Cboe Options Update to Auction Response Processing

Reference ID: C2023062900

OVERVIEW

Applicable Cboe Exchanges: Cboe Options

Effective per the deployment schedule below, Cboe Options Exchange ("C1") will update Matching Engine auction handling to include auction responses arriving at the Matching Engine server prior to auction end time but being handled in the Matching Engine after the scheduled auction end time.

TECHNICAL DETAILS

Upon the effective date, the Matching Engine will begin to track to two distinct times:

1. The Matching Engine takes a timestamp immediately prior to handling its next inbound event (T1). This is known as the "Transaction Time" in the Cboe system.
2. An additional Network Interface Card ("NIC") timestamp will be put on each message when arriving at the Matching Engine server (T2).

At the conclusion of an auction response or exposure period, the Cboe Matching Engine will continue processing messages, including auction responses, for up to an additional 25ms to include auction responses that arrived at the Matching Engine NIC prior to the scheduled auction end time. The Matching Engine will immediately conclude the auction either upon processing all events where T2 < scheduled auction end time or upon elapse of the 25ms additional timer.

Under current behavior, the Matching Engine concludes an auction if the auction timer is up when it begins to handle an event (T1 >= scheduled end time).

Example (current behavior):

1. 09:10:55.000 – New order is handled at the Matching Engine (T1) and starts a 100ms auction.
2. 09:10:55.098 – Auction response arrives at Matching Engine NIC, is given a timestamp (T2), and is in the queue to be handled in arrival sequence behind earlier arriving events.
3. 09:10:55.100 – Scheduled auction end time passes, and the Matching Engine concludes the auction.
4. 09:10:55.102 – Matching Engine begins to process the auction response received from #2 above. The auction has concluded, so the auction response is rejected.

Example (new behavior):

1. 09:10:55.000 – New order is handled at the Matching Engine (T1) and starts a 100ms auction.
2. 09:10:55.098 – Auction response arrives at Matching Engine NIC, is given a timestamp (T2), and is in the queue to be handled in arrival sequence behind earlier arriving events.

3. 09:10:55.100 – Scheduled auction end time passes, but the Matching Engine continues to handle events that arrived at the Matching Engine NIC prior to the scheduled end time.
4. 09:10:55.102 – Matching Engine begins to process the auction response received from #2 above. The auction response is included in the auction. If this is the last event with a NIC timestamp (T2) that arrived prior to the scheduled auction end time, then the auction will be completed.

TESTING OPPORTUNITIES

This functionality is currently available to test in the C1 certification environment.

DEPLOYMENT SCHEDULE

- **Effective July 31, 2023:** C1 Options – Symbol Range A - ADBD~
- **Effective August 7, 2023:** C1 Options – All Symbols

ADDITIONAL INFORMATION

For more information, please refer to the following technical specifications:

- US Options Complex Book Specification
- US Options Auction Specification

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