XDP ORDER IMBALANCES FEED CLIENT SPECIFICATION

NYSE AMERICAN ORDER IMBALANCES FEED
NYSE ARCA ORDER IMBALANCES FEED
NYSE ORDER IMBALANCES FEED

Version	Date
2.2b	December 19, 2019

PREFACE

DOCUMENT HISTORY

VERSION	DATE	CHANGE DESCRIPTION
2.1b	May 8, 2017	Added 5 fields supporting LULD amendment 12 (day 1, defaulted to 0) Corrected tables of trading and publication times
2.1c	May 26, 2017	▪ Corrected NYSE Imbalance publication frequencies ▪ The Imbalance Side field pertains to the Total Imbalance Qty field ▪ Clarified that the 2 clearing price fields will be initially 0 ▪ Clarified that Qty fields are truncated to round lots for NYSE
2.1d	September 22, 2017	**v2.1d contains no changes in feed behavior, only spec clarifications** Updated Section 3 and field descriptions in Section 2 to include specialized information for NYSE Tape A symbols
2.1e	November 20, 2017	Updated the Imbalance the Clearing Price fields and 5 trailing fields – no longer set to 0 for Arca and American
2.1f	February 1, 2018	**No feed changes**. Corrected 5 trailing fields: for NYSE, 0 for now. Corrected descriptions: ClosingOnlyClearingPrice, AuctionStatus
2.2	December 3, 2018	▪ Updates throughout applicable to NYSE under Pillar. ▪ Renamed Closing Only Clearing Price to Auction Only Clearing Price. The 3 new trailing fields in the Imbalance message contain only default values in non-NYSE markets.
2.2a	March 8, 2019	▪ Corrected the imbalance publication time to 3:50pm. ▪ Defaulted the significant imbalance - till a future implementation date.
2.2b	December 19, 2019	• Corrected order imbalance publication time to be 8am for the NYSE Core Auction

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
- ICE Global Network
- NYSE Symbology
- IP Addresses

CONTACT INFORMATION

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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 stats page .

CONTENTS

1 XDP Imbalances Feed Information

This real-time low latency product provides imbalance data published during auctions of all traded securities on the NYSE Group equity exchanges: NYSE, NYSE American and NYSE Arca. This data is intended for clients who require a direct standalone feed with timestamps provided directly from the Exchange matching engines.

1.1 IMBALANCE PUBLICATION TIMES

Scheduled trading session times on normal and early-close days for all NYSE markets can be found here.

Regularly scheduled auctions occur at the following times. Trading halts and re-opens can occur anytime during any session. Trading halts can last from one session into the next.

All times are US Eastern Time

DESCRIPTION	MARKET	NORMAL AUCTION PERIOD
Early Opening Auction	Arca	3:30am - 4:00am ET
	American	7:00am - 9:30am ET
Core Opening Auction	Arca American	8:00am - 9:30am ET
	NYSE (tape A only)	8:00am ET - the stock opens
Closing Auction	Arca American	3:00pm - 4:00pm ET
	NYSE (tape A only)	3:50pm ET - the stock closes

During auction periods, Imbalance messages are published every second if there is any change from the last publication.

On early closing days, the Closing auction runs from 12:00pm to 1:00pm for ARCA and American. For NYSE, the closing auction runs from 12:50 until the stock closes.

1.2 CONTROL MESSAGE TYPES

For all markets, the initial publication of Symbol Index Mapping messages occurs shortly after system startup at approximately 12:15am ET.

MSGTYPE	DESCRIPTION
1	Sequence Number Reset
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
34	Security Status Message
35	Refresh Header Message

1.3 REFRESH MESSAGE TYPES

MSGTYPE	DESCRIPTION
35	Refresh Header Message
3	Symbol Index Mapping
105	Imbalance Message
34	Security Status Message

2 Imbalance Message – Msg Type 105

Imbalance messages are published once a second during auctions to update price and volume information. If there is no change to the calculated fields, no message will be generated. See 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.

