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## **XDP INTEGRATED FEED CLIENT SPECIFICATION**

**NYSE AMERICAN INTEGRATED FEED**

**NYSE ARCA INTEGRATED FEED**

**NYSE NATIONAL INTEGRATED FEED**

**NYSE INTEGRATED FEED\***

Version

2.1g

Date

January 29, 2018

\*There may be changes to the NYSE auction rules when NYSE Tape A symbols migrate to Pillar in 2018. Any such changes are not expected to affect the other NYSE equity markets.

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## PREFACE

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### DOCUMENT HISTORY

VERSION NO.	DATE	CHANGE DESCRIPTION
2.1	1/13/2017	Added RPI message Removed references to obsolete Session Change message Added Cross Type field value E in the Cross Trade message Updated order entry correlations with Order ID and Trade ID fields Added Reference Price field to Imbalance message Updated Appendix A: Information on Auctions
2.1a	5/8/2017	Added 5 fields to the Imbalance message (type 105) supporting LULD amendment 12 (day 1, defaulted to 0) Corrected tables of trading and publication times Updated contact information
2.1b	5/26/2017	Corrected the size of the Low Collar field in the Imbalance message to 4 bytes Clarified that the Imbalance Side field pertains to the Total Imbalance Qty field Clarified that Qty fields are truncated to round lots for NYSE Clarified that the 2 clearing price fields will be initially 0
2.1c	8/14/2017	Updated Add Order message description regarding Order IDs
2.1d	9/22/2017	<b>v2.1d contains no changes in feed behavior, only spec clarifications</b>  Updated Imbalance msg field descriptions and Appendix A to include specialized information for NYSE Tape A symbols
2.1e	9/27/2017	<b>no changes in feed behavior, only spec clarifications</b>  Added NYSE to message publication times Corrected description of DBExecID field for NYSE Tape A symbols
2.1f	11/20/2017	Updated the Imbalance the Clearing Price fields and 5 trailing fields – no longer set to 0 for Arca and American
2.1g	01/29/2018	<b>No change to the feed.</b> Added spec support for NYSE National.

### 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 Information](#)
- [NYSE Symbology](#)
- [IP Addresses](#)

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### FURTHER INFORMATION

For additional information about the product, visit the [XDP Imbalances Feed Product Page](#)

For updated capacity figures, visit our [capacity pages](#)

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# 1. XDP Integrated Feed Information

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## 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 at 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.

See Appendixes D and E for differences between XDP Integrated Book Feed version 1.0 and 2.0

## 1.2 CONTROL MESSAGE TYPES USED IN THE FEED

See the XDP Common Client Specification for details on all control messages.

MSG TYPE	DESCRIPTION	PUBLISHER CHANNELS	REQUEST CHANNEL	REFRESH CHANNELS
1	Sequence Number Reset	x		x
2	Time Reference	x		x
3	Symbol Index Mapping	x		x
10	Retransmission Request		client	
11	Request Response		server	
12	Heartbeat Response		client	
13	Symbol Index Mapping Request		client	
15	Refresh Request		client	
31	Message Unavailable		server	
32	Symbol Clear	x		
34	Security Status Message	x		x
35	Refresh Header Message			x

### 1.3 MESSAGE PUBLICATION TIMES

All times are US Eastern Time. Early Close Days end at 1:00pm ET for all markets.

#### Integrated Feed Message Types

MSG TYPE	DESCRIPTION	HOURS
100	Add Order Message	
101	Modify Order Message	<b>NYSE Arca</b>
104	Replace Order Message	3:30am – 8:00pm
102	Delete Order Message	<b>NYSE American</b>
112	Trade Cancel Message	6:30am – 8:00pm
111	Cross Trade Message	<b>NYSE National</b>
113	Cross Correction Message	6:30am – 8:00pm
114	Retail Price Improvement Msg	<b>NYSE Tape A</b> <b>NYSE Tapes B&amp;C</b>
106	Add Order Refresh Message	6:30am – 4:00pm      6:30am – 4:00pm
105	Imbalance Message	<b>See Section A.1.2</b>
103	Order Execution Message	<b>NYSE Arca</b>
110	Non-Displayed Trade Message	4:00am – 8:00pm <b>NYSE Tape A</b>
223	Stock Summary Message	<b>NYSE American</b> 9:30am – 4:00pm
		7:00am – 8:00pm <b>NYSE Tapes B&amp;C</b>
		7:00am – 8:00pm      7:00am – 4:00pm

**Control Message Types** - See the XDP Common Client Specification for details

MSG TYPE	DESCRIPTION	HOURS
1	Sequence Number Reset	
2	Time Reference	
3	Symbol Index Mapping	12:30am – 8:00pm
32	Symbol Clear	
34	Security Status Message	<b>NYSE Arca</b> <b>NYSE Tape A</b>
		12:30am – 8:00pm      12:30am – 4:00pm
		<b>NYSE American</b> <b>NYSE Tapes B&amp;C</b>
		12:30am – 8:00pm      12:30am – 4:00pm
		<b>NYSE American</b>
		12:30am – 8:00pm

## 2. Add Order Message – Msg Type 100

An Add Order message is published when a new visible order has been received and added to the book. The Order ID is assigned by the matching engine and is good for today only. It is unique across all markets, except that for NYSE Tape A symbols, it is only unique per matching engine instance.

