



US Options Auction Process

Version 1.1.3

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1 Introduction

1.1 Overview

The auctions on the Cboe Options (“C1”) and EDGX Options Exchanges are used to communicate execution and price improvement opportunities by delivering auction message information. This document describes relevant information for each of the auction types offered by the Cboe Exchanges.

2 Cboe Options Auction Information

Cboe disseminates auction information **real-time** during Regular Trading Hours (“RTH”) from 9:30 a.m. to 4:15 p.m. ET. C1 will also disseminate auction information for eligible classes during Global Trading Hours (“GTH”) between 3:00 a.m. and 9:30 a.m. ET. Cboe Options auction data will be exposed on both the US Options Multicast PITCH feed and the US Options Auction Feed. Auction information will not be disseminated via OPRA.

3 Messaging

3.1 Auction Notification Messages

Auction Notification messages are used to disseminate details of an auction. Auctions will be available for a defined period of time known as the exposure period.

3.2 Auction Trade Messages

Auction Trade messages are used to disseminate executions resulting from an earlier Auction Notification message.

3.3 Auction Cancel Messages

Auction Cancel messages are used to disseminate the cancellation of an earlier Auction Notification message as a result of a user cancellation of the original order, a user modification request to change the price or increase the original order quantity, a fading of the NBBO, or a cancellation of any remaining order quantity from the original Auction Notification following the auction termination.

A user request to modify the order price or to increase the original order quantity will result in a cancellation of the auction followed by a new Auction Notification message. Auction Cancel messages will not be issued for order quantity decrements.

4 Cboe Options Auction Types

All auction types described below are available for single leg instruments, complex instruments, and FLEX instruments.

4.1 Bats Auction Mechanism (BAM) (EDGX Only)

BAM will be deprecated on EDGX and replaced with AIM upon implementation of C1 Feature Pack 5.

BAM Auctions allow Members to facilitate their clients' (agency) order flow by broadcasting their orders on the Exchange for price improvement opportunity over the current market price. At the conclusion of the BAM Auction exposure interval, the agency order will trade against the specified contra party(s) or other responses to the auction.

4.1.1 Initiating BAM Orders

A Member may initiate BAM by submitting a two-sided `New Order Cross` message using either [FIX](#) or [Binary Order Entry \(BOE\)](#) protocols. The two-sided order will contain symbol, price and quantity along with relevant clearing information for both the agency and contra sides. The initiating BAM Order must include the contra-side response(s) within the BAM `New Order Cross` message. A maximum of ten (10) contra-parties will be accepted per order.

The Initiating Member may elect to Auto Match. If elected, the Initiating Member will be allocated the number of contracts equal to the aggregated size of all the orders and responses awarded at each price point. If a limit price is specified (optional), contracts will be matched up to and including their Auto Match limit price.

If the Initiating Member would prefer to surrender its execution entitlement completely, it may elect Last Priority. The system will attempt to honor the request in the allocation process but the Initiating Member will be required to fill the balance of the order, if any remains, after all eligible orders and responses are executed.

4.1.2 Response Orders

During the exposure period, other Exchange Members not directly included in the contra-side of a BAM Auction order may send a targeted response to the auction which reflects the responding Member's willingness to participate in that auction. Response orders to an auction may be entered by any Exchange Member regardless of order capacity origin. Response orders must be entered on the opposite side of the auction order or they will be rejected. Responses priced more aggressive than the opposite side of the NBBO at the time the auction was created will be capped at the NBBO. Individual responses will be capped at the size of the auction order while members submitting multiple responses

will have the cap applied to their aggregate response size. Response orders will be acknowledged and held until the completion of the auction or until an early termination. All unexecuted responses will be canceled back after the completion of the auction.

Response orders may be canceled or modified using the `Order Cancel Request` message or the `Order Cancel/Replace Request` message. As a result, Response orders may not be IOC.

4.1.3 Unrelated Orders

Liquidity resting on the book at the initiation of the auction and unrelated orders received during the auction exposure are also eligible to execute against the auctioned order but are not considered true responses and may have different fees associated with them. If a Member has both a resting order on the book and a response in the auction at the same price, the response is eligible for execution first.

Unrelated orders may also be canceled or modified.

4.1.4 Early Termination

A BAM Auction will terminate naturally at the end of the exposure interval. In addition, the auction may terminate early under some circumstances. See Exchange rules for further details.

4.1.5 Matched Trade Prevention

Matched Trade Prevention instructions will not be applied to the BAM order ensuring that the BAM order will not be prevented due to a resting order. BAM Response Orders may only have the `Cancel Newest` instruction. This will prevent a respondent from executing against an order from the same firm.

4.1.6 Simultaneous BAM Auctions

Simultaneous BAM Auctions will be supported for auctions of greater than or equal to 50 contracts only. If a BAM for less than 50 contracts is ongoing, then a BAM for 50 contracts or more can be initiated. If a BAM for less than 50 contracts is sent, it will be canceled.

4.1.7 Small Size Entitlement

The contra-side will be entitled to at least one contract when it is at the final auction price. Customer orders will always trade before the contra receives their entitlement.

4.1.8 BAM Executions

The Initiating Member will receive its execution entitlement at the Final Auction Price after customer orders at that price are filled. If there are only two participants that will trade at the final auction price, the Initiating Member will receive 50% of the original order quantity. If there are more than 2

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participants at the Final Auction Price, the Initiating Member will receive 40% of the original order quantity. The unexecuted remainder will trade pro-rata between the respondents with any balance filled by the Contra.

As an incentive to post tighter markets on the Exchange, execution priority will be granted to participants with orders at the NBBO at the time an auction is initiated ahead of other responses at the same price. This Priority Quoter benefit will be based upon the size of the participant's displayed quote. The balance of any response that is greater than the displayed size will trade pro-rata with the remaining responses. Priority Quoter functionality is configurable by underlying symbol on the Exchange.

BAM Auction executions will begin with the best price and conclude with the Final Auction Price where the remaining auction volume will be executed.

4.1.9 BAM Examples

Example 1) Standard Allocation: A BAM Order is entered and exposed. Responses are received at multiple prices. The Contra is allocated 40% of the original order quantity, the remainder of the agency order will trade pro-rata at the Final Auction Price. Unexecuted responses and contra interest are canceled at the conclusion of the auction.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03	Agency Side: Buy 100 @ 1.02 BAM	Other Responses: Sell 10 @ 1.00 MM1 Sell 20 @ 1.01 MM2	Trade: 10 @ 1.00 MM1 20 @ 1.01 MM2 40 @ 1.02 Contra 17 @ 1.02 BD1 13 @ 1.02 BD2
Cboe BBO .95 X 1.03	Contra Side: Sell 100 @ 1.02 <i>Expose Order</i>	Sell 50 @ 1.02 BD1 Sell 40 @ 1.02 BD2	Cancel: 60 @ 1.02 Contra 33 @ 1.02 BD1 27 @ 1.02 BD2

Example 2) Parity Allocation: BAM order is entered and exposed. Only one response is received. The Contra-Allocation at the Final Auction Price is 50% to remain on parity with the response.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03	Agency Side: Buy 100 @ 1.02 BAM	Other Responses: Sell 100 @ 1.02 MM1	Trade: 50 @ 1.02 Contra 50 @ 1.02 MM1
Cboe BBO .95 X 1.03	Contra Side: Sell 100 @ 1.02 <i>Expose Order</i>		Cancel: 50 @ 1.02 MM1 50 @ 1.02 Contra

