Cboe BIDS Australia - Service Description

Version 1.2 – September 2023

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Contents

1   Introduction

This document provides the service description of a new service (**Cboe BIDS Australia**) which has been designed by Cboe Australia Pty Ltd (**CXA** or **Cboe**) and BIDS Trading L.P. and its affiliates (collectively **BIDS**) to offer additional functionality for users of the CXA market.

Cboe BIDS Australia is a block and large-sized trading execution service that allows **Participants** and their clients to submit messages indicating trading interest (**conditional messages**) and provides an opportunity to firm-up that trading interest, after it is matched, by submitting a **firm order**. It includes measures to minimise information leakage by keeping **conditional message** firm-up rates at or above appropriate levels. Matched **firm orders** result in an on-exchange trade execution on Cboe BIDS Australia.

The service also supports the direct submission of **firm orders** by **Participants**, which will execute immediately when matching with another **firm order**.

Cboe BIDS Australia includes a sponsored access component which allows certain buy-side firms (**Sponsored Users**) to submit **conditional messages** to the service provided they are sponsored by a CXA Participant (**Sponsoring Participant**) who is responsible for all orders and trades that originate from the **conditional messages**.

1.1   Regulation

CXA is the holder of an Australian Markets License (**AML**) and is regulated by the Australian Securities & Investments Commission (**ASIC**). Cboe BIDS Australia is operated by CXA under its AML.

The Operating Rules and Operating Rules: Procedures provide the rules and procedures that govern Cboe BIDS Australia. This service description provides additional information regarding the operation of Cboe BIDS Australia and is a Technical Specification for the purposes of the rules. This document does not have the status of rules or procedures and is secondary and subordinate to the rules and procedures.

1.2   Definitions

BIDS Instruction	A **firm order** or **conditional message** submitted to Cboe BIDS Australia.
Block Trade	Has the meaning given by the ASIC Market Integrity Rules (Securities Markets) 2017
Central Counterparty (CCP)	A clearing facility approved by Cboe Note: This is currently ASX Clear
Conditional Message	An electronic message indicating an interest to buy or sell submitted to Cboe BIDS Australia that is non-binding, conditional and does not constitute a **firm order**
Firm order	An executable order that was directly entered into Cboe BIDS Australia or the result of a successful firm up of a **conditional message** after an invitation to trade
Introducing Broker	A firm that has arrangements with a **Sponsored User** and a **Sponsoring Participant** in relation to Cboe BIDS Australia
NBBO	The consolidated Best Bid and Offer, which incorporates all best, displayed Buy Order Prices and best displayed Sell Order Prices available from each market. It comprises the best lit bid and the best lit offer overall.
Participant	An entity admitted as a Participant of Cboe under the Cboe Operating Rules
Sponsored User	A firm that has an arrangement with a **Sponsoring Participant** or an **Introducing Broker** to use Cboe BIDS Australia

| Sponsoring Participant	A **Participant** that has an arrangement with a **Sponsored User** or **Introducing Broker** to offer execution and clearing services in relation to Cboe BIDS Australia.
Trade with Price Improvement	Has the meaning given by the ASIC Market Integrity Rules (Securities Markets) 2017

2   Conditional Message Workflow

1. The ability to submit **conditional messages** to Cboe BIDS Australia is enabled for **Participants** and **Sponsored Users** by Cboe in accordance with the Cboe Operating Rules.
2. Cboe BIDS Australia allows interaction between **conditional messages** submitted by both buy-side and sell-side firms. Once a match is identified and meets qualifying criteria, Cboe BIDS Australia will send an "invitation to firm-up" message to both parties indicating a match has occurred and that they may now attempt to convert the **conditional message** into a **firm order**.
3. When responding to an invitation to firm-up, a **Sponsored User** must select a **Sponsoring Participant** to be responsible for the order.
4. If the pre-trade risk controls set-up by the **Sponsoring Participant** in the BIDS Trading Admin Client (or elsewhere) are passed, a **firm order** is generated, accepted by the order book, and is reported to the **Sponsoring Participant** via a drop copy.
5. **Firm orders** match if they meet certain criteria, and a **firm order** will execute if it would result in a **Block Trade** or a **Trade with Price Improvement**.
6. The resulting trade is executed on-exchange and sent to the clearing house under the existing CXA clearing model.
7. In parallel, the trade is reported to the **Sponsoring Participant** via a drop copy, who clears and settles the market side of the transaction.