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
<b>Msg Size</b>	0	2	Binary	Size of the message: 39 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 100 – Add Order Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>OrderID</b>	16	8	Binary	The unique ID assigned by the matching engine to this order . Can be used to match this message to the gateway Order Report.
<b>Price</b>	24	4	Binary	The order price. Use with the Price Scale from the symbol-mapping index.
<b>Volume</b>	28	4	Binary	The order quantity in shares
<b>Side</b>	32	1	ASCII	The side of the order (Buy/Sell). Valid values: <ul style="list-style-type: none"> <li>▪ 'B' – Buy</li> <li>▪ 'S' – Sell</li> </ul>
<b>FirmID</b>	33	5	ASCII	The market participant's firm ID. Blank-filled if a firm ID was not specified.
<b>NumParitySplits</b>	38	1	Binary	Defaulted to 0. Future use by NYSE only. Resulting number of splits at this price level <ul style="list-style-type: none"> <li>▪ 0 = The number of parity splits at this price level is between 1 and 4 inclusive</li> <li>▪ 5-254 = The number of parity splits at this price level</li> <li>▪ 255 = 255 or more splits at this price level</li> </ul>

### 3. Modify Order Message – Msg Type 101

A Modify Order message is sent when the price or volume of an order is changed due to an event other than a cancel-replace, or full or partial execution. The content of the price and volume fields represent the new values after modification.

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
<b>Msg Size</b>	0	2	Binary	Size of the message: 35 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 101 – Modify Order Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>OrderID</b>	16	8	Binary	The unique ID assigned by the matching engine to the order to be modified
<b>Price</b>	24	4	Binary	The new order price. Use the Price scale from the symbol mapping index.
<b>Volume</b>	28	4	Binary	The new order quantity in shares.
<b>PositionChange</b>	32	1	Binary	Currently defaulted to 0. <ul style="list-style-type: none"> <li>▪ 0 – Kept position in book</li> <li>▪ 1 – Lost position in book</li> </ul>
<b>PrevPriceParitySplits</b>	33	1	Binary	Defaulted to 0. Future use by NYSE only. Resulting number of splits at the previous price <ul style="list-style-type: none"> <li>▪ 0 = The number of parity splits at this price level is between 1 and 4 inclusive</li> <li>▪ 5-254 = The number of parity splits at this price level</li> <li>▪ 255 = 255 or more splits at this price level</li> </ul>
<b>NewPriceParitySplits</b>	34	1	Binary	Defaulted to 0. Future use by NYSE only. Resulting number of splits at the new price <ul style="list-style-type: none"> <li>▪ (If price does not change, same as PrevPriceParitySplits)</li> </ul> Values same as PrevPriceParitySplits

## 4. Replace Order Message – Msg Type 104

A Replace Order message is published when a cancel/replace order is received and executed. The sitting order is replaced with a new one containing the same symbol, side and attribution, a new Order ID, and the price and size specified. The sitting order must be removed from the book and replaced with the new order.

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
<b>Msg Size</b>	0	2	Binary	Size of the message: 42 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 104 – Replace Order Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>OrderID</b>	16	8	Binary	The unique ID assigned by the matching engine to the existing order to be replaced
<b>NewOrderID</b>	24	8	Binary	The new Order ID of the replacement order
<b>Price</b>	32	4	Binary	The new order price. Use the Price scale from the symbol mapping index.
<b>Volume</b>	36	4	Binary	The new order quantity in shares.
<b>PrevPriceParitySplits</b>	40	1	Binary	Defaulted to 0. Future use by NYSE only. Resulting number of splits at the previous price <ul style="list-style-type: none"> <li>▪ 0 = The number of parity splits at this price level is between 1 and 4 inclusive</li> <li>▪ 5-254 = The number of parity splits at this price level</li> <li>▪ 255 = 255 or more splits at this price level</li> </ul>
<b>NewPriceParitySplits</b>	41	1	Binary	Defaulted to 0. Future use by NYSE only. Resulting number of splits at the new price <ul style="list-style-type: none"> <li>▪ (If price does not change, same as PrevPriceParitySplits)</li> </ul> Values same as PrevPriceParitySplits



## 5. Delete Order Message – Msg Type 102

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A Delete Order message is published when an order is taken off of the book for any reason except for full execution, in which case an Order Execution message is sent.

