1pm
106	Order Book Add Order Refresh Message	–	3:30am – 1:15pm
108	Order Book Attributed Add Order Refresh Message	3:30am – 4:15pm	3:30am – 1:15pm
220	Trade Message	4:00am – 1:00pm	3:30am – 1:15pm
221	Trade Cancel or Bust Message	4:00am – 1:00pm	3:30am – 1:15pm
222	Trade Correction Message	4:00am – 1:00pm	3:30am – 1:15pm
223	Stock Summary Message	4:00am – 1:00pm	3:30am – 1:15pm

1.3 CONTROL MESSAGE TYPES

Table 3 Control Message Types used in the Data Feed

MSGTYPE	DESCRIPTION
1	Sequence Number Reset
2	Time Reference Message
3	Symbol Index Mapping
10	Retransmission Request Message
11	Request Response Message
12	Heartbeat Response Message
13	Symbol Index Mapping Request Message
15	Refresh Request Message
31	Message Unavailable
32	Symbol Clear
33	Trading Session Change
34	Security Status Message
35	Refresh Header Message

1.4 REFRESH MESSAGE TYPES

Table 4 Refresh Message Types used in the Refresh Feed

MSGTYPE	DESCRIPTION
35	Refresh Header Message
3	Symbol Index Mapping
105	Imbalance Message
34	Security Status Message
33	Trading Session Change
106	Order Book Add Order Refresh Message
108	Order Book Attributed Add Order Message

1.5 TRADING SESSIONS

Table 5 Trading Sessions (all times are EST)

SESSION VALUE	DESCRIPTION	NYSE ARCA	GLOBAL OTC
0x01	Morning Hours	4:00am – 9:30am	8:00am – 9:30am
0x02	National Hours	9:30am – 4:00pm	9:30am – 4:00pm
0x04	Late Hours	4:00pm – 8:00pm	4:00pm – 4:15pm

2. ORDER BOOK ADD ORDER MESSAGE – MSG TYPE ‘100’

An Add Order message is published when a new visible order has been added to the book.

See the XDP Common Client Specification for details on Time Reference and Symbol Index Mapping messages, and Order ID and Price field formats.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: NYSE Arca Equities - 31 Bytes Global OTC - 32 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 100 – Add Order Message
SourceTimeNS	4	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	8	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	12	4	Binary	This field contains the symbol sequence number
OrderID	16	4	Binary	The Order ID identifies a unique order.
Price	20	4	Binary	The price point. Use the Price scale from the symbol-mapping index.
Volume	24	4	Binary	This field contains the order quantity in shares
Side	28	1	ASCII	This field indicates the side of the order Buy/Sell. Valid values: ■ ‘B’ – Buy ■ ‘S’ – Sell
OrderIDGTCIndicator	29	1	Binary	This field specifies if Trade Order ID is a GTC order: ■ ‘0’ – Day Order ■ ‘1’- GTC Order
TradeSession	30	1	Bit Field	Values: ■ 0x01 Ok for morning hours ■ 0x02 Ok for national hours (core) ■ 0x03 OK for morning and core ■ 0x04 Ok for late hours ■ 0x06 OK for core and late ■ 0x07 OK for morning, core, and late
Flags	31	1	Bit Field	Values: ■ 0x00 – Solicited order

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				■ 0x01 - Unsolicited order NOTE: This field is published by Global OTC only.

3. ORDER BOOK ATTRIBUTED ADD ORDER MESSAGE – MSG TYPE '107'

NOTE: This message type is left as a future enhancement for NYSE Arca. The current production Arca Integrated Feed does not send this message type.