The first diagram below summarises these steps into a process diagram. The bullet points under each step indicate the checks and controls that must pass for that step to complete successfully. For further information, refer to the indicated sections. The second diagram below provides visual representation of the workflow.

1) User submits conditional message
- AOT
- $20K minimum*

2) BIDS matches and issues invitation
- Inivitation matching conditions*

3) User firms up and selects broker
- AOT
- $20K minimum*
- Broker risk controls**

4) Order accepted by Cboe and matched
- Order matching conditions*
- Broker risk controls**
- ETR

5) Trade Finalised
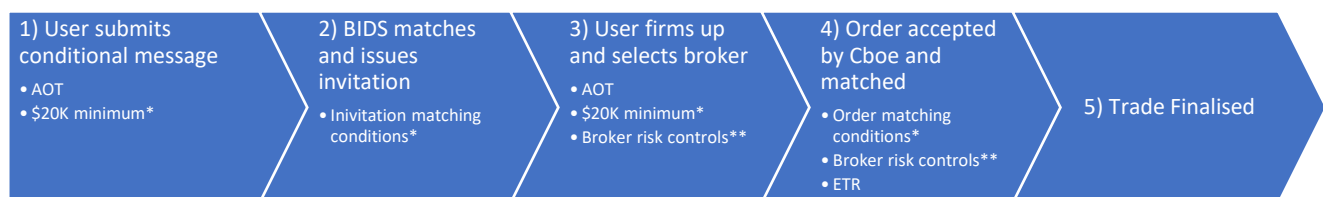
* Refer to section 3.4
** Refer to section 7.8
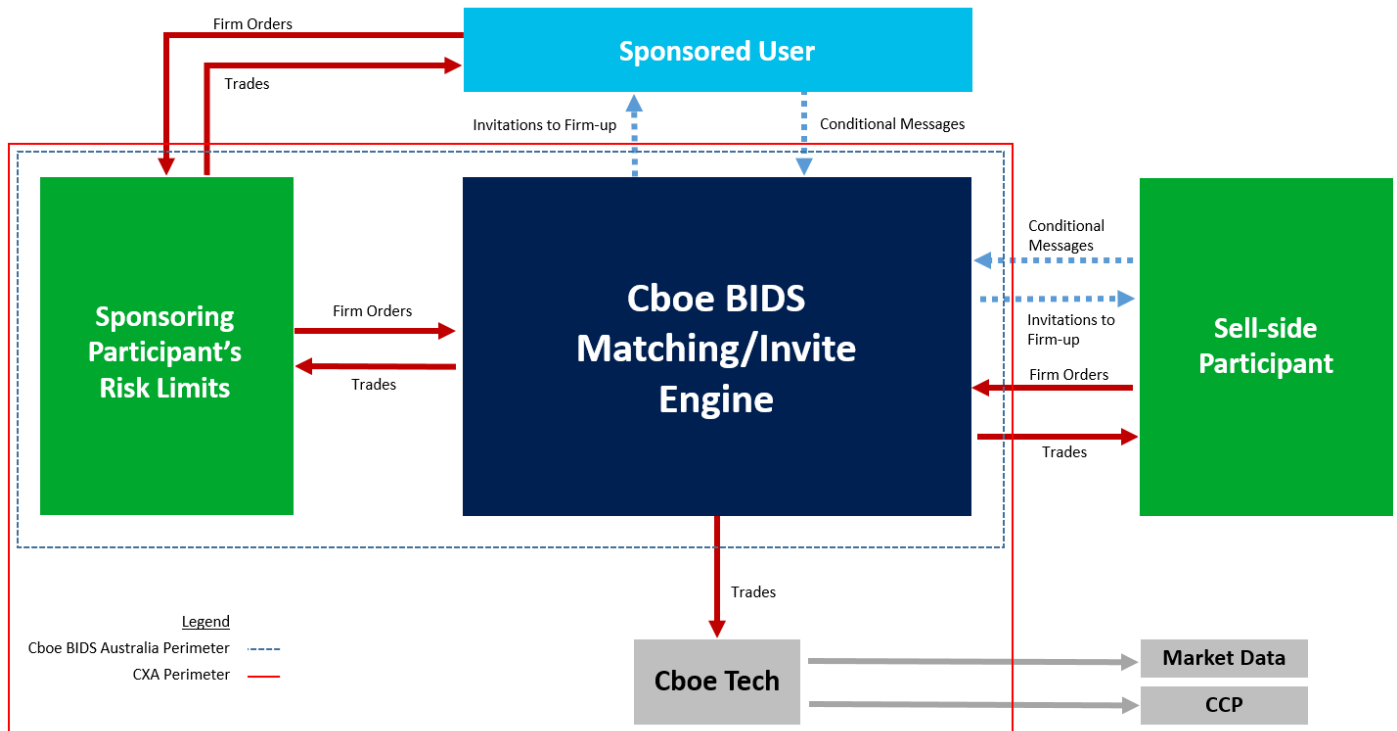
3 Market Model