Immediately before a trading session changes (eg: Early session to Core session), all orders that were submitted for the current or current+previous sessions are explicitly deleted with a Delete Order message.

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

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 25 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 102 – Delete Order Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>OrderID</b>	16	8	Binary	The unique ID assigned by the matching engine to the existing order to be deleted
<b>NumParitySplits</b>	24	1	Binary	Defaulted to 0. Future use by NYSE only. Resulting number of splits at the price level of the deleted order <ul style="list-style-type: none"> <li>▪ 0 = The number of parity splits at this price level is between 1 and 4 inclusive</li> <li>▪ 5-254 = The number of parity splits at this price level</li> <li>▪ 255 = 255 or more splits at this price level</li> </ul>

## 6. Order Execution Message – Msg Type 103

An Order Execution message is sent when an 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.

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

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 42 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 103 – Order Execution Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>OrderID</b>	16	8	Binary	The unique ID assigned by the matching engine to the partially or fully executed order .
<b>TradeID</b>	24	4	Binary	Unique ID assigned by the matching engine to this execution. Used by any subsequent Trade Cancel message to identify this execution. Can be matched to the Deal ID field in the gateway Execution Report (see Common Client Spec, section 3.6).
<b>Price</b>	28	4	Binary	The execution price of this trade. Use the Price Scale from the symbol mapping index.
<b>Volume</b>	32	4	Binary	The executed quantity in shares
<b>PrintableFlag</b>	36	1	Binary	<ul style="list-style-type: none"> <li>▪ 0 = Not Printed to the SIP</li> <li>▪ 1 = Printed to the SIP</li> </ul>
<b>NumParitySplits</b>	37	1	Binary	<p>Defaulted to 0. Future use by NYSE only.</p> <p>Resulting number of splits at the price level at which the executed order was resting</p> <ul style="list-style-type: none"> <li>▪ 0 = 1 to 4 parity splits at this price level</li> <li>▪ 5-254 = The number of splits at this price level</li> <li>▪ 255 = 255 or more splits at this price level</li> <li>▪</li> </ul>

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>DBExecID</b>	38	4	Binary	For Pillar-powered markets, unused, defaulted to 0. For NYSE Tape A symbols, DB ExecID is assigned by the matching engine to all orders that participated in this trade event. Correlates with the DBExecID field in the gateway Execution Ack msg.

## 7. Non-Displayed Trade Message – Msg Type 110

An Non Displayed Trade message is sent as a result of a match between two non-displayed orders.

Customers who are only interested in building a book of displayed orders may safely ignore Non-Displayed Trade messages. Customers who are creating statistics or displays requiring the full record of trades in this market will need to process Non-Displayed Trade messages.

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

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 33 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 110 – Non-Displayed Trade Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>TradeID</b>	16	4	Binary	Unique ID assigned by the matching engine to this trade event. Used by any subsequent Trade Cancel message to identify this execution. Can be matched to the Deal ID field in the gateway Execution Report (see Common Client Spec, section 3.6).
<b>Price</b>	20	4	Binary	The execution price of the trade. Use the Price scale from the symbol mapping index.
<b>Volume</b>	24	4	Binary	Volume of the trade in shares
<b>PrintableFlag</b>	28	1	Binary	<ul style="list-style-type: none"> <li>▪ 0 = Not Printed to the SIP</li> <li>▪ 1 = Printed to the SIP</li> </ul>
<b>DBExecID</b>	29	4	Binary	For Pillar-powered markets, unused, defaulted to 0.  For NYSE Tape A symbols, DB ExecID is assigned by the matching engine to all orders that participated in this trade event. Correlates with the DBExecID field in the gateway Execution Ack msg.

## 8. Trade Cancel Message – Msg Type 112

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In the event that an earlier trade has been reported in error, a Trade Cancel message is sent. This occurs whether the initial report was an Order Execution or a Non-Displayed Trade message.

Note that since Trade Cancel messages only affect trades that occurred in the past, customers who are only interested in building a book may safely ignore them.

Customers who are building a complete record of today's trades should remove the cancelled trade from their records and subtract its volume from any statistics.

See the XDP Common Client Specification for details on Time Reference and Symbol Index Mapping messages.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 20 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 112 – Trade Cancel Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>TradeID</b>	16	4	Binary	The TradeID of the original Trade or Execution message to be cancelled.

## 9. Retail Price Improvement Message – Msg Type 114

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Published when RPI interest (hidden retail price improvement interest) is added or removed between the best bid and best offer price. When all RPI interest for this security is removed from the book, An RPI message with RPIIndicator = ' ' (space character) is published.