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Example 3) Customer Priority: A customer capacity order on the offer has priority and receives a fill ahead of all non-customer responses at the same price and before the Initiating Member receives its 40% allocation.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03	Agency Side: Buy 100 @ 1.03 BAM	Other Responses: Sell 50 @ 1.03 MM1 Sell 20 @ 1.03 MM2	Trade: 10 @ 1.03 CUST 40 @ 1.03 Contra 36 @ 1.03 MM1 14 @ 1.03 MM2
Cboe BBO .95 X 1.03 (10)	Contra Side: Sell 100 @ 1.03		Cancel: 60 @ 1.03 Contra 14 @ 1.03 MM1 6 @ 1.03 MM2
CUST on Offer Sell 10 @ 1.03	Expose Order		

Example 4) Auto Match: BAM order is entered with the Auto Match option elected and a limit price is specified so Auto Match will apply to limited price level responses. The contra will match each contract allocated at the better prices up to and including its limit. The Contra-Allocation of 40% of the original order quantity occurs after better-priced responses are allocated.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03	Agency Side: Buy 100 @ 1.02 BAM	Other Responses: Sell 10 @ 1.00 MM2 Sell 10 @ 1.01 MM1 Sell 20 @ 1.02 BD1 Sell 30 @ 1.02 BD2	Trade: 10 @ 1.00 MM2 10 @ 1.01 MM1 10 @ 1.01 Contra (Auto Match) 40 @ 1.02 Contra (40% entitlement) 18 @ 1.02 BD2 12 @ 1.02 BD1
Cboe BBO .95 X 1.03	Contra Side: Sell 100 @ 1.02 Auto Match Limit 1.01 Expose Order		Cancel: 50 @ 1.02 Contra 8 @ 1.02 BD1 12 @ 1.02 BD2

Example 5) Last Priority: Initiating Member has requested Last Priority. Responses received are greater than the size of the exposed order. The Contra's request for Last Priority is honored and the allocations are given to others.

Market	Order	Responses	Result/Allocations
NBBO	Agency Side:	Other Responses:	Trade:

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.97 X 1.03 Cboe BBO .95 X 1.03	Buy 100 @ 1.02 BAM Contra Side: Sell 100 @ 1.02 Last Priority Expose Order	Sell 100 @ 1.02 MM1 Sell 100 @ 1.02 MM2	50 @ 1.02 MM1 50 @ 1.02 MM2 Cancel: 100 @ 1.02 Contra 50 @ 1.02 MM1 50 @ 1.02 MM2
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Example 6) Priority Quoter status is configured: The Priority Quoter (MM1) participates in the execution after the contra and ahead of non-priority responses at the same price. The priority allocation is equal to the size of the displayed quote at the NBBO. The remainder of the response is eligible to trade pro-rata with other non-priority responses (MM3). Execution priority will be CUST, Contra, Priority MMs, others (Balance of Priority Quoters, Non-Priority MMs, and BDs).

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03 Cboe BBO .97 X 1.03 (20) MM1 quote at 1.03 for 20 contracts MM3 is not @ 1.03	Agency Side: Buy 100 @ 1.02 BAM Contra Side: Sell 100 @ 1.02 Expose Order	Other Responses: Sell 50 @ 1.02 MM1 Sell 50 @ 1.02 MM3	Trade: 40 @ 1.02 Contra 20 @ 1.02 MM1 (Priority Quoter) 15 @ 1.02 MM1 (pro-rata remainder of response) 25 @ 1.02 MM3 (response) Summary of Trades: 40 @ 1.02 Contra 35 @ 1.02 MM1 25 @ 1.02 MM3 Cancel: 60 @ 1.02 Contra 15 @ 1.02 MM1 25 @ 1.02 MM2

4.2 AIM Auction (C1 Only) Effective on EDGX upon implementation of C1 Feature Pack 5

AIM auctions allow Members to facilitate their clients' (agency) order flow by broadcasting their orders on the Exchange for price improvement opportunity over the current market price. At the conclusion of the AIM Auction exposure interval, the agency order will trade against the specified contra party(s) or other responses to the auction.

4.2.1 Initiating AIM Orders

A Member may initiate an AIM auction by submitting a two-sided `New Order Cross` message using either [FIX](#) or [Binary Order Entry \(BOE\)](#) protocols. The two-sided order will contain symbol, price and quantity along with relevant clearing information for both the agency and contra sides. The initiating AIM Order must include the contra-side response(s) within the `New Order Cross` message. A maximum of ten (10) contra-parties will be accepted per order.

The Initiating Member may elect to Auto Match. If elected, the Initiating Member will be allocated the number of contracts equal to the aggregated size of all the orders and responses awarded at each price point. If a limit price is specified (optional), contracts will be matched up to and including their Auto Match limit price.

If the Initiating Member would prefer to surrender its execution entitlement completely, it may elect Last Priority. The system will attempt to honor the request in the allocation process but the Initiating Member will be required to fill the balance of the order, if any remains, after all eligible orders and responses are executed.

AIM orders can optionally include the ISO flag. If present, the initiating member has taken the responsibility of clearing all better-priced interest allowing the execution to occur through the NBBO, but not through the local book. The ISO instruction will be applied to the agency-side of the AIM Auction only.

4.2.2 Response Orders

During the exposure period, other Exchange Members not directly included in the contra-side of a AIM Auction order may send a targeted response to the auction which reflects the responding Member's willingness to participate in that auction. Response orders must be entered on the opposite side of the auction order or they will be rejected. Responses priced more aggressive than the opposite side of the NBBO at the time the auction was created will be capped at the NBBO. Individual responses will be capped at the size of the auction order while members submitting multiple responses will have the cap applied to their aggregate response size. Response orders will be acknowledged and held until the completion of the auction or until an early termination. All unexecuted responses will be canceled back after the completion of the auction.

Response orders may be canceled or modified using the `Order Cancel Request` message or the `Order Cancel/Replace Request` message. As a result, Response orders may not be IOC.

4.2.3 Unrelated Orders

Liquidity resting on the book at the initiation of the auction and unrelated orders received during the auction exposure are also eligible to execute against the auctioned order but are not considered true responses and may have different fees associated with them. If a Member has both a resting order on the book and a response in the auction at the same price, the response is eligible for execution first.

Unrelated orders may also be canceled or modified.

4.2.4 Early Termination

An AIM auction will terminate naturally at the end of the exposure interval. In addition, the auction may terminate early under some circumstances. See Exchange rules for further details.

4.2.5 Matched Trade Prevention

Matched Trade Prevention instructions will not be applied to the AIM order ensuring that the AIM order will not be prevented due to a resting order. AIM Response Orders may only have the Cancel Newest instruction. This will prevent a respondent from executing against an order from the same firm.

4.2.6 Attribution

AIM orders may optionally be attributed to the four-character EFID, a four-character Client ID, or both the EFID and Client ID on the `Auction Notification` message.

