U.S. Equities
Auction Feed Specification

Version 1.3.0

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1   Introduction

1.1   Overview

Bats members may use the Bats Auction Feed to obtain Opening, Closing, Halt and IPO Auction information. The Auction Feed is a direct data feed product. The Auction Feed disseminates Bats Auction price and size information **every five seconds**:

> ➢ between 8:00 and 9:30 am for the Opening Auction.

> ➢ between 3:00 and 4:00 pm for the Closing Auction.

> ➢ during a defined Quote-Only period for Halt and IPO Auctions.

1.2   Halt and IPO Quote-Only Period

The default Quote-Only period will be 5 minutes before Halt Re-Open Auctions and 15 minutes before IPO Auctions plus a short random period to prevent gaming. Situations that can result in the Quote-Only period being extended include, but are not limited to:

> ➢ Unmatched Market Order Shares (automatic)

> ➢ Legitimate Underwriter Request (manual, IPO only)

> ➢ Volatility (automatic 5 minute extension for a price movement that is the greater of 10% or 50 cents in the 15 second window prior to the auction match)

During the Quote-Only period, Cboe will begin accepting orders and disseminating indicative prices and Auction Feed information in the subject security. Entered orders can be cancelled and no executions in the subject security will occur until the auction has completed.

1.3   Feed Connectivity Requirements

Given the defined intervals and the limited amount of messaging required at this time, there is no minimum bandwidth requirement for the Auction Feed.

2 Protocol

The Cboe Auction Feed disseminates Cboe Auction information. The Auction Feed cannot be used to enter orders. For order entry, refer to the Cboe FIX Specification.

All information presented on the Auction Feed is anonymous and does not contain any member identifying information.

2.1 Message Format

The Cboe Auction Feed is comprised of a series of fixed-length sequenced messages. The length of each message is dependent upon the message type. Each message is made up of non-control ASCII bytes. Members familiar with the TCP PITCH protocol should find it very easy to reuse that code to process the Auction Feed.

2.2 Sequence Numbers

The messages that make up the Cboe Auction Feed protocol are delivered using SOUP 2.0, which handles sequencing and delivery integrity. Cboe implementation of SOUP 2.0 is the same as other Market Centers.

3 Sessions

Cboe implementation of SOUP 2.0 is the same as other Market Centers. This includes the implementation of session events such as login requests, client/server heartbeats, and logout requests.

4   Auction Feed Messages

The fields within each message type have a corresponding data type. The various data types are defined in the following table.

Data Type	Description
Alpha	A string of ASCII letters (A-Z) left justified and space padded on the right.
Numeric	A string of ASCII numbers (0-9), right justified and zero filled on the left.
Prices	A string of ASCII numbers (0-9) consisting of 6 whole number digits followed by 4 decimal digits. The whole number portion is zero filled on the left; the decimal portion is zero filled on the right. The decimal point is implied by position and does not does explicitly appear in the field
Timestamps	A string of numbers (0-9) representing whole number milliseconds past midnight Eastern Time, right justified and zero filled on the left, with no decimal point.

4.1   System Event Message

Unlike other Market Centers, Cboe does not send System Event messages.

4.2   Auction Update Message

Auction Update Messages are used to disseminate Cboe price and size information during auctions for Cboe listed securities. The Auction Update messages are sent every five seconds during the auction periods previously defined.

The Auction Update Message has the following format:

Field Name	Offset	Length	Data Type	Description
Timestamp	0	8	Numeric	Timestamp
Message Type	8	1	"I"	Auction Update
Stock Symbol	9	8	Alpha	Stock symbol right padded with spaces.
Auction Type	17	1	Alpha	O = Opening Auction C = Closing Auction H = Halt Auction I = IPO Auction M = Cboe Market Close (**effective TBD**)
Reference Price	18	10	Numeric	BBO Collared auction price (see Auction Process Spec).
Buy Shares	28	10	Numeric	Number of shares on buy side at the *Reference Price*. Shares matched for Cboe Market Close (**effective TBD**).
Sell Shares	38	10	Numeric	Number of shares on sell side at the *Reference Price*. Shares matched for Cboe Market Close (**effective TBD**).

Indicative Price	48	10	Numeric	Price at which the auction book and the continuous book would match.
Auction Only Price	58	10	Numeric	Price at which the auction book would match using only Eligible Auction Orders (see Auction Process Spec).

4.3   Auction Summary Message

Auction Summary Messages are used to disseminate the results of an auction of a Cboe listed security. An Auction Summary message for each Cboe listed security is sent at the conclusion of its opening auction and represents the Cboe official opening price. A Closing Auction Summary message for each Cboe listed security is sent at the conclusion of its closing auction and represents the Cboe official closing price. An IPO Auction Summary message for each Cboe listed security is sent at the conclusion of the IPO Auction and represents the official Cboe IPO opening price.

The Auction Summary Message has the following format:

Field Name	Offset	Length	Data Type	Description
Timestamp	0	8	Numeric	Timestamp
Message Type	8	1	"J"	Auction Summary
Stock Symbol	9	8	Alpha	Stock symbol right padded with spaces.
Auction Type	17	1	Alpha	O = Opening Auction C = Closing Auction H = Halt Auction I = IPO Auction M = Cboe Market Close (**effective TBD**)
Price	18	10	Numeric	Auction price. Price of the CMC match (**effective TBD**).
Shares	28	10	Numeric	Cumulative number of shares executed during the auction. Shares executed in the CMC match (**effective TBD**).

5   Support

Please e-mail questions or comments regarding this specification to [tradedesk@cboe.com.](mailto:tradedesk@cboe.com)

Revision History

Document Version	Date	Description
1.0.0	05/09/11	Initial version.
1.0.1	06/06/11	Various changes based on feedback and internal discussions.
1.0.2	06/27/11	Minor formatting update.
1.0.3	07/12/11	Corrected typo in Multicast Configuration section.
1.1.0	09/26/11	Converted protocol specification from Multicast format to TCP format.
1.2.0	02/19/16	Bats branding/logo changes.
1.2.1	03/24/16	Update to auction update dissemination times for Opening and Closing Auctions (effective 3/4/16).
1.2.2	10/17/17	Cboe branding/logo changes.
1.3.0	07/03/18	Added support for Cboe Market Close (CMC) in `Auction Update` and `Auction Summary` messages **effective TBD**.