XDP IMBALANCES FEED CLIENT SPECIFICATION

NYSE AMERICAN IMBALANCES FEED
NYSE IMBALANCES FEED
NYSE ARCA IMBALANCES FEED   **PRODUCTION 2018**

Version
2.1f

Date
February 1, 2018

PREFACE

DOCUMENT HISTORY

VERSION	DATE	CHANGE DESCRIPTION
2.1a	March 22, 2017	Cleaned up typos Corrected Trading Session Times Corrected list of product IDs
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

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

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 pages

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   TRADING SESSION TIMES

All times are US Eastern Time

DESCRIPTION	MARKET	NORMAL AUCTION PERIOD
Early Session	Arca	4:00am – 9:30am ET
	American	7:00am – 9:30am ET
Core Session	Arca American NYSE	9:30am – 4:00pm ET
American	Arca American	4:00pm – 8:00pm ET

On early closing days for all markets, the Core session ends at 1:00pm, and there is no Late session.

1.2   IMBALANCE PUBLICATION TIMES

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.

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)	8:30am - 9:30am ET
Closing Auction	Arca American	3:00pm - 4:00pm ET
	NYSE (tape A only)	3:45pm - 4:00pm ET

On early closing days for all markets, the Closing auction runs from 12:00pm to 1:00pm.

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

1.3   NYSE IMBALANCE PUBLICATION FREQUENCIES

During NYSE Auction periods, Imbalance messages are published as follows if there is any change from the last publication.

MESSAGE	PUBLICATION PERIOD	PUBLICATION FREQUENCY
Opening Imbalances	8:30am – 9:00am ET	Every 5 minutes
	9:00am – 9:20am ET	Every 60 seconds
	9:20am – 9:35am ET or until the stock opens	Every 5 seconds
Closing Imbalances	3:45pm – 4:00pm ET	Every 5 seconds

1.4   CONTROL MESSAGE TYPES

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

1.5   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 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 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 future releases for each market.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 67 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	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)
PairedQty	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.

TotalImbalanceQty	28	4	Binary	For Pillar-powered markets, the total imbalance quantity at the Indicative Match Price. For NYSE, the total imbalance quantity at the Reference Price, truncated to the round lot. E.g. 1575 shares is published as 1500.
MarketImbalanceQty	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.
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 ▪ R – Regulatory 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 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.
ClosingOnly ClearingPrice	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.
SSRFilingPrice	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.

IndicativeMatchPrice	52	4	Binary	For Pillar-powered markets, the price that has the highest executable volume of auction-eligible shares, 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 7.35P for details
				For NYSE, set to 0 till a date TBA
LowerCollar	60	4	Binary	If the IndicativeMatchPrice is not strictly between the UpperCollar and the LowerCollar, special auction rules apply. See Rule 7.35P for details.
				For NYSE, set to 0 till a date TBA
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
				For NYSE, set to 0 till a date TBA
FreezeStatus	65	1	Binary	0 - Imbalance freeze not yet in effect
				1 - Imbalance freeze is in effect
				For NYSE, set to 0 till a date TBA
NumExtensions	66	1	Binary	Number of times the halt period has been extended
				For NYSE, set to 0 till a date TBA

3   Information on Auctions

3.1   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	**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 **Calculation** The Reference Price is equal to the previous close unless there is a Rule 15 or Mandatory indication published, in which case ■ The Reference Price is the indication low price if the indication low price is higher than the previous close ■ The Reference Price is the indication high price if the indication high price is lower than the previous close ■ The Reference Price is the previous close if the previous close is within the indication range The Continuous Book Clearing Price is defaulted to 0 until 2 minutes before the opening auction time.
Closing	**Interest Included** ■ For Paired Quantity, Total Imbalance Quantity and Closing Only Clearing Price: 　o MOC and LOC orders 　o Closing Only interest (when offsetting the imbalance) 　o Discretionary orders in the last 5 minutes of the auction only ■ For Continuous Book Clearing Price: 　o All electronic interest eligible to trade in the closing auction 　o DMM interest as needed to offset the imbalance **Order Cancellation** ■ 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. **Calculation** The Continuous Book Clearing Price is defaulted to 0 until 15 minutes before the closing auction time.

3.2   NYSE ARCA / 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 description 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	**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 7.35P for full detail. Unexecuted session 1 eligible orders become eligible for the Early Session immediately upon conclusion of the Early Opening Auction.

Core Opening and Re-Opening Auctions	**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 7.35P for full detail.
Closing Auction	**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 7.35P 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