4.2.7 Simultaneous AIM Auctions

Simultaneous AIM Auctions will be supported for auctions of greater than or equal to 50 contracts only. If an AIM for less than 50 contracts is ongoing, then an AIM for 50 contracts or more can be initiated. If an AIM for less than 50 contracts is sent, it will be canceled.

4.2.8 Small Size Entitlement

For AIM auctions with an initial size of one or two contracts, the contra-side will be entitled to at least one contract, assuming there are no customers at the final auction price. Customer orders will always trade before the contra receives their entitlement.

4.2.9 AIM Executions

The Initiating Member will receive its execution entitlement at the Final Auction Price after customer orders at that price are filled. If there are only two participants that will trade at the final auction price including the initiating member, the Initiating Member will receive 50% of the remaining order quantity, after customer interest. If there are more than 2 participants at the Final Auction Price including the initiating member, the Initiating Member will receive 40% of the remaining order quantity. The

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unexecuted remainder will trade pro-rata between the respondents with any balance filled by the Contra.

As an incentive to post tighter markets on the Exchange, execution priority will be granted to participants with orders at the NBBO at the time an auction is initiated ahead of other responses at the same price. This Priority Quoter benefit will be based upon the size of the participant's displayed quote. The balance of any response that is greater than the displayed size will trade pro-rata with the remaining responses. Priority Quoter functionality is configurable by underlying symbol on the Exchange.

AIM Auction executions will begin with the best price and conclude with the Final Auction Price where the remaining auction volume will be executed.

4.2.10 AIM Examples

Example 1) Standard Allocation: An AIM Order is entered and exposed. Responses are received at multiple prices. The Contra-Allocation of 40% of the remaining order quantity occurs after better-priced responses are allocated. The remainder trades pro-rata at the Final Auction Price. Unexecuted responses and contra interest are canceled at the conclusion of the auction.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03	Agency Side: Buy 100 @ 1.02 AIM	Other Responses: Sell 10 @ 1.00 MM1 Sell 20 @ 1.01 MM2	Trade: 10 @ 1.00 MM1 20 @ 1.01 MM2 28 @ 1.02 Contra 23 @ 1.02 BD1 19 @ 1.02 BD2
Cboe BBO .95 X 1.03	Contra Side: Sell 100 @ 1.02 <i>Expose Order</i>	Sell 50 @ 1.02 BD1 Sell 40 @ 1.02 BD2	Cancel: 72 @ 1.02 Contra 27 @ 1.02 BD1 21 @ 1.02 BD2

Example 2) Parity Allocation: AIM order is entered and exposed. Only one response is received. The Contra-Allocation at the Final Auction Price is 50% to remain on parity with the response.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03	Agency Side: Buy 100 @ 1.02 AIM	Other Responses: Sell 100 @ 1.02 MM1	Trade: 50 @ 1.02 Contra 50 @ 1.02 MM1
Cboe BBO .95 X 1.03	Contra Side: Sell 100 @ 1.02 <i>Expose Order</i>		Cancel: 50 @ 1.02 MM1 50 @ 1.02 Contra

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Example 3) Customer Priority: A customer capacity order on the offer has priority and receives a fill ahead of all non-customer responses at the same price and before the Initiating Member receives its 40% allocation.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03 Cboe BBO .95 X 1.03 (10) CUST on Offer Sell 10 @ 1.03	Agency Side: Buy 100 @ 1.03 AIM Contra Side: Sell 100 @ 1.03 Expose Order	Other Responses: Sell 50 @ 1.03 MM1 Sell 20 @ 1.03 MM2	Trade: 10 @ 1.03 CUST 36 @ 1.03 Contra 39 @ 1.03 MM1 15 @ 1.03 MM2 Cancel: 64 @ 1.03 Contra 11 @ 1.03 MM1 5 @ 1.03 MM2

Example 4) Auto Match: AIM order is entered with the Auto Match option elected and a limit price is specified so Auto Match will apply to limited price level responses. The contra will match each contract allocated at the better prices up to and including its limit. The Contra-Allocation of 40% of the remaining order quantity occurs after better-priced responses are allocated.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03 Cboe BBO .95 X 1.03	Agency Side: Buy 100 @ 1.02 AIM Contra Side: Sell 100 @ 1.02 Auto Match Limit 1.01 Expose Order	Other Responses: Sell 10 @ 1.00 MM2 Sell 10 @ 1.01 MM1 Sell 20 @ 1.02 BD1 Sell 30 @ 1.02 BD2	Trade: 10 @ 1.00 MM2 10 @ 1.01 MM1 10 @ 1.01 Contra (Auto Match) 28 @ 1.02 Contra (40% entitlement) 17 @ 1.02 BD1 25 @ 1.02 BD2 Cancel: 62 @ 1.02 Contra 3 @ 1.02 BD1 5 @ 1.02 BD2

Example 5) Last Priority: Initiating Member has requested Last Priority. Responses received are greater than the size of the exposed order. The Contra's request for Last Priority is honored and the allocations are given to others.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03	Agency Side: Buy 100 @ 1.02 AIM	Other Responses: Sell 100 @ 1.02 MM1 Sell 100 @ 1.02 MM2	Trade: 50 @ 1.02 MM1 50 @ 1.02 MM2

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Cboe BBO .95 X 1.03	Contra Side: Sell 100 @ 1.02 Last Priority Expose Order	Cancel: 100 @ 1.02 Contra 50 @ 1.02 MM1 50 @ 1.02 MM2
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Example 6) Priority Quoter status is configured: The Priority Quoter (MM1) participates in the execution after the contra and ahead of non-priority responses at the same price. The priority allocation is equal to the size of the displayed quote at the NBBO. The remainder of the response is eligible to trade pro-rata with other non-priority responses (MM3). Execution priority will be CUST, Contra, Priority MMs, others (Balance of Priority Quoters, Non-Priority MMs, BDs).

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03 Cboe BBO .97 X 1.03 (20) MM1 quote at 1.03 for 20 contracts MM3 is not @ 1.03	Agency Side: Buy 100 @ 1.02 AIM Contra Side: Sell 100 @ 1.02 Expose Order	Other Responses: Sell 50 @ 1.02 MM1 Sell 50 @ 1.02 MM3	Trade: 40 @ 1.02 Contra 20 @ 1.02 MM1 (Priority Quoter) 15 @ 1.02 MM1 (pro-rata remainder of response) 25 @ 1.02 MM3 (response) Summary of Trades: 40 @ 1.02 Contra 35 @ 1.02 MM1 25 @ 1.02 MM3 Cancel: 60 @ 1.02 Contra 15 @ 1.02 MM1 25 @ 1.02 MM2

Example 7) AIM ISO: AIM order is sent as ISO. There are no ABBO entry price checks and can trade through the ABBO but must still be at or better than the local BBO. AIM price is equal to local BBO. AIM is accepted and trades with responses and resting Customers at the best price.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03 Cboe BBO .97 X 1.04 (10 Cust)	Agency Side: Buy 50 @ 1.04 AIM ISO Contra Side: Sell 50 @ 1.04 Expose Order	Other Responses: Sell 20 @ 1.02 MM1 Sell 20 @ 1.02 MM2	Trade: 20 @ 1.02 MM1 20 @ 1.02 MM2 10 @ 1.04 Cust Cancel: 50 @ 1.02 Contra