The Cboe BIDS Australia order book supports both **firm orders** and **conditional messages** and allows a user to firm-up their **conditional message** if a match is identified (refer to section 3.4). At the point of firm-up, the **conditional message** is cancelled and replaced by a **firm order** that is binding on the **Participant**, matched on the Cboe BIDS Australia order book, and executed as an on-market trade.

3.1 Conditional Parameters

Conditionals messages represent volume that is submitted but not committed to Cboe BIDS Australia. The volume underlying a **conditional message** may be active in both another system and Cboe BIDS Australia until a firm-up process completes in respect of that **conditional message**. Within Cboe BIDS Australia, a **conditional message** will not have the ability to trade until it is replaced by a **firm order**. This allows a trader to deploy their liquidity in multiple ways without the risk of over execution.

The table below outlines some key parameters available to users when delivering **BIDS Instructions** to Cboe BIDS Australia using FIX connectivity. For the complete list of parameters please refer to the **BIDS Trading Australia FIX Specification**.

Tag	Field Name	Description
8002	BIDSType	This tag allows the user to specify whether a new message is a conditional message or firm order 0=Conditional 1=Firm

8008	BIDSTradePriority	This tag allows the user to specify the algorithm they would like Cboe BIDS Australia to use to determine the best match for their submitted conditional messages and firm orders: 0=Price 1=Volume
110	MinQty	The MinQty to be executed. This tag can be sent on inbound messages for NewOrderSingle on conditional message and NewOrderSingle on firm/firm-up messages to change the MinQty accepted. Invitations will only be sent, or trades will only occur if the contra BIDS Instruction meets both this minimum quantity value, along with the other matching requirements.

3.2   Time in Force Values

Participants may specify one of the following time in force values on their BIDS Instructions:

Time in Force Value	ExpireTime Required	Comments
IOC – immediate-or-cancel	Optional	If ExpireTime is supplied, the value will be interpreted as a delay in milliseconds by which to persist the order for a potential match. Cboe BIDS Australia has a system default of 300ms This option is only meaningful for firm orders.
Day	No	Will persist on Cboe BIDS Australia until partial or full execution is received or until the closing time of the CXA Market.
GTD – Good till Date	Yes	Will persist on Cboe BIDS Australia until a full execution is received, or ExpireTime is reached. Regardless of the date supplied this will only persist on Cboe BIDS Australia until the closing time of the CXA Market of the current day.
EnC – Execute and Cancel	Optional	If an EnC Firm order does not trade its total available volume after the initial execution, the remaining quantity is cancelled. If the EnC Firm order has an expiry time and does not trade at all, it will terminate at the expiry time. Regardless of the time supplied this will only persist on Cboe BIDS Australia until the closing time of the CXA Market of the current day. This option is only meaningful for firm orders.