See the XDP Common Client Specification for details on Time Reference and Symbol Index Mapping messages.

Note: This message type will not be published for NYSE Tape A symbols until they transition to trading on Pillar in 2018.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 17 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 114 – Retail Price Improvement Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>RPIIndicator</b>	16	1	ASCII	The side(s) where Retail Price Improvement orders (RPI orders) exist. Valid values correspond to CQS values: <ul style="list-style-type: none"> <li>▪ ' ' – Space means no retail interest (default)</li> <li>▪ A – Retail interest on the bid side</li> <li>▪ B – Retail interest on the offer side</li> <li>▪ C – Retail interest on the bid and offer sides</li> </ul>

## 10. Cross Trade Message – Msg Type 111

A Cross Trade message is published on completion of a crossing auction, and shows the bulk volume that traded in the auction. The Reason Code field indicates the auction type. Additionally, a non-printable Order Execution or Trade message will be published for each order that traded.

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
<b>Msg Size</b>	0	2	Binary	Size of the message: 29 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 111 – Cross Trade Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>CrossID</b>	16	4	Binary	Unique identifier for this Cross Trade. Used in Cross Correction message to identify the Cross Trade to correct.
<b>Price</b>	20	4	Binary	The execution price. Use the Price scale from the symbol mapping index.
<b>Volume</b>	24	4	Binary	Volume executed in shares
<b>CrossType</b>	28	1	ASCII	Reason for the crossing auction. Valid values: <ul style="list-style-type: none"> <li>▪ E – Market Center Early Opening Auction</li> <li>▪ O – Market Center Opening Auction</li> <li>▪ 5 – Market Center Reopening Auction</li> <li>▪ 6 – Market Center Closing Auction</li> </ul>

## 11. Cross Correction Message – Msg Type 113

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In the event that an earlier Cross Trade has been reported in error, a Cross Correction message is sent.

Note that since Cross Correction messages only affect cross auctions that occurred in the past, customers who are only interested in building a book may safely ignore them.

Customers who are building a complete record of today's volume should remove the previously reported volume from their statistics and add the volume of the Cross Correction to them.

See the XDP Common Client Specification for details on Time Reference and Symbol Index Mapping messages.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 24 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 113 – Cross Correction Message
<b>SourceTimeNS</b>	4	4	Binary	The nanosecond offset from the Time Reference second (since Jan 1, 1970 00:00:00 UTC)
<b>SymbolIndex</b>	8	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	12	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>CrossID</b>	16	4	Binary	The CrossID of the original Cross Trade message to be corrected.
<b>Volume</b>	20	4	Binary	The corrected volume of Cross Trade message.



## 12. Imbalance Message – Msg Type 105

Imbalance messages are sent periodically during auctions to update price and volume information. If there is no change to the calculated fields, no message will be generated. See APPENDIX A:Information on Auctions for details on the auction process in the NYSE, Arca, and American markets.

See the XDP Common Client Specification for details on Symbol Index Mapping messages and Price field format.

**NOTE: For NYSE, the last 5 new fields from offset 56 on will initially be set to 0. They will be fully populated in a future release.**

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 67 bytes
<b>Msg Type</b>	2	2	Binary	This field identifies the type of message. 105 – Imbalance Message
<b>SourceTime</b>	4	4	Binary	The time when this msg was generated in the order book, in seconds since Jan 1, 1970 00:00:00 UTC.
<b>SourceTimeNS</b>	8	4	Binary	The nanosecond offset from the Source Time
<b>SymbolIndex</b>	12	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	16	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>ReferencePrice</b>	20	4	Binary	For Pillar-powered markets, the Reference Price is used to calculate the Indicative Match Price. See Information on Auctions for details.  For NYSE Tape A symbols, 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 the last sale is lower than Bid price, or the Offer price if the last sale is higher than Offer price. (see Information on Auctions for details)
<b>PairedQty</b>	24	4	Binary	For Pillar-powered markets, the number of shares paired off at the Indicative Match Price.  For NYSE, the number of shares paired off at the Reference Price, truncated to the nearest round lot quantity. E.g. 1575 shares is published as 1500.
<b>TotalImbalanceQty</b>	28	4	Binary	For Pillar-powered markets, the total imbalance quantity at the Indicative Match Price.  For NYSE, the total imbalance quantity at the