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Example 7) AIM with Reserve: Customer order with reserve quantity resting on the book. One auction response is received and a customer same priced incoming order with reserve quantity is received. Customer orders will trade in time priority at the same price.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03 Cboe BBO .95 X 1.03 (15) Sell 10 @ 1.03 Cust1 (Reserve of 20) Sell 5 @ 1.03 Cust2	Agency Side: Buy 100 @ 1.03 AIM Contra Side: Sell 100 @ 1.03 Expose Order	Other Responses: Sell 60 @ 1.03 MM1 Incoming Orders: Sell 15 @ 1.03 Cust3 (Reserve of 20)	Trade: 10 @ 1.03 Cust1 Display 5 @ 1.03 Cust2 Display 15 @ 1.03 Cust3 Display 35 @ 1.03 Contra 35 @ 1.03 MM1 Cancel: 65 @ 1.03 Contra 25 @ 1.02 MM1

Example 8) AIM with Reserve and Last Priority: Customer order with reserve quantity resting on the book. One auction response is received. Auction will trade with displayed customer interest on the book, then non-customer responses and orders, and then any customer and non-customer reserve orders and the initial contra at the final auction price.

Market	Order	Responses	Result/Allocations
NBBO .97 X 1.03 Cboe BBO .95 X 1.02 (15) Sell 10 @ 1.02 Cust1 (Reserve of 20) Sell 5 @ 1.02 Cust2	Agency Side: Buy 100 @ 1.02 AIM Contra Side: Sell 100 @ 1.02 Last Priority Expose Order	Other Responses: Sell 60 @ 1.02 MM1	Trade: 10 @ 1.02 Cust1 Display 5 @ 1.02 Cust2 Display 60 @ 1.02 MM1 20 @ 1.02 Cust1 Reserve 5 @ 1.02 Contra Cancel: 95 @ 1.02 Contra

4.2.11 Sweep & AIM (C1 Only) Effective on EDGX with C1 Feature Pack 5

Sweep & AIM Auctions allow Members to facilitate their clients' (agency) order flow by broadcasting their orders on the Exchange for price improvement opportunity, while sweeping any better priced quotes at local and away markets. The Exchange will sweep better-priced displayed away quotes and better-priced local interest before the AIM auction is initiated.

4.2.12 Sweep & AIM Examples

Example 1) Sweep & AIM received for 100 contracts through away markets only, all away routed orders complete filled. Only better priced away markets are swept.

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Market	Order	Responses	Result/Allocations
NBBO 1.20 X 1.30 BZX @ 1.30 (10) ISE @ 1.30 (10) MIAX @ 1.31 (10) ARCA @ 1.31 (10) PHLX @ 1.32 (10) Cboe BBO 1.20 X 1.35	Agency Side: Buy 100 @ 1.32 Sweep & AIM Contra Side: Sell 100 @ 1.32 Expose Order	Other Responses: None	Sweep: BZX 10 @ 1.30 ISE 10 @ 1.30 MIAX 10 @ 1.31 ARCA 10 @ 1.31 AIM ISO (60): 60 vs. Contra @ 1.32 Cancel: 40 Contra

Example 2) Sweep & AIM received for 100 contracts through the away and local book, all away routed orders complete filled. One price level on local book swept.

Market	Order	Responses	Result/Allocations
NBBO 1.20 X 1.30 BZX @ 1.30 (10) ISE @ 1.30 (10) MIAX @ 1.31 (10) ARCA @ 1.31 (10) PHLX @ 1.40 (50) Cboe BBO 1.20 X 1.35 (10) Next Offer 10 @ 1.40 (Cust)	Agency Side: Buy 100 @ 1.40 Sweep AIM Contra Side: Sell 100 @ 1.40 Expose Order	Other Responses: None	Sweep: BZX 10 @ 1.30 ISE 10 @ 1.30 MIAX 10 @ 1.31 ARCA 10 @ 1.31 Local 10 @ 1.35 AIM ISO (50): 10 vs. Cust @ 1.40 40 vs. Contra @ 1.40 Cancel: 60 Contra

Example 3) Sweep & AIM received for 100 contracts through the away and local book, unfilled order received back during exposure. One price level on local book swept, one Response received.

Market	Order	Responses	Result/Allocations
NBBO 1.20 X 1.30 BZX @ 1.30 (10) ISE @ 1.30 (10) MIAX @ 1.31 (10) ARCA @ 1.31 (10) PHLX @ 1.40 (50) Cboe BBO 1.20 X 1.35 (10) Next Offer 10 @ 1.40 BD1	Agency Side: Buy 100 @ 1.40 Sweep AIM Contra Side: Sell 100 @ 1.40 Expose Order	Other Responses: 100 @ 1.40 MM1 Response capped at 60.	Sweep: BZX 10 @ 1.30 ISE 10 @ 1.30 MIAX 10 @ 1.31 ARCA 10 @ 1.31 Local 10 @ 1.35 40 filled, 10 unfilled during exposure.

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			AIM ISO (60): 24 vs. Contra @ 1.40 31 vs. MM1 @ 1.40 5 vs. BD1 @ 1.40 Cancel: 76 Contra 69 MM1
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4.3 Solicitation Auction Mechanism (SAM) (C1 Only) Effective on EDGX 04/29/19

SAM Auctions allow Members to facilitate their clients' (agency) order flow by broadcasting their orders on the Exchange for price improvement opportunity over the current market price. At the conclusion of the SAM Auction exposure interval, the agency order will trade against the specified contra party(s) or other responses to the auction. SAM Auctions must be for 500 contracts or more.

4.3.1 Initiating SAM Orders

A Member may initiate a SAM Auction by submitting a two-sided `New Order Cross` message using either [FIX](#) or [Binary Order Entry \(BOE\)](#) protocols. The two-sided order will contain symbol, price and quantity along with relevant clearing information for both the agency and contra sides. A maximum of ten (10) contra-parties will be accepted per order. The contra-side can be any order capacity, unless the contra-side EFID is the same as the agency-side EFID. In that case, the contra capacity cannot be Firm.

Auto Match and Last Priority are not available for SAM Auctions.

SAM orders can optionally include the ISO flag. If present, the initiating member has taken the responsibility of clearing all better-priced interest allowing the execution to occur through the NBBO, but not through the local book. The ISO instruction will be applied to the agency-side of the SAM Auction only.

4.3.2 Response Orders

During the exposure period, other Exchange Members not directly included in the contra-side of a SAM Auction order may send a targeted response to the auction which reflects the responding Member's willingness to participate in that auction. Response orders must be entered on the opposite side of the auction order or they will be rejected. Responses priced more aggressive than the opposite side of the NBBO at the time the auction was created will be capped at the NBBO. Individual responses will be capped at the size of the auction order while members submitting multiple responses will have the cap applied to their aggregate response size. Response orders will be acknowledged and held until the

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completion of the auction or until an early termination. All unexecuted responses will be canceled back after the completion of the auction.

Response orders may be canceled or modified using the `Order Cancel Request` message or the `Order Cancel/Replace Request` message. As a result, Response orders may not be IOC.

4.3.3 Unrelated Orders

AIM unrelated orders rules will also apply to SAM Auctions.