Global OTC market makers may publish an add (107) on the buy side attributed to the market maker MPID but with prices and sizes set to 0. This information is non-tradable and is published each day by the system on behalf of the market maker.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	The size of the message: NYSE Arca Equities - 36 Bytes Global OTC - 37 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 107 – Attributed Add Order Message
SourceTimeNS	4	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	8	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	12	4	Binary	This field contains the symbol sequence number
OrderID	16	4	Binary	The Order ID identifies a unique order
Price	20	4	Binary	This field contains the price point. Use the Price scale from the symbol-mapping index.
Volume	24	4	Binary	This field contains the order quantity in shares
Side	28	1	ASCII	This field indicates the side of the order Buy/Sell. Valid values: ■ 'B' – Buy ■ 'S' – Sell
OrderIDGTCIndicator	29	1	Binary	This field specifies if Trade Order ID is a GTC order: ■ '0' – Day Order ■ '1'- GTC Order
TradeSession	30	1	Bit Field	Values: ■ 0x01 Ok for morning hours ■ 0x02 Ok for national hours (core) ■ 0x03 OK for morning and core ■ 0x04 Ok for late hours ■ 0x06 OK for core and late ■ 0x07 OK for morning, core, and late

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
FirmID	31	5	ASCII	This field provides market participant's firm ID
Flags	36	1	Bit Field	Values: ■ 0x00 – Solicited order ■ 0x01 - Unsolicited order NOTE: This field is published by Global OTC only.

4. ORDER BOOK MODIFY MESSAGE – MSG TYPE '101'

XDP Integrated feed sends this message when an order in the Order Book is modified. The Order ID refers to the original order sent in the add order message. The following events trigger a modify order message.

- The price of an order changes
- The size of an order changes
- An order is routed to an away market with some shares remaining in the Order Book

Note: If an away market declines a routed order, a Modify Order message is published to "add" the declined shares back to Order Book.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 31 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 101 – Modify Message
SourceTimeNS	4	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	8	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	12	4	Binary	This field contains the symbol sequence number
OrderID	16	4	Binary	The Order ID identifies a unique order.
Price	20	4	Binary	This field contains the price point. Use the Price scale from the symbol mapping index.
Volume	24	4	Binary	This field contains the order quantity in shares
Side	28	1	ASCII	This field indicates the side of the order Buy/sell. Valid values: ■ 'B' – Buy ■ 'S' – Sell
OrderIDGTCIndicator	29	1	Binary	This field specifies if Trade Order ID is a GTC order: ■ '0' – Day Order ■ '1'- GTC Order
ReasonCode	30	1	Binary	Modify Reason: ■ 5 – Change (lost position in book) ■ 6 – Routed (keep position in book) ■ 7 – Modify Fill keep position

5. ORDER BOOK DELETE MESSAGE – MSG TYPE '102'

XDP Integrated feed sends this message when an order is taken off of the order book. The following events will trigger the transmission of a delete order message:

- An order is cancelled
- An order expires
- An order is routed to an away market. **Note**: If the away market declines the Matching Engine preference, an Add Order message with the original Order ID will be sent to return the order to the Order Book.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 23 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 102 – Delete Message
SourceTimeNS	4	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	8	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	12	4	Binary	This field contains the symbol sequence number
OrderID	16	4	Binary	The Order ID identifies a unique order.
Side	20	1	ASCII	This field indicates the side of the order Buy/sell. Valid values: ■ 'B' – Buy ■ 'S' – Sell
OrderIDGTCIndicator	21	1	Binary	This field specifies if Trade Order ID is a GTC order: ■ '0' – Day Order ■ '1'- GTC Order
ReasonCode	22	1	Binary	Delete Reason: ■ 1 – User Cancel ■ 2 – Modify (taken off book, Order ID may add again) ■ 3 – Delete Filled