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				Reference Price, truncated to the round lot. E.g. 1575 shares is published as 1500.
<b>MarketImbalanceQty</b>	32	4	Binary	For Pillar-powered markets, the total market order imbalance quantity at the Indicative Match Price.  For NYSE, unused and defaulted to 0.
<b>AuctionTime</b>	36	2	Binary	Projected Auction Time (hhmm)
<b>AuctionType</b>	38	1	ASCII	<ul style="list-style-type: none"> <li>▪ O – Early Opening Auction (non-NYSE only)</li> <li>▪ M – Core Opening Auction</li> <li>▪ H – Reopening Auction (Halt resume)</li> <li>▪ C – Closing Auction</li> <li>▪ R – Regulatory Imbalance (NYSE only)</li> </ul>
<b>ImbalanceSide</b>	39	1	ASCII	The side of the TotalImbalanceQty <ul style="list-style-type: none"> <li>▪ B – Buy side</li> <li>▪ S – Sell side</li> </ul> Space – No imbalance.
<b>ContinuousBook ClearingPrice</b>	40	4	Binary	For Pillar-powered markets, the price at which all interest on the book can trade, including auction and imbalance offset interest, and disregarding auction collars  For NYSE, the indicative matching price, i.e. the price closest to the reference price where the imbalance is 0. If a continuous book clearing price is not reached, it is defaulted to 0.
<b>ClosingOnly ClearingPrice</b>	44	4	Binary	For Pillar-powered markets, the price at which all eligible auction-only interest would trade, subject to auction collars  For NYSE, the price closest to the reference price where the imbalance of closing-only interest is 0. If a closing-only clearing price is not reached, it is defaulted to 0.
<b>SSRFilingPrice</b>	48	4	Binary	For Pillar-powered markets, not supported and defaulted to 0.  For NYSE, the price at which Sell Short interest in the opening auction will be filed if a Sell Short Restriction is in effect for the security.
<b>IndicativeMatchPrice</b>	52	4	Binary	For Pillar-powered markets, the price that has the highest executable volume of auction-eligible

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				<p>shares, subject to auction collars. It includes the non-displayed quantity of Reserve Orders.</p> <p>See Information on Auctions for details.</p> <p>For NYSE, set to 0.</p>
<b>UpperCollar</b>	56	4	Binary	<p>If the IndicativeMatchPrice is not strictly between the UpperCollar and the LowerCollar, special auction rules apply. See Rule 7.35P for details.</p> <p><b>For NYSE, set to 0 till a date TBA</b></p>
<b>LowerCollar</b>	60	4	Binary	<p>If the IndicativeMatchPrice is not strictly between the UpperCollar and the LowerCollar, special auction rules apply. See Rule 7.35P for details.</p> <p><b>For NYSE, set to 0 till a date TBA</b></p>
<b>AuctionStatus</b>	64	1	Binary	<p>Indicates whether the auction will run</p> <p>0 - Will run as always for Open and Close</p> <p>1 - Will run, interest exists inside or at the collars or is fully paired off</p> <p>2 - Will not run because there is an imbalance through the collars</p> <p>3 - Will not run, will transition to the Closing auction instead</p> <p><b>For NYSE, set to 0 till a date TBA</b></p>
<b>FreezeStatus</b>	65	1	Binary	<p>0 - Imbalance freeze not yet in effect</p> <p>1 - Imbalance freeze is in effect</p> <p><b>For NYSE, set to 0 till a date TBA</b></p>
<b>NumExtensions</b>	66	1	Binary	<p>Number of times the halt period has been extended</p> <p><b>For NYSE, set to 0 till a date TBA</b></p>

## 13. Add Order Refresh Message – Msg Type 106

The Add Order Refresh message can be sent in either of two contexts:

- 1) If a client sends a Refresh Request to the Request Controller, an Add Order Refresh message is sent over the Refresh channels as part of the refresh response for every order currently sitting on the book.
- 2) If NYSE Operations refreshes a symbol, a Symbol Clear message is published, followed by a full refresh. The refresh includes an Add Order Refresh message for every order currently sitting on the book of the symbol.

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
<b>Msg Size</b>	0	2	Binary	Size of the message: 43 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 106 – Add Order Refresh Message
<b>SourceTime</b>	4	4	Binary	The time when this msg was generated in the order book, in seconds since Jan 1, 1970 00:00:00 UTC.
<b>SourceTimeNS</b>	8	4	Binary	The nanosecond offset from the SourceTime
<b>SymbolIndex</b>	12	4	Binary	The ID of the symbol in the Symbol Index msg
<b>SymbolSeqNum</b>	16	4	Binary	The sequence number of this message in the set of all messages for this symbol
<b>OrderID</b>	20	8	Binary	The unique ID assigned by the matching engine to this order
<b>Price</b>	28	4	Binary	The order price. Use the Price scale from the symbol-mapping index.
<b>Volume</b>	32	4	Binary	The order quantity in shares
<b>Side</b>	36	1	ASCII	The side of the order (Buy/sell). Valid values: <ul style="list-style-type: none"> <li>▪ 'B' – Buy</li> <li>▪ 'S' – Sell</li> </ul>
<b>FirmID</b>	37	5	ASCII	The participant's firm ID, or blanks if firm ID was not specified
<b>NumParitySplits</b>	42	1	Binary	Future use. Defaulted to 0.