4.3.4 Early Termination

SAM Auctions will terminate naturally at the end of the exposure interval. In addition, the auction may terminate early under some circumstances. See Exchange rules for further details.

4.3.5 Matched Trade Prevention

AIM Matched Trade Prevention rules will also apply to SAM Auctions.

4.3.6 SAM Executions

Depending on responses and unrelated orders received, the agency-side will either 1) trade with price-improved responses, better priced unrelated orders, and any customer orders at the auction price, 2) trade fully against the contra-side, or 3) be canceled in its entirety. SAM Auctions will be canceled without execution if there is an incoming Customer order on the opposite side of the agency order at the same price and there is insufficient quantity in price-improved responses, better priced unrelated orders and customer quantity to fully fill the agency-side. SAM Auctions will also be canceled without execution if a price-improved unrelated order is received and there is insufficient quantity in price-improved responses and better priced unrelated orders to fully fill the agency-side.

If the size of price-improved responses and better priced unrelated orders exceeds the SAM Auction size, the normal pro-rata allocation rules will apply.

4.3.7 SAM Examples

Example 1) No responses received. Executes at Solicitation Order Price vs Contra after exposure.

Market	Order	Responses	Result/Allocations
NBBO 1.24 X 1.28	Agency Side: Buy 1000 @ 1.28 SAM	Other Responses: No Responses received	Trade: 1000 @ 1.28 Contra
Cboe BBO 1.24 X 1.28	Contra Side: Sell 1000 @ 1.28 <i>Expose Order</i>		

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Example 2) There is insufficient size in price-improved responses to break up the trade. Agency side trades against the solicited side at limit auction price.

Market	Order	Responses	Result/Allocations
NBBO 1.24 X 1.28	Agency Side: Buy 1000 @ 1.26 SAM	Other Responses: Sell 300 @ 1.25 BD1 Sell 400 @ 1.25 MM1	Trade: 1000 @ 1.26 Contra
Cboe BBO 1.24 X 1.28	Contra Side: Sell 1000 @ 1.26 Expose Order		Cancel: 300 BD1 400 MM1

Example 3) There is sufficient size in price-improved responses to break up the trade. Agency side trades against the responses at improved price.

Market	Order	Responses	Result/Allocations
NBBO 1.24 X 1.28	Agency Side: Buy 1000 @ 1.26 SAM	Other Responses: Sell 500 @ 1.25 BD1 Sell 500 @ 1.25 MM1	Trade: 500 @ 1.25 BD1 500 @ 1.25 MM1
Cboe BBO 1.24 X 1.28	Contra Side: Sell 1000 @ 1.26 Expose Order		Cancel: 1000 Contra

Example 4) Incoming order at a better price on opposite side causes auction to early terminate. There is sufficient size including the orders and responses to execute the unsolicited order vs the responses/incoming order at the auction price.

Market	Order	Responses	Result/Allocations
NBBO 1.24 X 1.28	Agency Side: Buy 1000 @ 1.28 SAM	Other Responses: Sell 1000 @ 1.27 MM1 Sell 500 @ 1.27 MM2	Trade: 500 @ 1.27 MM1 250 @ 1.27 MM2 250 @ 1.27 BD1
Cboe BBO 1.24 X 1.28	Contra Side: Sell 1000 @ 1.28 Expose Order	Unrelated Incoming Order: Sell 500 @ 1.27 BD1	Cancel: 1000 Contra 500 MM1 250 MM2

4.4 Step-Up Mechanism (SUM)

Cboe SUM Auctions provide execution opportunity by exposing marketable orders prior to (1) routing to an away market, (2) canceling an order back or (3) booking the order on the Exchange. The period of time the SUM Auction order will be exposed is 50 ms. Cboe SUM Auctions are system-generated rather

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than Member-initiated. Member orders will initiate a SUM Auction if they are marketable against the NBBO and if the Member is configured to participate in SUM Auctions or the order bears explicit instructions to expose it.

Other Exchange Members can interact with SUM Auction Orders by entering regular marketable orders or Response Orders.

Regular marketable orders or Response Orders that satisfy all or part of a SUM Auction Order will execute immediately, while the remaining SUM Auction Order balance will continue to be exposed and eligible for execution until the exposure period is over or the SUM Auction terminates early.

4.4.1 Initiating SUM Orders

A Member may decide if its order is eligible to initiate a SUM Auction. By default, routable orders will be SUM eligible, while non-routable orders will not be SUM eligible unless otherwise instructed. Members may override these defaults on an order-by-order basis or configure alternative port level defaults by submitting a “Modify” Logical Port Request into the [Cboe Customer Web Portal](#).

Orders will be eligible to initiate a SUM Auction prior to the order routing, canceling or posting to the book if identified with the following instructions:

Fix Tag	Routable Order	Non-Routable Order
9370 AuctionID	Not Supplied	Not Supplied
9303 RoutingInst	R, RS, S, SS, X or XS	BS
9400 RoutStrategy	ROUT	N/A
18 ExecInst (C1 Only) Effective on EDGX with C1 Feature Pack 6	G (All or None)	G (All or None)
Incompatible with:	ISO flag (ExecInst = f) TIF = FOK MinQty	ISO = (ExecInst = f) TIF = FOK MinQty

SUM Auctions Orders can be canceled at any time by the Member, resulting in the remaining unexecuted balance canceled back to the Member.

For C1, SUM orders can also be designated as All or None (AON) by setting *ExecInst* (tag 18) = ‘G’.

4.4.2 Responding to SUM Auction Orders

Members may respond to a SUM Auction with either a regular marketable order or a Response Order. Response Orders must include the *AuctionID* (FIX Tag 9370) of the targeted SUM Auction and will only interact with the associated SUM Auction Order.

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Regular marketable orders and Response Orders may be market orders or limit orders priced equal to or more aggressive than the SUM Auction Price.

Example:

NBBO: 1.00 x 1.01

SUM Order: Buy @ 1.01

Response Order: Sell @ 1.01 – marketable (trades)

Response Orders priced at or better than the NBBO Price that satisfy all or part of a SUM Auction Order will execute immediately, unless the SUM auction is AON. If the SUM is AON, response orders that do not satisfy the size contingency will be held to allow for aggregation with other response orders. If the aggregate quantity of the SUM AON responses and unrelated orders is insufficient to satisfy the size contingency the auction will be canceled. Response Orders priced less aggressive than the NBBO Price and equal to or more aggressive than the Auction Price will be held and continue to be eligible for execution until the SUM Auction Order fully executes, expires or terminates early. These held Response Orders may be canceled, modified or cancel replaced anytime.

Held Response Orders may become marketable if the NBBO updates during the exposure window. If multiple held Response Orders become marketable, existing allocation logic will be applied (See Example 9).

Response Orders that are not fully executed against the targeted SUM Auction Order will be canceled back following the conclusion of the SUM Auction.

Regular marketable orders that do not execute against the SUM Auction Order will be processed according to the original order instructions by routing to an away market, canceling back, or posting to the book.

4.4.3 Early Termination

A SUM order will terminate naturally at the end of the exposure interval. In addition, the auction may terminate early under some circumstances. See Exchange rules for further details.