6. ORDER BOOK EXECUTION MESSAGE – MSG TYPE '103'

An Order Book Execution message is sent when a visible order is partially or fully executed. The Volume field indicates the executed quantity. If the Price field is different from the price of the order, any remaining shares keep their original price. If the Volume field equals the number of shares previously remaining in the order, then the order has been fully executed and should be removed from the book. If the order has been partially executed, further Order Execution messages for this Order ID may be published.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 34 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 103 – Execution Message
SourceTimeNS	4	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	8	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	12	4	Binary	This field contains the symbol sequence number
OrderID	16	4	Binary	The Order ID identifies a unique order.
Price	20	4	Binary	This field contains the price the order execution price. Use the Price scale from the symbol mapping index.
Volume	24	4	Binary	This field contains the order quantity in shares
OrderIDGTCIndicator	28	1	Binary	This field specifies if executed Order is a GTC order: ▪ '0' – Day Order ▪ '1'- GTC Order
ReasonCode	29	1	Binary	Default: 0 See Section 6.1 for more information.
TradeID	30	4	Binary	The TradeID identifies a unique transaction in the matching engine and allows you to correlate Order Book Execution messages to Trade messages.

6.1 ORDER BOOK EXECUTION MESSAGE SENDING RULES

If the reason codes are set to zero, signifying that this feature has not yet been implemented, then the feed will disseminate the following:

1. In the event an order is partially filled, the data feed will first send an execution message followed by a modify message for the Order ID that has been partially executed.
2. In the event an order is fully executed, the data feed will first send an execution message followed by a delete for the Order ID that has been fully executed.

If the reason codes are not to zero, then the data feed will only send the execution message with the appropriate reason code when a trade occurs

3. In the event an order is partially filled, the execution message will show a reason code value of “7” requiring that the corresponding Order ID should have its volume reduced by the volume amount on the execution message.
4. In the event an order is fully executed, the data feed will send an execution message with a reason code value of “3”. The corresponding Order ID should then be removed from the book since the volume has been fully executed.

7. ORDER BOOK ADD ORDER REFRESH MESSAGE – MSG TYPE '106'

This message is published only during a refresh or after a symbol clear which will result in a book refresh.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: NYSE Arca - 35 Bytes (future release) Global OTC – 36 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 106 – Add Order Refresh Message
SourceTime	4	4	Binary	This field specifies the time when the msg was generated in the order book. The number represents the number of seconds in UTC time (EPOCH)
SourceTimeNS	8	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	12	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	16	4	Binary	This field contains the symbol sequence number
OrderID	20	4	Binary	The Order ID identifies a unique order.
Price	24	4	Binary	This field contains the price point. Use the Price scale from the symbol-mapping index.
Volume	28	4	Binary	This field contains the order quantity in shares
Side	32	1	ASCII	This field indicates the side of the order Buy/sell. Valid values: ■ 'B' – Buy ■ 'S' – Sell
OrderIDGTCIndicator	33	1	Binary	This field specifies if Trade Order ID is a GTC order ■ '0' – Day Order ■ '1'- GTC Order
TradeSession	34	1	Bit Field	Values: ■ 0x01 Ok for morning hours ■ 0x02 Ok for national hours (core) ■ 0x03 OK for morning and core ■ 0x04 Ok for late hours

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				■ 0x06 OK for core and late ■ 0x07 OK for morning, core, and late
Flags	35	1	Bit Field	Values: ■ 0x00 - Solicited order ■ 0x01 - Unsolicited order NOTE: This field is included for Global OTC only.

8. ORDER BOOK ATTRIBUTED ADD ORDER REFRESH MESSAGE – MSG TYPE '108'

(Global OTC market makers may publish an Attributed Add Order (107) on the buyside attributed to the market maker MPID but without a price or a size as well as the same on the sell side. This information is non-tradable and is published each day by the system on behalf of the market maker.)

The Global OTC Integrated feed publishes this message type (108) only during a refresh or after a symbol clear which will result in a book refresh. It represents a re-add of a previously published 107 message.