3.3   Message Types

Limit

Cboe BIDS Australia accepts **BIDS Instructions** with a limit price.

Market

Cboe BIDS Australia accepts **BIDS Instructions** without a limit price that may trade at any price, subject to the peg instruction.

Cboe BIDS Australia allows BIDS Instructions to peg to the NBBO in three ways:

- Primary – pegs to the same side of the NBBO as the **BIDS Instruction**
- Midpoint – pegs to the midpoint of the NBBO
- Market – pegs to the far side of the NBBO

All **BIDS Instructions** are assigned a default price protection rule if no specific peg instruction is given. Refer to section 3.5.1 for an explanation of the price protection rules. The default price protection rule is user configurable but can be overridden on each FIX message using the custom price protection tags or standard FIX pegging tags.

A **BIDS Instruction** must have a minimum notional value of 20,000 AUD to enter Cboe BIDS Australia. Any **BIDS Instruction**, including partially traded resting **firm orders,** will be cancelled once they fall below this value.

3.4   Cboe BIDS Australia Matching

If a **conditional message** and a contra **conditional message** or **firm order** in Cboe BIDS Australia match, then the **conditional message(s)** will be invited to firm-up into **firm order(s)**.

If both sides are **firm orders**, then an invitation to firm-up is unnecessary, as the orders are already firm, and the trade will execute without an invitation.

An invitation to firm-up will occur if the following conditions are met:

- The prices match or cross such that a permitted trade is possible.
- The symbol is available for matching, i.e. not halted.
- The notional value of the **conditional message** equals or exceeds 20,000 AUD.
- The volume on the **conditional message** meets the minimum volume requirements of the contra and vice versa.
- The scorecard for the user meets or exceeds the filter setting for the contra and vice versa (refer to section 4.1). Note: If the contra is a **firm order,** then this step is skipped as filters only apply in respect of **conditional message** to **conditional message** interactions.

An invitation to firm-up does not last indefinitely and the system imposes a time-out (refer to section 3.8). If a user takes too long to firm-up, the invitation may expire, or the contra firm-up may expire or be manually cancelled. Time is of the essence when firming up.

Cboe BIDS Australia allows the matching of **firm orders** that if executed would result in a **Block Trade** or a **Trade with Price Improvement**. Cboe BIDS Australia allows trades of block size or higher to execute at or within the NBBO and trades below block size execute at the midpoint.

Two **firm orders** will therefore automatically trade under the following conditions:

- The prices match or cross.

- The symbol is available for execution i.e., not halted.
- The notional value of the firm order equals or exceeds 20,000 AUD.
- The volume on the firm order meets or exceeds the minimum volume on the contra firm order and vice versa.
- The resulting trade meets all requirements of the Market Integrity Rules for a Block Trade or a Trade with Price Improvement.
- The resulting trade executes at midpoint (if under block size) or, at or within the NBBO (if block size or above).

If these conditions are met, then a trade is generated and results in an on-exchange trade execution on Cboe BIDS Australia.

If the NBBO moves between firming-up and order matching such that the matching engine is still able to calculate a mutually agreeable trade price given the restrictions on the two **firm orders** and the MIR requirements, then the trade will occur. If this is not possible, then the trade will not occur, and the orders will be cancelled after the expiry time has elapsed.