4.4.4 Matched Trade Prevention

SUM eligible orders may have any of the five valid Match Trade Prevention instructions.

Response Orders may only have the Cancel Newest instruction. If both the inbound order and the Response Order bear MTP instructions, the Response Order will be canceled and the SUM Auction will continue.

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Regular marketable orders participating in an auction upon arrival, may also have any of the 5 MTP instructions applied.

If an exposed SUM Auction Order having any MTP instruction would match against a regular marketable order also having any MTP instruction, the instruction on the regular marketable order will be observed. In this scenario, it is possible the SUM order will be canceled.

4.4.5 SUM Examples

T_n represents the time sequence of each event.

Example 1) After executing available size on Cboe, the remainder of the order is exposed. Execute the remaining size vs. responses as they arrive.

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	Response Orders: (FIRMA) Sell 5 @ 1.30 (A1) T ₅ (FIRMB) Sell 5 @ 1.30 (A1) T ₇	Trade: 10 @ 1.30 (A1) vs. book T ₃ 5 @ 1.30 (A1) vs. FIRMA T ₆ 5 @ 1.30 (A1) vs. FIRMB T ₈
Cboe BBO: 1.24 X 1.30 (10) T ₁	Expose O1 Balance: Buy 10 @ 1.30 (A1) T ₄		

Example 2) After executing the available size on Cboe, expose the remainder of the order. Execute some size vs. responses and route the balance.

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	Response Orders: (FIRMA) Sell 5 @ 1.30 (A1) T ₅	Trade: 10 @ 1.30 (A1) vs. book T ₃ 5 @ 1.30 (A1) vs. FIRMA T ₆
Cboe BBO: 1.24 X 1.30 (10) T ₁	Expose O1 Balance: Buy 10 @ 1.30 (A1) T ₄		Route: Buy 5 @ 1.30 (O1) T ₇

Example 3) After executing the available size on Cboe, expose the remainder of the order. No responses are received: The remainder of the order is routed.

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 T ₂	No Responses	Trade: 10 @ 1.30 (A1) vs. book T ₃
Cboe BBO: 1.24 X 1.30 (10) T ₁	Expose O1 Balance: Buy 10 @ 1.30 (A1) T ₄		Route: 10 @ 1.30 T ₅

Example 4) Cboe is not at the NBBO when the order arrives so there is no liquidity on the book to interact with. Expose the entire order before routing. No responses: Route entire order size.

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Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	No Responses	Route: Buy 20 @ 1.30 (O1) T ₄
Cboe BBO: 1.24 X 1.35 T ₁	Expose O1: Buy 20 @ 1.30 (A1) T ₃		

Example 5a) Cancel request received from Customer. If the order is in the midst of exposure, cancel any unexecuted remainder of the order.

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	Response Orders: (FIRMA) Sell 3 @ 1.29 (A1) T ₅	Trade: 10 @ 1.30 (A1) vs. book T ₃ 3 @ 1.30 (A1) vs. FIRMA T ₆
Cboe BBO: 1.24 X 1.30 (10) T ₁	Expose O1 Balance: Buy 10 @ 1.30 (A1) T ₄		Auction Cancel: (A1) T ₈
	Cancel received: (O1) T ₇		Cancel Order: Buy 7 @ 1.30 (A1) T ₉

Example 5b) Cancel request received from Customer. If the order is in the midst of exposure, cancel any unexecuted remainder of the order and unexecuted Responses. (Note: This conveys a race condition.)

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	Response Orders: (FIRMA) Sell 3 @ 1.29 (A1) T ₈	Trade: 10 @ 1.30 (A1) vs. book T ₃
Cboe BBO: 1.24 X 1.30 (10) T ₁	Expose O1 Balance: Buy 10 @ 1.30 (A1) T ₄		Auction Cancel: (A1) T ₆
	Cancel received: (O1) T ₅		Cancel Order: Buy 10 @ 1.30 (O1) T ₇
			Cancel Late Response: Sell 3 @ 1.29 FIRMA T ₉

Example 6) Early Termination: NBBO Fades. An order partially executes against the book (The Cboe BBO updates based on our execution) and initiates an exposure auction for the balance of the order before routing. The exposed order then executes against a response. An NBBO update is received; the NBBO has faded and both Cboe BBO and NBBO are the same on the offer side. The auction early terminates. The remainder of the order is posted to the Cboe book and the Cboe quote is updated improving the NBBO.

Market	Order	Responses	Result/Allocation
NBBO: 1.28 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	Response Orders: (FIRMA) Sell 5 @ 1.29 (A1) T ₆	Trade: 10 @ 1.30 (A1) vs. book T ₃

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Cboe BBO: 1.28 X 1.30 (10) T ₁ Cboe BBO Update: 1.28 X 1.31 T ₄ NBBO Update: 1.28 X 1.31 T ₈ Cboe BBO Update: (5) 1.30 X 1.31 T ₁₁ NBBO Update: 1.30 X 1.31 T ₁₂	Expose O1 Balance: Buy 10 @ 1.30 (A1) T ₅		5 @ 1.30 (A1) vs. FIRMA T ₇ Terminate Auction: (A1) T ₉ Post Order: (O1) T ₁₀
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Example 7a) Parallel Exposures. Auction responses **are not** eligible to participate in parallel SUM Auction events. The initial order to buy 20 @ 1.30 partially executes against the book (10). The balance of the order is exposed and trades against the first Response. A Regular Order is received to buy 10 at the auction price. A second SUM Auction (A2) is started for that order. A second Response is received (FIRMB) targeting (A1) which trades against the remaining quantity of the initial order leaving 5 contracts remaining on the FIRMB response. The balance of the Response by FIRMB is canceled even though it is executable against the Regular Order exposed in (A2).

Market	Order	Responses	Result/Allocation
NBBO: 1.28 X 1.30 T ₁ Cboe BBO: 1.28 X 1.30 (10) T ₁ Cboe BBO Update: 1.28 X 1.31 T ₄	Regular Order: Buy 20 @ 1.30 (O1) T ₂ Expose O1 Balance: Buy 10 @ 1.30 (A1) T ₅ Regular Order: Buy 10 @ 1.30 (O2) T ₈ Expose O2: (A2) T ₉	Response Orders: (FIRMA) Sell 5 @ 1.29 (A1) T ₆ (FIRMB) Sell 10 @ 1.30 (A1) T ₁₀	Trade: 10 @ 1.30 (A1) vs. book T ₃ 5 @ 1.30 (A1) vs. FIRMA T ₇ 5 @ 1.30 (A1) vs. FIRMB T ₁₁ Cancel: Sell 5 @ 1.30 (FIRMB) T ₁₂ Exposure Expired: Buy 10 @ 1.30 (A2) T ₁₃

Example 7b) Two SUM Auctions will be started based on the arrival of 2 Regular buy orders neither of which can be executed at our BBO. Regular orders, unlike Response Orders, **are** eligible to trade in parallel SUM Auctions. A third Regular order (O3) is received on the opposite side of the exposed orders that can be executed against both SUM Auctions. The earlier SUM Auction (A1) will be completed first with the remainder applied to the second SUM Auction (A2). FIRMB's response cancels upon entry with the second auction (A2) having fully executed with FIRMA.