The current production Arca Integrated Feed does not publish this message type.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	The size of the message: NYSE Arca Equities - 40 Bytes Global OTC - 41 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 108 – Attributed Add Order Refresh Message
SourceTime	4	4	Binary	This field specifies the time when the msg was generated in the order book. The number represents the number of seconds in UTC time (EPOCH)
SourceTimeNS	8	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	12	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	16	4	Binary	This field contains the symbol sequence number
OrderID	20	4	Binary	The Order ID identifies a unique order.
Price	24	4	Binary	This field contains the price point. Use the Price scale from the symbol-mapping index.
Volume	28	4	Binary	This field contains the order quantity in shares
Side	32	1	ASCII	This field indicates the side of the order Buy/sell. Valid values: ■ 'B' – Buy ■ 'S' – Sell
OrderIDGTCIndicator	33	1	Binary	This field specifies if Trade Order ID is a GTC order ■ '0' – Day Order ■ '1'- GTC Order

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
TradeSession	34	1	Bit Field	Values: ▪ 0x01 Ok for morning hours ▪ 0x02 Ok for national hours (core) ▪ 0x03 OK for morning and core ▪ 0x04 Ok for late hours ▪ 0x06 OK for core and late ▪ 0x07 OK for morning, core, and late
FirmID	35	5	Binary	This field provides market participant's firm ID
Flags	40	1	Bit Field	Values: ▪ 0x00 - Solicited order ▪ 0x01 - Unsolicited order NOTE: This field is included for Global OTC only.

9. TRADE MESSAGE – MSG TYPE ‘220’

A Trade message is published as a result of an execution involving either visible or hidden liquidity.

Trade messages published by the NYSE Arca Integrated feed correspond to Trade messages published by Arca to the CTA.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 54 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 220 – Trade Message
SourceTime	4	4	Binary	This field specifies the time when the msg was generated in the order book. The number represents the number of seconds in UTC time (since EPOCH)
SourceTimeNS	8	4	Binary	This field specifies the number represents the nanosecond portion of UTC time (since EPOCH)
SymbolIndex	12	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	16	4	Binary	This field contains the symbol sequence number
TradeID	20	4	Binary	The TradeID identifies a unique transaction in the matching and allows you to correlate execution reports to the last sale.
Price	24	4	Binary	This field specifies the price of the order. Use the Price scale from the symbol mapping index.
Volume	28	4	Binary	Volume of the trade in actual shares
TradeCond1	32	1	ASCII	This field contains a settlement related conditions. Valid values: ■ ‘@’ - Regular Sale ■ ‘C’ – Cash ■ ‘N‘– Next Day Trade ■ ‘R’ – Seller
TradeCond2	33	1	ASCII	This field contains a the Reason for Trade Through Exemptions. Valid values:

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				■ '0x20' – N/A ■ 'F' – Intermarket Sweep Order ■ 'O' – Market Center Opening Trade ■ '4' – Derivatively Priced ■ '5' – Market Center Reopening Trade ■ '6' – Market Center Closing Trade ■ '9' – Corrected Last Sale Price
TradeCond3	34	1	ASCII	This field contains extended hours/sequencing related conditions. Valid values: ■ '0x20' – N/A ■ 'L' – Sold Last ■ 'T' – Extended Hours Trade ■ 'U' – Extended Hours Sold (Out of Sequence) ■ 'Z' – Sold
TradeCond4	35	1	ASCII	This field contains the SRO Required Detail. Valid values: ■ '@' - Regular Sale ■ '0x20' – N/A ■ 'B' – Average Price Trade ■ 'E' – Automatic Execution ■ 'H' – Price Variation Trade ■ 'I' – Odd Lot Trade ■ 'M' – Official Closing Price ■ 'P' – Prior Reference Price ■ 'Q' – Official Open Price ■ 'V' – Stock-Option Trade ■ 'X' – Cross Trade
Trade Through Exempt	36	1	ASCII	■ 'X' – 611 Trade through Exempt ■ '0x20' – N/A
LiquidityIndicatorFlag	37	1	Binary	This field indicates which side added liquidity to the trade. Bit Shift values: ■ 0x01 Buy Side ■ 0x02 Sell Side ■ 0x04 No Liquidity added
Ask Price	38	4	Binary	This field specifies the Ask price of the last quote at the time of the trade. Use the Price scale from the symbol