## 14. Stock Summary Message – Msg Type 223

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On a separate channel from the main feed, the Stock Summary channel, a Stock Summary message per symbol is sent every 60 seconds. The message is sent regardless of whether there has been a change to the symbol in the last 60 seconds or not.

See the XDP Common Client Specification for details on the Price field format.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
<b>Msg Size</b>	0	2	Binary	Size of the message: 36 bytes
<b>Msg Type</b>	2	2	Binary	The type of message: 223 – Stock Summary Message
<b>SourceTime</b>	4	4	Binary	The time when this msg was generated in the order book, in seconds since Jan 1, 1970 00:00:00 UTC.
<b>SourceTimeNS</b>	8	4	Binary	The nanosecond offset from the SourceTime
<b>SymbolIndex</b>	12	4	Binary	The ID of the symbol in the Symbol Index msg
<b>HighPrice</b>	16	4	Binary	The exchange high price of this stock for the day. Use the Price Scale in the symbol index msg.
<b>LowPrice</b>	20	4	Binary	The exchange Low price of this stock for the day. Use the Price Scale in the symbol index msg.
<b>Open</b>	24	4	Binary	The exchange Opening price of this stock for the day. Use the Price Scale in the symbol index msg.
<b>Close</b>	28	4	Binary	The exchange Closing price of this stock for the day. Use the Price Scale in the symbol index msg.
<b>TotalVolume</b>	32	4	Binary	The exchange cumulative volume for the stock throughout the day.

## APPENDIX A: Information on Auctions

### 14.1 NYSE AUCTIONS

The NYSE market runs auctions for NYSE-primaried (Tape A) symbols only. There are no auctions for Tape B & C symbols. Note that auction rules for NYSE under Pillar are not yet finalized.

AUCTION TYPE	DESCRIPTION
Opening	<p><b>Interest Included</b></p> <ul style="list-style-type: none"> <li>▪ All electronic interest eligible to trade in the opening auction</li> <li>▪ DMM interest as needed to offset the imbalance</li> </ul> <p><b>Order Cancellation</b></p> <ul style="list-style-type: none"> <li>▪ Orders can be cancelled at any time up to the conclusion of the auction</li> </ul> <p><b>Calculation</b></p> <p>The Reference Price is equal to the previous close unless there is a Rule 15 or Mandatory indication published, in which case</p> <ul style="list-style-type: none"> <li>▪ The Reference Price is the indication low price if the indication low price is higher than the previous close</li> <li>▪ The Reference Price is the indication high price if the indication high price is lower than the previous close</li> <li>▪ The Reference Price is the previous close if the previous close is within the indication range</li> </ul> <p>The Continuous Book Clearing Price is defaulted to 0 until 2 minutes before the opening auction time.</p>
Closing	<p><b>Interest Included</b></p> <ul style="list-style-type: none"> <li>▪ For Paired Quantity, Total Imbalance Quantity and Closing Only Clearing Price: <ul style="list-style-type: none"> <li>○ MOC and LOC orders</li> <li>○ Closing Only interest (when offsetting the imbalance)</li> <li>○ Discretionary orders in the last 5 minutes of the auction only</li> </ul> </li> <li>▪ For Continuous Book Clearing Price: <ul style="list-style-type: none"> <li>○ All electronic interest eligible to trade in the closing auction</li> <li>○ DMM interest as needed to offset the imbalance</li> </ul> </li> </ul> <p><b>Order Cancellation</b></p> <ul style="list-style-type: none"> <li>▪ Orders can be cancelled any time during the auction, except for MOC and LOC orders which can be cancelled only up to 2 minute before the conclusion of the auction.</li> </ul> <p><b>Calculation</b></p> <p>The Continuous Book Clearing Price is defaulted to 0 until 15 minutes before the closing auction time.</p>

## A.1 NYSE ARCA AND NYSE AMERICAN AUCTIONS

Three single-price auctions are conducted during the day: the Early Opening Auction, the Core Opening Auction and the Closing Auction. As a part of the auction process, the reference price, indicative match price, matched volume, total imbalance, and market imbalance are disseminated every second if there is any change from the previous second.

This appendix covers normal cases. For full detail on exception cases, see Rule 7.35P.

### Indicative Match Price Details

- The Indicative Match Price is the price that maximizes executable volume of auction-eligible shares, subject to Auction Collars.
- It includes the non-displayed quantity of Reserve Orders.
- If two or more prices maximize executable volume equally, in an effort to maintain continuity, the Indicative Match Price is whichever price is closest to the Reference Price.
- The final auction execution price is the Indicative Match Price at auction time.