FIELD NAME	OFFSET	SIZE	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 73 bytes
Msg Type	2	2	Binary	This field identifies the type of message. 105 – Imbalance Message
SourceTime	4	4	Binary	The time when this msg was generated in the order book, in secs since 1/1/1970 00:00:00 UTC
SourceTimeNS	8	4	Binary	The nanosecond offset from the Source Time
SymbolIndex	12	4	Binary	The ID of the symbol in the Symbol Index msg
SymbolSeqNum	16	4	Binary	The sequence number of this message in the set of all messages for this symbol
ReferencePrice	20	4	Binary	The Reference Price is the notional likely price of the auction trade. See Information on Auctions for details. For non-NYSE markets, the Reference Price is used to calculate the Indicative Match Price.
PairedQty	24	4	Binary	For non-NYSE markets, the number of shares paired off at the Indicative Match Price. For NYSE, the number of shares paired off at the Reference Price.
TotalImbalanceQty	28	4	Binary	For non-NYSE markets, the total imbalance quantity at the Indicative Match Price. For NYSE, the total imbalance quantity at the Reference Price. When Auction Type=P (NYSE only), this field will be set to the Extreme Order Imbalance quantity.
MarketImbalanceQty	32	4	Binary	The total market order imbalance quantity at the Indicative Match Price. For NYSE, unused and defaulted to 0.
AuctionTime	36	2	Binary	Projected Auction Time (hhmm)
AuctionType	38	1	ASCII	▪ O – Early Opening Auction (non-NYSE only) ▪ M – Core Opening Auction ▪ H – Reopening Auction (Halt resume) ▪ C – Closing Auction ▪ P – Extreme Closing Imbalance (NYSE only) ▪ R – Regulatory Closing Imbalance (NYSE only)

ImbalanceSide	39	1	ASCII	The side of the TotalImbalanceQty ▪ B – Buy side ▪ S – Sell side ▪ Space – No imbalance
ContinuousBook ClearingPrice	40	4	Binary	For non-NYSE 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 price closest to the reference price where the imbalance is 0. For regulatory imbalances, or if a continuous book clearing price is not reached, this field is defaulted to 0.
AuctionInterest ClearingPrice	44	4	Binary	For non-NYSE markets, the price at which all eligible auction-only interest would trade, subject to auction collars. For the NYSE closing auction only, 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, this field is defaulted to 0.
SSRFilingPrice	48	4	Binary	For non-NYSE markets, not supported and defaulted to 0. For NYSE non-Regulatory imbalances, if a Sell Short Restriction is in effect, the price at which Sell Short interest will be filed.
IndicativeMatchPrice	52	4	Binary	For non-NYSE markets, the price at which the highest number of shares would trade, subject to auction collars. It includes the non-displayed quantity of Reserve Orders. See Information on Auctions for details. For NYSE, set to 0.
UpperCollar	56	4	Binary	If the IndicativeMatchPrice is not strictly between the UpperCollar and the LowerCollar, special auction rules apply. See Rule 7.35 for details For NYSE, set to 0

LowerCollar	60	4	Binary	If the IndicativeMatchPrice is not strictly between the UpperCollar and the LowerCollar, special auction rules apply. See Rule 7.35 for details. For NYSE, set to 0
AuctionStatus	64	1	Binary	Indicates whether the auction will run 0 - Will run as always for Open and Close 1 - Will run, interest exists inside or at the collars or is fully paired off 2 – Will not run because there is an imbalance through the collars 3 – Will not run, will transition to the Closing Auction instead
FreezeStatus	65	1	Binary	0 - Imbalance freeze not yet in effect 1 - Imbalance freeze is in effect
NumExtensions	66	1	Binary	Number of times the halt period has been extended For NYSE, set to 0
Unpaired Qty	67	4	Binary	For NYSE only, during the Closing Auction, the number of unpaired shares priced at or better than the Reference Price. For non-NYSE markets, 0.
Unpaired Side	71	1	ASCII	For NYSE only, the side of the Unpaired Qty ▪ B - buy side ▪ S - sell side ▪ Space - not applicable
Significant Imbalance	72	1	ASCII	For Auction Types = C or P in NYSE-listed symbols. Using historical closing data for each symbol, NYSE will set this indicator if the Continuous Book Clearing Price is more than a 'significant' range away from the Reference Price. ▪ Space - not significant, or not applicable (default till a future implementation date) ▪ Y - the current Imbalance is significant

3 Information on Auctions

3.1 NYSE AUCTIONS

The NYSE market conducts auctions for NYSE-listed (Tape A) symbols only. The NYSE market does not publish imbalances for IPO or Direct Listing symbols.