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				mapping index.
Ask Volume	42	4	Binary	This field contains the Ask size of the last quote at the time of the trade
Bid Price	46	4	Binary	This field specifies the Bid price of the last quote at the time of the trade. Use the Price scale from the symbol mapping index.
Bid Volume	50	4	Binary	This field contains the Bid size of the last quote at the time of the trade

10. TRADE CANCEL OR BUST MESSAGE – MSG TYPE '221'

In the event that an earlier Trade has been reported in error, a Trade Cancel message is sent to delete the Trade.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 24 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 221 – Trade Cancel or Bust Message
SourceTime	4	4	Binary	This field specifies the time when the msg was generated in the order book. The number represents the number of seconds in UTC time (since EPOCH)
SourceTimeNS	8	4	Binary	This field specifies the number represents the nanosecond portion of UTC time (since EPOCH)
SymbolIndex	12	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	16	4	Binary	This field contains the symbol sequence number
OriginalTradeID	20	4	Binary	This field is the TradeID of the original trade marked as a correction by this message.

11. TRADE CORRECTION MESSAGE – MSG TYPE ‘222’

NOTE: This message type is not currently used for Global OTC, but may be in a future release.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 41 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 222 – Trade Correction Message
SourceTime	4	4	Binary	This field specifies the time when the msg was generated in the order book. The number represents the number of seconds in UTC time (since EPOCH)
SourceTimeNS	8	4	Binary	This field specifies the number represents the nanosecond portion of UTC time (since EPOCH)
SymbolIndex	12	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	16	4	Binary	This field contains the symbol sequence number
OriginalTradeID	20	4	Binary	This field is the source sequence number of the original trade marked as a correction by this message.
TradeID	24	4	Binary	The LinkID identifies a unique transaction in the matching and allows you to correlate execution reports to the last sale.
Price	28	4	Binary	This field specifies the price of the order. Use the Price scale from the symbol mapping index.
Volume	32	4	Binary	Volume of the trade in actual shares
TradeCond1	36	1	ASCII	This field contains a settlement related conditions. Valid values: ■ ‘@’ - Regular Sale ■ ‘C’ – Cash ■ ‘N‘– Next Day Trade ■ ‘R’ – Seller
TradeCond2	37	1	ASCII	This field contains a the Reason for Trade Through Exemptions. Valid values: ■ ‘0x20’ – N/A ■ ‘F’ – Intermarket Sweep Order

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				■ ‘O’ – Market Center Opening Trade ■ ‘4’ – Derivatively Priced ■ ‘5’ – Market Center Reopening Trade ■ ‘6’ – Market Center Closing Trade
TradeCond3	38	1	ASCII	This field contains extended hours/sequencing related conditions. Valid values: ■ ‘0x20’ – N/A ■ ‘L’ – Sold Last ■ ‘T’ – Extended Hours Trade ■ ‘U’ – Extended Hours Sold (Out of Sequence) ■ ‘Z’ – Sold
TradeCond4	39	1	ASCII	This field contains the SRO Required Detail. Valid values: ■ ‘@’ - Regular Sale ■ ‘0x20’ – N/A ■ ‘B’ – Average Price Trade ■ ‘E’ – Automatic Execution ■ ‘H’ – Price Variation Trade ■ ‘I’ – CAP Election Trade ■ ‘M’ – Official Closing Price ■ ‘P’ – Prior Reference Price ■ ‘Q’ – Official Open Price ■ ‘V’ – Stock-Option Trade ■ ‘X’ – Cross Trade
Trade Through Exempt	40	1	ASCII	‘X’ – 611 Trade through Exempt ‘0x20’ – N/A

12. STOCK SUMMARY MESSAGE – MSG TYPE '223'

NOTE: This message type is not currently used for Global OTC, but may be in a future release.