### Imbalance Calculation

AUCTION TYPE	DESCRIPTION
Early Opening Auction	<p><b>Interest Included</b></p> <ol style="list-style-type: none"> <li>1. Limit Orders designated for the Early Trading Session.</li> <li>2. During the last minute before the Early Opening Auction time, the non-displayed quantity of Reserve Orders designated for the Early Open Auction is included in the Matched Volume and Total Imbalance Volume.</li> </ol> <p><b>Order Cancellation</b></p> <p>Orders can be cancelled at any time up to the conclusion of the auction.</p> <p><b>Reference Price</b></p> <ul style="list-style-type: none"> <li>▪ The Reference Price is normally the listing market's previous Official Closing Price. See Rule 7.35P for full detail.</li> </ul> <p>Unexecuted session 1 eligible orders become eligible for the Early Session immediately upon conclusion of the Early Opening Auction.</p>

<b>Core Opening and Re-Opening Auctions</b>	<p><b>Interest Included</b></p> <ol style="list-style-type: none"> <li>1. Limit, Market, MOO, LOO and Primary Peg orders</li> <li>2. During the last 5 seconds before the Core Opening Auction time, the non-displayed quantity of Reserve Orders is included in the Matched Volume and Total Imbalance Volume.</li> </ol> <p><b>Order Cancellation</b></p> <p>Orders can be cancelled any time during the auction, except for MOO and LOO orders which can be cancelled only up to 1 minute before the conclusion of the auction.</p> <p><b>Reference Price</b></p> <ul style="list-style-type: none"> <li>▪ The Reference Price is normally the midpoint of the NBBO. See Rule 7.35P for full detail.</li> </ul>
<b>Closing Auction</b>	<p><b>Interest Included</b></p> <ol style="list-style-type: none"> <li>1. Limit, Market, MOC, LOC and Primary Peg orders</li> <li>2. During the last minute before the Closing Auction time, the non-displayed quantity of Reserve Orders is included in the Matched Volume and Total Imbalance Volume.</li> </ol> <p><b>Reference Price</b></p> <ul style="list-style-type: none"> <li>▪ The Reference Price is normally the Consolidated Tape last sale.</li> </ul> <p>If the price closest to the Reference Price would trade through the exchange book, the indicative match price will be the best price available where no trade through occurs. See Rule 7.35P for full detail.</p>

### Imbalance Message Publication Times

For all markets, the initial publication of Symbol Index Mapping messages occurs shortly after system startup at approximately 12:30am ET.

DESCRIPTION	MARKET	NORMAL AUCTION PERIOD
<b>Early Opening Auction</b>	Arca	3:30am - 4:00am ET
	American	7:00am - 9:30am ET
<b>Core Opening Auction</b>	Arca American	8:00am - 9:30am ET
	NYSE	8:30am - 9:30am ET
<b>Closing Auction</b>	Arca American	3:00pm - 4:00pm ET
	NYSE	3:45pm - 4:00pm ET



## APPENDIX B: Trading Session Hours

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All times are US Eastern Time

MESSAGE	PUBLICATION PERIOD	PUBLICATION FREQUENCY
Early Session	Arca	4:00am – 9:30am ET
	American National	7:00am – 9:30am ET
Core Session	all markets	9:30am – 4:00pm ET
Late Session	Arca American National	4:00pm – 8:00pm ET

For all markets, on Early Closing Days, the Core session ends at 1:00pm, and there is no Late session.

## APPENDIX C: Product IDs

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Refresh and Retransmission Request messages must specify a Product ID. The correct product IDs for the Integrated feed follow.

EXCHANGE	PRODUCT ID	DESCRIPTION
NYSE	11	NYSE Integrated Feed
NYSE American	59	NYSE American Integrated Feed
NYSE National	109	NYSE National Integrated Feed
NYSE Arca	157	NYSE Arca Integrated Feed

## APPENDIX D: Scenarios For Integrated Feed version 2 vs. version 1

The following is a list of elementary scenarios to illustrate the changes in this major release. For each scenario, the list of expected msgs is shown in order of publication.