As a part of the auction process, Imbalance messages are published every second if there is any change from the previous second.

Note: During an auction, in calculating the imbalance at a price point on the book, NYSE considers the following to be an imbalance:

- market orders
- interest whose price is better than the book price point

AUCTION TYPE	DESCRIPTION
Opening Auction (M) **and** **Re-Opening Auction (H)**	**Interest Included** ▪ All electronic interest eligible to trade in the opening auction ▪ DMM interest as needed to offset the imbalance **Order Cancellation** ▪ Orders can be cancelled at any time up to the conclusion of the auction **Reference Price Calculation** The Reference Price is ▪ The consolidated last sale* if no Mandatory Indication has been published ▪ The consolidated last sale* if it is within the indication range ▪ The indication low price if it is higher than the consolidated last sale* ▪ The indication high price it is lower than the consolidated last sale* * If there's no consolidated last sale price, the previous close price is used

Closing Auction (C)	**Interest Included**
	▪ For Paired Quantity, Unpaired Quantity, and Total Imbalance Quantity:
	  ○ MOC and LOC orders
	  ○ Imbalance offset orders
	  ○ Closing D orders
	▪ For Continuous Book Clearing Price:
	  ○ All electronic interest eligible to trade in the closing auction
	  ○ DMM interest as needed to offset the imbalance
	▪ For Auction Interest Clearing Price:
	  ○ MOC and LOC orders
	  ○ Imbalance offset orders

AUCTION TYPE	DESCRIPTION
	Order Cancellation ▪ Orders can be cancelled any time during the auction period, except for MOC, LOC and Imbalance offset orders, which can be cancelled only up to 2 minutes before the scheduled closing time. **Reference Price Calculation** The Reference Price is ▪ The NYSE last sale if it is at or within the NYSE best quote ▪ The NYSE best bid if the NYSE best bid is higher than the NYSE last sale ▪ The NYSE best offer if the NYSE best offer is lower than the NYSE last sale
Regulatory Closing Auction (R)	**Interest Included** ▪ MOC and LOC orders **Reference Price Calculation** ▪ The Reference Price is the NYSE last sale* * If there's no NYSE last sale price, the NYSE previous close price is used
Extreme Imbalance Closing Auction (P)	**Interest Included** ▪ All electronic interest eligible to trade in the closing auction **Reference Price Calculation** ▪ The Reference Price is the NYSE last sale* * If there's no NYSE last sale price, the NYSE previous close price is used

3.2 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, Imbalance messages are published every second if there is any change from the previous second.

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

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.

Note: During an auction, in calculating the imbalance at a price point on the book, NYSE Arca and American consider the following to be an imbalance:

- Market orders
- Any interest whose price is at or better than the book price point

Imbalance Calculation

AUCTION TYPE	DESCRIPTION
Early Opening Auction (O)	**Interest Included** 1. Limit Orders designated for the Early Trading Session. 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. **Order Cancellation** Orders can be cancelled at any time up to the conclusion of the auction. **Reference Price** ▪ The Reference Price is normally the listing market's previous Official Closing Price. See Rule 7.35 for full detail. Unexecuted session 1 eligible orders become eligible for the Early Session immediately upon conclusion of the Early Opening Auction.
Core Opening Auction (M) **and** **Re-Opening Auction (H)**	**Interest Included** 1. Limit, Market, MOO, LOO and Primary Peg orders 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. **Order Cancellation** 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. **Reference Price** The Reference Price is normally the midpoint of the NBBO. See Rule 7.35 for full detail.
Closing Auction (C)	**Interest Included** 1. Limit, Market, MOC, LOC and Primary Peg orders 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. **Reference Price** ▪ The Reference Price is normally the Consolidated Tape last sale. 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 7.35 for full detail.

4 Product IDs

EXCHANGE	PRODUCT ID	DESCRIPTION
NYSE	8	NYSE Imbalance Feed
NYSE American	58	NYSE American Imbalance Feed
NYSE Arca	158	NYSE Arca Imbalance Feed