The stock summary message is sent on a separate channel from the main feed every one minute, regardless of whether the information has changed to or not.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 36 bytes
Msg Type	2	2	Binary	This field identifies the type of message. 223 – Stock Summary Message
SourceTime	4	4	Binary	This field specifies the time when the msg was generated in the order book. The number represents the number of seconds in UTC time (since EPOCH)
SourceTimeNS	8	4	Binary	This field specifies the number represents the nanosecond portion of UTC time (since EPOCH)
SymbolIndex	12	4	Binary	This field identifies the numerical representation of the symbol.
HighPrice	16	4	Binary	This field specifies the exchange high price of the stock for the day. Use the Price scale from the symbol mapping index.
LowPrice	20	4	Binary	This field specifies the exchange Low price of the stock for the day. Use the Price scale from the symbol mapping index.
Open	24	4	Binary	This field specifies the exchange Opening price of the stock for the day. Use the Price scale from the symbol mapping index.
Close	28	4	Binary	This field specifies the exchange Closing price of the stock for the day. Use the Price scale from the symbol mapping index.
TotalVolume	32	4	Binary	This field specifies the exchange cumulative volume for the stock throughout the day.

13. IMBALANCE MESSAGE– MSG TYPE '105'

Imbalance messages are sent periodically to update price and volume information during auctions.

See Imbalance Calculation below for more information.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 52 Bytes
Msg Type	2	2	Binary	This field identifies the type of message. 105 – Imbalance Message
SourceTime	4	4	Binary	This field specifies the time when the msg was generated in the order book. The number represents the number of seconds in UTC time (since EPOCH)
SourceTimeNS	8	4	Binary	This field represents the nanosecond offset from the time reference second in UTC time (EPOCH)
SymbolIndex	12	4	Binary	This field identifies the numerical representation of the symbol.
SymbolSeqNum	16	4	Binary	This field contains the symbol sequence number
ReferencePrice	20	4	Binary	The Reference Price is the Last Sale if the last sale is at or between the current best quote. Otherwise the Reference Price is the Bid Price if last sale is lower than Bid price, or the Offer price if last sale is higher than Offer price.
PairedQty	24	4	Binary	This field contains the paired off quantity at the reference price point
TotalImbalanceQty	28	4	Binary	This field contains the total imbalance quantity at the reference price point. Please note that Total Imbalance Quantity could be negative.
MarketImbalanceQty	32	4	Binary	This field indicates the total market order imbalance at the reference price
AuctionTime	36	2	Binary	Projected Auction Time (hhmm)
AuctionType	38	1	ASCII	■ 'O' – Open (4am) Arca Only ■ 'M' – Market (9:30am) ■ 'H' - Halt ■ 'C' – Closing ■ 'R' – Regulatory Imbalance
ImbalanceSide	39	1	ASCII	This field indicates the side of the imbalance Buy/sell. Valid Values: ■ 'B' – Buy

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				■ 'S' – Sell ■ Space – No imbalance Note: This field is a future enhancement and will have a '0' value until it is implemented.
ContinuousBook ClearingPrice	40	4	Binary	The Continuous Book Clearing Price is defined as the price closest to last sale where imbalance is zero. If a Book Clearing Price is not reached, the Clearing Price, a zero will be published in the Book Clearing Price Field Note: This field is a future enhancement and will have a '0' value until it is implemented.
ClosingOnly ClearingPrice	44	4	Binary	This field contains the indicative price against closing only order only Note: This field is a future enhancement and will have a '0' value until it is implemented.
SSRFilingPrice	48	4	Binary	This field contains the SSR Filing Price. This price is the price at which Sell Short interest will be filed in the matching in the event a Sell Short Restriction is in effect for the security. Note: The SSR Filing price is based on the National Best Bid at 9:30am. This price remains static after the SSR Filing price has been determined. Note: This field is a future enhancement and will have a '0' value until it is implemented.

13.1 IMBALANCE CALCULATION

NYSE Arca and Global OTC each conduct three single-price auctions during the day: the Opening Auction, the Market Order Auction and the Closing Auction. As a part of the auction process, the indicative match price, indicative match volume and the auction imbalance are continually calculated and disseminated.