	SCENARIO	Existing XDP 1.0	XDP 2.0
1	<b>Client adds an order</b>	Add	Add
2	<b>Client adds an attributed order</b> <i>Basic Add msg handles attribution</i>	Attributed Add	Add(firmID)
3	<b>Client deletes an order</b>	Del	Del
4	<b>Client reduces the size of an order</b> <i>Position indicator replaces Reason Code</i>	Mod(pri,vol)	Mod (pri,vol)
5	<b>Client cancel-replace</b> <i>New Replace msg typically handles this scenario</i>	Mod(pri,vol)	Replace(pri,vol)
6	<b>Hidden liquidity executes</b> <i>New dedicated message type</i>	Trade(pri,vol)	NonDisplayedTrade(pri,vol)
7	<b>An order partially executes</b> <i>All execution events handled by one msg type</i>	Exe(pri,vol) Trade(pri,vol) Mod(pri,vol)	Exe(pri,vol)
8	<b>An order fully executes</b>	Exe(pri,vol) Trade(pri,vol) Del	Exe(pri,vol)
9	<b>An order executes (new price)</b>	Exe(pri,vol) Trade(pri,vol) Mod(pri,vol) or Del	Exe(pri,vol)
10	<b>Multiple orders exe (same price)</b>	Exe Trd 1 Del 1 Trd 2 Del 2 ... Trd N Mod	Exe(pri,vol) Exe(pri,vol) ...
11	<b>a. add reserve to buy 1000, 100 lit</b>	Add 100 to buy	Add 100 to buy
	<b>b. aggressor sells 400</b>	Exe 100	

	Trd 100	
	Del 100	Exe(pri,100)
	Trd 300	NonDispTrd 300
	Add 100 to buy	Add 100 to buy
12	<b>a. add reserve to buy 1000, 500 lit</b>	Add 500 to buy
	<b>b. aggressor sells 400</b>	Exe(pri,400)
		Add 400 to buy
13	<b>An order reprices (peg, SSR, LULD...)</b>	Mod(pri,vol)
	<i>Orders usually lose position on reprice</i>	Mod(pri)
15	<b>a. Client adds order for 2500</b>	Add 2500 to buy
	<b>b. 1000 routed away</b>	Mod(vol=1500)
	<b>c. 1000 canceled back</b>	Mod (vol=2500)
16	<b>a. Client adds order for 2500</b>	Add 2500 to buy
	<b>b. 2500 routed away</b>	Del
	<b>c. 2500 canceled back</b>	Add 2500 to buy
17	<b>a. Client adds reserve ord for 1000, 500 lit</b>	Add 500 to buy
	<b>b. 700 routed away, 300 bal in reserve lit</b>	Del
		Add 300 to buy
	<b>c. 700 canceled back, 500 put back in reserve</b>	Add 200 to buy, or Mod(vol=500)
18	<b>open/reopen/close auction</b>	
	<i>Total volume executed and printed to the SIP</i>	CrossTrade
	<i>Visible and hidden executions in the auction</i>	Exes,Trades(printable=0)
	<i>Dels of orders not matched in the auction</i>	Dels
	<i>Replenishes after partial executions</i>	Adds
	<i>Official notice of end of auction and new session</i>	SecurityStatus (session=early,open,reopen,late)

## APPENDIX E: Changes in Integrated Feed version 2 vs. version 1

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<b>Msg Types affected</b>		
<b>1</b>	all order msgs	TradeSession field removed, so on session change, explicit deletes of expired messages are sent
<b>2</b>	all order msgs	Order ID field increased to 8 bytes, so order ID maps directly to the ID in the gateway Order Ack message
<b>3</b>	all order msgs	GTC Indicator field is removed
<b>4</b>	Time Reference	Time Reference msgs are sent once a second per Matching Engine server, not per symbol, saving thousands of msgs per second
<b>5</b>	all msg types	SourceTimeSecs removed - all IBF messages now use Time Reference messages
<b>6</b>	Exe,Mod,Del,Trd	Reporting of executions is simplified to a single Execution message, simplifying client processing
<b>7</b>	Add & Add Refresh	Attribution (Firm ID field) added to Add and Add Refresh messages. Attributed Add no longer needed.
<b>8</b>	Replace	Added Replace message to express the cancel/replace scenario
<b>9</b>	Add,Del,Mod,Repl,Exe	NumParitySplits fld added to support NY (0 for Arca) - shows num splits at this price point as a result of this message
<b>10</b>	Mod, Replace	Mod & Replace msgs can change price of an existing order, so need 2 parity flds: at old price & at new price
<b>11</b>	NonDisplayedTrade	New message type replaces Trade msg, shows trades in which both sides are hidden
<b>12</b>	CrossTrade	New msg type shows bulk volume resulting from an auction execution (followed by exes & trades showing each)
<b>13</b>	Exe & NonDispTrade	new Printable fld - 0 if not printed to tape, else 1
<b>14</b>	Mod	New PositionChange field (0=kept position, 1=lost position) - replaces reason code field
<b>15</b>	Mod, Replace, Del	Eliminated version 1's side field
<b>16</b>	Security Status	Market Status (open/reopened/closed) moved from Status field to its own field

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