Market	Order	Responses	Result/Allocation
NBBO: 1.28 X 1.32 T ₁	Regular Order: Buy 5 @ 1.32 (O1) T ₂	Regular Order: (FIRMA) Sell 15 @ 1.29 (O3) T ₆	Trade: 5 @ 1.32 (A1) vs. FIRMA T ₇

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Cboe BBO: 1.26 X 1.34 T ₁	Expose O1: (A1) T ₃ Regular Order: Buy 10 @ 1.33 (O2) T ₄ Expose O2: (A2) T ₅	Response Order: (FIRMB) Sell 10 @ 1.29 (A2) T ₉	10 @ 1.32 (A2) vs. FIRMA T ₈ Cancel: Sell 10 @ 1.29 (FIRMB) T ₁₀
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Example 7c) Parallel SUM Auctions: Regular Orders **are** eligible to participate in parallel SUM Auctions. Two separate orders are entered to buy at 1.30. Each one initiates its own SUM Auction. FIRMA sends a Regular sell order (not marked with a particular Auction ID) that partially executes in SUM (A1). Part of the unexecuted balance of the regular order can execute in the parallel SUM Auction (A2). The remainder will initiate its own SUM Auction, (A3) as the NBBO bid is higher than the Cboe Best Bid.

Market	Order	Responses	Result/Allocation
NBBO: 1.28 X 1.30 T ₁ Cboe BBO: 1.27 X 1.31 T ₁	Regular Order: Buy 10 @ 1.30 (O1) T ₂ Expose O1: (A1) T ₃ Regular Order: Buy 5 @ 1.30 (O2) T ₄ Expose O2: (A2) T ₅ Expose O3 balance: Sell 5 @ 1.28 (A3) T ₉	Regular Order: (FIRMA) Sell 20 @ 1.28 (O3) T ₆	Trades: 10 @ 1.30 (A1) vs. FIRMA T ₇ 5 @ 1.30 (A2) vs. FIRMA T ₈

Example 8a) When Responses are received that are not immediately executable against an exposed order (as is the case with BD1 and MM2 responses below), the responses are held until they either become executable or the end of the exposure period. In this scenario, the NBBO moves allowing the responses to trade.

Market	Order	Responses	Result/Allocation
NBBO: 1.00 X 1.10 T ₁ Cboe BBO: 1.00 X 1.20 T ₁ Cboe BBO Update: 1.00 X 1.19 (50) T ₇ NBBO Update: 1.00 X 1.19 T ₈ Cboe BBO Update:	Regular Order: Buy 100 @ 1.20 (O1) T ₂ Expose O1: (A1) T ₃	Response Orders: (BD1) Sell 100 @ 1.19 (A1) T ₄ (MM2) Sell 100 @ 1.19 (A1) T ₅ Regular Order: (MM1) Sell 50 @ 1.19 (O2) T ₆	Trades: T ₉ 40 @ 1.19 (A1) vs. BD1 40 @ 1.19 (A1) vs. MM2 20 @ 1.19 (A1) vs. MM1 Cancel: T ₁₀ 60 @ 1.19 BD1 60 @ 1.19 MM2

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1.00 X 1.19 (30) T ₁₁			
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Example 8b) One of the responses received cannot execute against the SUM Auction order as it is outside of the updated NBBO. At the end of the exposure period, the Response Order is canceled and the unexecuted balance of the SUM Auction order is eligible to route out. When the NBBO updates, eligible Responses and Regular Orders trade against the SUM Auction order. With an unexecuted balance, the SUM Auction continues to its natural end. The remaining contracts of the SUM Auction order are routed out.

Market	Order	Responses	Result/Allocation
NBBO: 1.00 X 1.10 T ₁ Cboe BBO: 1.00 X 1.20 T ₁ Cboe BBO Update: 1.00 X 1.18 (20) T ₇ Cboe BBO Update: 1.00 X 1.18 (30) T ₉ NBBO Update: 1.00 X 1.18 T ₁₀ Cboe BBO: 1.00 X 1.20 T ₁₂	Regular Order: Buy 100 @ 1.20 (O1) T ₂ Expose O1: (A1) T ₃	Response Orders: (BD1) Sell 100 @ 1.19 (A1) T ₄ (MM2) Sell 30 @ 1.18 (A1) T ₅ Regular Orders: (MM1) Sell 20 @ 1.18 (O2) T ₆ (CUST) Sell 10 @ 1.18 (O3) T ₈	Trade: T ₁₁ 10 @ 1.18 (A1) vs CUST 30 @ 1.18 (A1) vs MM2 20 @ 1.18 (A1) vs MM1 Exposure Ended: (A1) T ₁₃ Route O1 balance: Buy 40 @ 1.18 (O1) T ₁₄ Cancel: 100 @ 1.19 BD1 T ₁₅

Example 9a) A SUM Auction order is modified and canceled due to a modification of the price and increased order quantity. A new auction is not initiated due to O2 no longer being marketable against the NBBO. The auction is terminated and the Cboe BBO is updated.

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁ Cboe BBO: 1.24 X 1.30 (10) T ₁ Cboe BBO: T ₄ 1.24 X 1.31 Cboe BBO: T ₈ 1.29 X 1.31	Regular Order: Buy 20 @ 1.30 (O1) T ₂ Expose O1: Buy 10 @ 1.30 (A1) T ₅ Modify O1 Received: Buy 25 @ 1.29 (O2) T ₆	No Responses	Trade: 10 @ 1.30 (A1) vs. book T ₃ Cancel Auction (A1) T ₇

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Example 9b) A SUM Auction order is modified and canceled due to a modification of an increased order quantity. The modified order (O2) remains marketable against the NBBO resulting in a new auction being initiated. The original auction (A1) is terminated. The new order is exposed (A2) and the timer is refreshed.

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	No Responses	Trade: 10 @ 1.30 (A1) vs. book T ₃
Cboe BBO: 1.24 X 1.30 (10) T ₁	Expose O1: Buy 10 @ 1.30 (A1) T ₅		Cancel Auction: (A1) T ₇
Cboe BBO: 1.24 X 1.31 T ₄	Modify O1 Received: Buy 25 @ 1.30 (O2) T ₆		Exposure Expired: Buy 15 @ 1.30 (A2) T ₉
	Expose Modified Order: Buy 15 @ 1.30 (A2) T ₈		

Example 9c) A SUM Auction order is modified and not canceled due to a reduction in order quantity from the original quantity. The original auction (A1) remains active until the auction expires. After expiry, the order has a remainder of 5 contracts (modified order quantity of 15 minus 10 executed) to route away.

Market	Order	Responses	Result/Allocation
NBBO: 1.26 X 1.30 T ₁	Regular Order: Buy 20 @ 1.30 (O1) T ₂	No Responses	Trade: 10 @ 1.30 (A1) vs. book T ₃
Cboe BBO: 1.24 X 1.30 (10) T ₁	Expose O1: Buy 10 @ 1.30 (A1) T ₅		Exposure Expired: Buy 5 @ 1.30 (A1) T ₇
Cboe BBO: 1.24 X 1.31 T ₄	Modify O1 Received: Buy 15 @ 1.30 (O2) T ₆		Route O1 balance: Buy 5 @ 1.30 (O1) T ₈

Example 10) An AON order enters SUM.