These auctions are conducted for NYSE Arca primary listings and for eligible Global OTC securities.

Table 6 Imbalance Calculation

<table>
<tr><th>MESSAGE TYPE</th><th>DESCRIPTION</th></tr>
<tr><td>Limit Order Opening Auction</td><td>Interest Included
All order types are eligible to participate in the Opening Auction with the exception of Passive Liquidity (PL), Midpoint Passive Liquidity (MPL) and Discretionary orders. Only Limit Orders that are eligible for the Opening Session will participate in the Opening Auction.
Order Cancellation
Orders that participate in the Opening Auction cannot be canceled during the conclusion of the auction. For NYSE Arca, this is between 3:59 a.m. ET and 4:00 a.m. ET. For Global OTC, it is between 7:59 a.m. ET and 8:00 a.m. ET.
Calculation
■ The Opening Auction will occur at the Indicative Match Price — the price at which the maximum volume of orders is executable at the time of the auction.
■ If two or more prices can maximize executable volume, the Opening Auction occurs at the price closest to the previous closing price in an effort to maintain continuity. In such a situation, for the purpose of determining the indicative match price, NYSE Arca uses the maximum size of both sides and displays the price closest to the previous close at the larger aggregate size.
■ Unexecuted orders become eligible for the Opening Session immediately upon conclusion of the Opening Auction.
Reference Price - The price at which the maximum volume of shares are executable.
Continuous Book Clearing Price - Field is set to zero, this is a future enhancement.
SSR Filing Price - Field is set to zero. For Arca, this is a future enhancement.</td></tr>
<tr><td>Market Order Opening Auction</td><td>Eligible Symbols
■ The Market Order Auction is run for NYSE Arca primary listed stocks, NYSE listed stock subject to a sub-penny trading conditions and exchange listed ETFs and ETNs. Auction specific order types, such as Limit on Open or Market on Open if submitted in non-NYSE Arca listed symbols are rejected. Market Orders submitted in non-NYSE Arca listed symbols are routed to the primary listing exchange.
■ For Global OTC, the Closing Auction is run for eligible Global OTC traded stocks.
Interest Included
■ Limit Orders (eligible for either the Opening Session and/or National hours</td></tr>
</table>

MESSAGE TYPE	DESCRIPTION
	Trading Session) ■ Market Orders and auction-only limit orders will participate in the Market Order Auction. **Calculation** ■ The match price is the price that maximizes the volume that can be executed. ■ The Market Order Auction will use the match price closest to the closing price of the previous trading day (based on normal market hours) if more than one indicative match price is valid. ■ Imbalances and indicative match prices in the Market Order Auction reflect market orders only. In the following examples, the limit orders are "auction only" limit orders. **Reference Price** - The price at which the maximum volume of shares are executable. **Continuous Book Clearing Price** - Field is set to zero, this is a future enhancement. **SSR Filing Price** - Field is set to zero. For Arca, this is a future enhancement.
Closing Auction	**Eligible Symbols** ■ For NYE Arca, the Closing Auction is run for NYSE Arca primary listed stocks, NYSE listed stocks subject to a sub-penny trading conditions and exchange listed ETFs and ETNs. Auction specific order types, such as Limit on Close or Market on Close, submitted for ineligible symbols are rejected. ■ For Global OTC, the Closing Auction is run for eligible Global OTC traded stocks. **Interest Included** ■ All MOC/LOC interest eligible for the close will be included ■ Auction Only Orders ■ The non-displayed portions of reserve orders, will participate in the NYSE Arca Closing Auction. ■ The reserve portion of an order will not display in the indicative matched volume, but will contribute to the indicative match price. **Calculation** ■ If there are no order imbalances, orders will be executed in the Closing Auction at the Indicative Match Price as of 4:00 p.m. ET. ■ The indicative match price will be the price at which the maximum number of shares in the total imbalance can execute. **Further rules for NYSE Arca** ■ If there are multiple prices at which the total imbalance can equally execute, the indicative price will be based on the price closest to the Consolidated Tape last sale.

