ETF Implied Liquidity Feed Specification

Version 1.0.2

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1   Introduction

1.1   Overview

Cboe members may use the ETF Implied Liquidity protocol to receive real-time updates to implied price and size information for a selection of ETFs. Implied prices and sizes are calculated in real time based on current market data sourced from the CTA and UTP SIPs for the underlying components in the ETF basket.

The messages received via the protocol provide an aggregated size and do not indicate the size or number of individual orders at the best bid or ask. Implied sizes are scaled by the underlying component with the lowest ratio of top-of-book liquidity to required shares in the corresponding ETF basket.

The ETF Implied Liquidity Feed is a TCP unicast data stream available within the NY5 data center. Please note that the feed will not offer redundancy at the Disaster Recovery (DR) site in CH4 upon launch, and as such can become unavailable in the case of a host failure.

* The highlighted sections indicate differences between ETF Implied Liquidity and similar protocols used by other Market Centers.

The ETF Implied Liquidity feed is expected to be a low (<5 Mb/s) bandwidth feed. However, feed bandwidth may increase over time as additional ETF products are listed.

2   Protocol

The messages that make up the ETF Implied Liquidity protocol are delivered using SOUP 2.0. Cboe implementation of SOUP 2.0 is the same as other Market Centers.

2.1   Message Format

The ETF Implied Liquidity data feed is comprised of a series of fixed-length sequenced messages. The length of each message is dependent upon the message type. Each message consists of non-control ASCII bytes.

2.2   Sequence Numbers

SOUP 2.0 handles sequencing and delivery integrity.

2.3   Sessions

SOUP 2.0 includes the implementation of session events such as login requests, client/server heartbeats, and logout requests.

3   Implied Liquidity Update 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 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.

3.1   System Event Message

Cboe does not send System Event messages.

3.2   Implied Liquidity Update Messages

Implied Liquidity Update messages replace the previous Implied Liquidity values for an ETF symbol. Implied price and size values are derived using current market data sourced from the CTA and UTP SIPs for the underlying securities of the ETF. Update messages also include the ETF BBO (Best Bid or Offer) and size sourced from the Cboe Exchanges as supplemental data to provide the ability to compare against the Implied BBO and size, all within a single feed.

3.2.1   Implied Liquidity Update Message (Server)

Field Name	Offset	Length	Value	Description
Timestamp	0	8	Numeric	Timestamp
Message Type	8	1	"i"	Implied Liquidity Update message
Symbol	9	6	Alpha	ETF Symbol
Implied Bid Price	15	10	Price	Bid price implied by bid prices of the underlying securities
Implied Bid Quantity	25	7	Numeric	Bid size implied by bid sizes of the underlying securities
Implied Ask Price	32	10	Price	Ask price implied by ask prices of the underlying securities
Implied Ask Quantity	42	7	Numeric	Ask size implied by ask sizes of the underlying securities
Bid Price	49	10	Price	Best bid price on Cboe Exchanges

Bid Quantity	59	6	Numeric	Best bid size on Cboe Exchanges
Ask Price	65	10	Price	Best ask price on Cboe Exchanges
Ask Quantity	75	6	Numeric	Best ask size on Cboe Exchanges

4   References

For more information on Cboe Symbology, please refer to the Cboe Symbology Reference document.

5   Support

Please e-mail questions or comments regarding this specification to tradedesk@bats.com.

Revision History

Document Version	Date	Description
1.0.0	05/01/17	Initial Version.
1.0.1	05/11/17	Added bandwidth requirement estimate.
1.0.2	10/17/17	Cboe branding/logo changes.