Market	Order	Responses	Result/Allocation
NBBO: 1.00 X 1.20	Order 1: Sell 4 @ 1.20 AON Order 2: Buy 5 @ 1.20 AON Step up eligible	No Responses	Order 2 rests on book at 1.20, locks Order 1

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Example 11) Concurrent SUM auctions are handled in time priority only. AON orders in SUM are not held in lower priority level than non-AON orders in SUM.

Market	Order	Responses	Result/Allocation
NBBO: 1.00 X 1.20	Order 1: Buy 5 @ 1.20 AON Step up eligible Order 2: Buy 5 @ 1.20 Step up eligible Order 3: Sell 5 @ 1.20 Unrelated order		Trade: Order 3 trades with Order 1 for 5 @1.20

Example 12) Aggregation of SUM AON responses meets entire AON quantity.

Market	Order	Responses	Result/Allocation
NBBO: 1.00 X 1.20	Order 1: Buy 5 @ 1.20 AON Step up eligible	Order 2: Sell 4 @ 1.20 Step up eligible Order 3: Sell 1 @ 1.20 Unrelated order	Trade: Order 2 trades with Order 1 for 4 @1.20 Order 3 trades with Order 1 for 1 @1.20

4.5 Qualified Contingent Cross (QCC)

A Qualified Contingent Cross represents an order comprised of an initiating order to buy (sell) at least 1,000 contracts that is identified as being part of a Qualified Contingent Trade (QCT), coupled with a contra-side order or orders totaling an equal number of contracts. QCC orders will execute upon arrival without exposure.

QCC orders are part of a multi-leg strategy that involves both an option leg and a stock component. EDGX Options will only support the “Options-Only” functionality where the option leg will trade at the prevailing rate in the standard tick, while the equity component could be traded on any Equity Exchange.

C1 Options will support the trading of both the Options leg and the equity leg of the QCC order. Please see the [US Options Complex Book Process Specification](#) for further details.

4.5.1 Initiating QCC Orders

A Member may initiate a QCC by submitting a two-sided `New Order Cross` message using either [FIX](#) or [Binary Order Entry \(BOE\)](#) protocols and identifying the `CrossType` as “QCC” The two-sided order will contain symbol, price and quantity along with relevant clearing information for both the agency and contra side(s) and optional routing broker details. The initiating QCC Order must include the contra-side response(s) within the `QCC New Order Cross` message. A maximum of ten (10) contra-parties will be accepted per order with a minimum total quantity of 1,000 contracts.

QCC Orders will be canceled or rejected rather than execute upon arrival if:

- There is a Priority Customer order resting on the order book at the execution price on either side.
- The limit price is outside the NBBO.
- The limit price is entered at an invalid tick increment.
- The Order Quantity is less than 1,000 contracts.

The symbol has not been open for trading, is in a halt state or is received during pre-market queuing period.

4.5.2 Response Orders

There will be no responses to QCC orders since they will be executed immediately without exposure.

4.5.3 Matched Trade Prevention

Matched Trade Prevention instructions will not be applicable for QCC orders.

4.5.4 QCC Executions

QCC executions will execute immediately and in full as long as qualifying conditions are met. With QCC there is no order exposure, no response mechanism and no interaction with the order book.

4.5.5 Market Data

QCC orders will not be displayed on either the US Options Multicast PITCH feed, the US Options Auction Feed, or OPRA.

4.5.6 OPRA

Executions resulting from QCC orders will be reported to OPRA as a Regular Trade.

4.5.7 Cboe Feeds

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Executions resulting from QCC orders will be reported to the US Options Multicast PITCH feed as a Trade Message.

4.5.8 Regulatory Impact and Member Reporting of Equity Trades

Members will be required to maintain books and records demonstrating the tie to their equity trades in the market with their QCC options trades executed on the C1 and EDGX Options Exchanges.

Members trading QCC will be required to upload a spreadsheet into the [Cboe Customer Web Portal](#) conveying the details of their trades. Members must supply to the Exchange both equity and options trade details in a manner to be conveyed to the Exchange using a method prescribed by the Exchange through Exchange memo.

In addition to the file upload, C1 Customers will be allowed to submit the equity leg execution information to Cboe in the New Order Cross message if the equity portion was executed away. Refer to the [US Options FIX Specification](#) for further details.

4.5.9 QCC Examples

1a) QCC order rejected: Size is less than the minimum size (assumed to be 1000).

Market	Order	Responses + Book	Result/Allocation
NBBO: 1.20 X 1.30 Cboe BBO: 1.15 X 1.35	QCC: Buy 600 XYZ Feb 25 C @ 1.30	N/A...No Exposure	Cancel Order: Order must be a minimum size (1000 contracts)

1b) QCC order is rejected. Must be at or between the NBBO and the Cboe BBO.

Market	Order	Responses + Book	Result/Allocation
NBBO: 1.20 X 1.30 Cboe BBO: 1.15 X 1.35	QCC: Buy 1000 XYZ Feb 25 C @ 1.35	N/A...No Exposure	Cancel Order: Order must be at or between the NBBO (1.20 – 1.30)

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2) QCC order is canceled due to customer orders on the book at the execution price.

Market	Order	Responses + Book	Result/Allocation
NBBO: 1.20 X 1.30 Cboe BBO: 1.15 X 1.30 CUST 1: 200 @ 1.30 CUST 2: 300 @ 1.30	QCC: Buy 1000 XYZ Feb 25 C @ 1.30	N/A...No Exposure	Cancel Order: CUST order on the offer at the execution price.

5 References

5.1 Order Entry

For more information regarding Cboe Options Auction order entry, please refer to the appropriate specification:

- [Cboe US Options FIX Specification](#)
- [Cboe US Options BOE Specification](#)

5.2 Market Data

For more information regarding Cboe Options Auction information market data messaging, please refer to the appropriate market data specification:

- [Cboe US Options Auction Feed Specification](#)
- [Cboe Depth – Multicast PITCH Specification](#)

6 Support

Please e-mail questions or comments regarding this document to tradedesk@cboe.com.

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Revision History

Document Version	Date	Description
1.0.0	05/17/16	Initial draft version.
1.0.1	07/07/16	Updated SUM Auction exposure time.
1.0.2	08/01/16	Added support for BAM Auction functionality (available in EDGX Options Certification 10/11/16 and EDGX Options Production 11/11/16).
1.0.3	09/07/16	Updated SUM Auction exposure time.
1.0.4	01/25/17	Updated SUM early termination details. Updated BAM Auction Notification Message details. Noted that BAM Response orders may not be IOC. Added support for QCC Auction functionality (available in EDGX Options Certification 2/24/17 and EDGX Options Production 3/3/17).
1.0.5	10/17/17	Cboe branding/logo changes.
1.1.0	11/16/18	Added support for Cboe Options Exchange.
1.1.1	02/06/19	Added notes indicating change to BAM nomenclature and implementation of SAM for Feature Pack 5.
1.1.2	03/13/19	Clarified description of responses to SUM auction orders. Updated effective date for SAM to 04/29/19 .
1.1.3	03/18/19	Added support for AON orders on EDGX available with C1 Feature Pack 6 . Added additional SUM + AON examples.