MESSAGE TYPE	DESCRIPTION
	■ If the price closest to the Consolidated Tape last sale would trade through the NYSE Arca Book, the indicative match price will be the best price available where no trade through occurs. **Reference Price** - The price at which the maximum volume of shares are executable. **Continuous Book Clearing Price** - Field is set to zero, this is a future enhancement. **Closing Only Clearing Price** - Field is set to zero, this is a future enhancement.

13.2 IMBALANCE PUBLICATION TIMES

Imbalance updates are published in real time during the following time periods

Table 7 Imbalance Publication Times

MESSAGE	NYSE ARCA	GLOBAL OTC
Opening Imbalances	3:30 a.m. ET - 4:00 a.m. ET	7:30 a.m. ET - 8:00 a.m. ET
Market Imbalances	4:00a.m. ET - 9:30 a.m. ET	8:00a.m. ET - 9:30 a.m. ET
Closing Imbalances	3:00 p.m. ET - 4:00 p.m. ET	3:00 p.m. ET - 4:00 p.m. ET

14. POSSIBLE MESSAGE SEQUENCES

Events with Add Order Messages:

- A) 100 share Buy Order entered at $49.99 for stock ABC
- B) 400 share Sell Order entered at $30.00 for stock XYZ
- C) 500 share execution ABC at$49.99 for Stock ABC
- D) 200 share cancel at $30.00 for stock XYZ
- E) Time Reference Message Stock XYZ

Based on the example above, the following would be the following messages received

EVENT	MSGSEQNUM	MSGTYPE	SYMBOLSEQNUM	SYMBOL	MESSAGE
A	1	100	50	ABC	Add Order
B	2	100	32	XYZ	Add Order
C	4	103	52	ABC	Execution
D	5	220	53	ABC	Trade
E	6	102	33	XYZ	Delete
F	7	2	34	XYZ	Time Reference

Events with Attributed Add Order Messages:

- A) 100 share Buy Order entered at $50.00 for stock ABC
- B) 300 share Sell Order entered at $50.00 for stock ABC
- C) 100 share execution ABC at$50.00 for Stock ABC
- D) 200 share cancel at $50.00 for stock ABC
- E) Time Reference Message Stock ABC

Based on the example above, the following would be the following messages received

EVENT	MSGSEQNUM	MSGTYPE	SYMBOLSEQNUM	SYMBOL	MESSAGE
A	1	107	50	ABC	Attributed Add Order
B	2	107	32	ABC	Attributed Add Order
C	4	103	52	ABC	Execution
D	5	220	53	ABC	Trade
E	6	102	33	ABC	Delete
F	7	2	34	ABC	Time Reference

Events with Attributed Add Order Messages:

- A) 500 share Buy Order entered at $50.00 for stock ABC
- B) 300 share Sell Order entered at $50.00 for stock ABC
- C) 300 share execution ABC at$50.00 for Stock ABC
- D) 200 shares post to the book at $50.00 for stock ABC
- E) Time Reference Message Stock ABC

Based on the example above, the following would be the following messages received

EVENT	MSGSEQNUM	MSGTYPE	SYMBOLSEQNUM	SYMBOL	MESSAGE
A	1	107	50	ABC	Attributed Add Order
B	2	107	32	ABC	Attributed Add Order
C	4	103	52	ABC	Execution
D	5	220	53	ABC	Trade
E	6	108	33	ABC	Attributed Add Order Refresh
F	7	2	34	ABC	Time Reference

15. PRODUCT ID

Table 8 describes the Product IDs associated with NYSE Arca and Global OTC Integrated Feed.

Table 8 Product ID

EXCHANGE	PRODUCT ID	DESCRIPTION
NYSE Arca	157	NYSE Arca Integrated Feed
Global OTC	170	Global OTC Integrated Feed