BIDS trading is available between 10:00 and 16:00. However, for ASX symbols, invitations will not be issued and **firm orders** will not match until after the ASX opening auction for that symbol has also completed (refer to section 7.1). The actual commencement for these symbols is variable rather than fixed at 10:00.

3.5   Invitation and Matching Priority

A fill priority governs the sequence in which matches of **conditional messages** will result in an invitation to firm-up. The priorities available are either volume/effective price/time or effective price/volume/time.

BIDS Instructions that are resting in Cboe BIDS Australia are called passive. A new **BIDS Instruction** entering Cboe BIDS Australia that meets the matching criteria against one or more of those passive orders is called aggressive. If multiple counterparties are matched or engaged in invitations by the system, the priority setting of the aggressive **BIDS Instruction** will govern the sequence in which the counterparties are considered (invitation or trade).

The trade fill priority is determined by the aggressive **firm order**:

- If the fill priority of the aggressive order is effective price/volume/time, passive orders are matched in sequence according to effective price (based on the effective price calculation set out at section 3.5.1), and then volume and then time.

- If the fill priority of the aggressive order is volume/effective price/time then the passive orders are matched in sequence according to highest volume, and then effective price (based on the effective price calculation set out at section 3.5.1) and then time.

In each case, the fill priorities of the passive **firm orders** are not taken into consideration.

Where two **firm orders** cross in price and satisfy all matching conditions, the two orders will take priority over any **conditional messages** and will match ahead of any invitations to **conditional messages** to firm-up that are in the order book at the same time.

Participants may opt-in to broker preferencing only in respect of their own order flow into BIDS. Broker preferencing is not available in respect of **Sponsored User** flow. If broker preferencing is used, **BIDS instructions** from the same **Participant** will be preferenced and:

- Effective price/volume/time priority is modified to effective price/broker/volume/time; and
- Volume/effective price/time priority is modified to broker/volume/effective price/time.

3.5.1 Effective Price Calculation

Effective prices are based on the **BIDS Instruction's** indicative tradeable price, computed using its peg/price protection mode and its limit price, as well as the prevailing NBBO:

- Mid-point peg/MOB (Mid or Better) price protection:
  - If a limit price is absent or more aggressive than the NBBO-midpoint, the effective price value (i.e., the *effective* limit price) is the NBBO-midpoint.
  - Otherwise, the effective price is the limit price.
- Market peg/AOB (At or Between) price protection:
  - If the **conditional message** is considered for invitation, the prioritisation logic treats AOB price protection the same as MOB price protection. See above.
  - If a **firm order** is considered for matching:
    - If a limit price is absent or more aggressive than the far side of the NBBO, the effective price used is the far side of the NBBO.
    - Otherwise, the effective price is the limit price.
- Primary peg/AOB price protection:
  - If a limit price is absent, the effective price value is the same side of the NBBO.
  - Otherwise, the limit price is better than the same side of the NBBO, the effective price value is the limit price.

The determination of effective prices is the same for both invitations (determining which **conditional messages** will be invited) and trades (determining which **firm orders** will trade).

The calculated tradable price (whether the event is an invitation or a trade) is optimized to be at the midpoint or, if midpoint is not achievable then the price that is closest to the midpoint while respecting the pricing parameters of both sides.

For example, if the midpoint is $10.03 and three competing buy orders are priced at market (price is blank), $10.03 and $11, all three are treated as equal in effective price when determining priority, even though some are more aggressively priced than others.

Once the crossing price has been determined, all orders that are eligible are ranked the same with respect to effective price, so priority is given to the largest in volume. If the volumes on the competing side are the same, then priority goes to the one that arrived earliest (assuming effective price/volume/time priority in this example).

Detailed invitation scenarios are provided at **Appendix 1**.

3.6   Invitation Counterparties

The invitation process varies depending on whether the users are human (manual) or algorithmic (algo). The diagrams below illustrate this as well as how **firm orders** and **conditional messages** interact.

3.6.1 Conditional Message Interaction - Algorithmic and Human
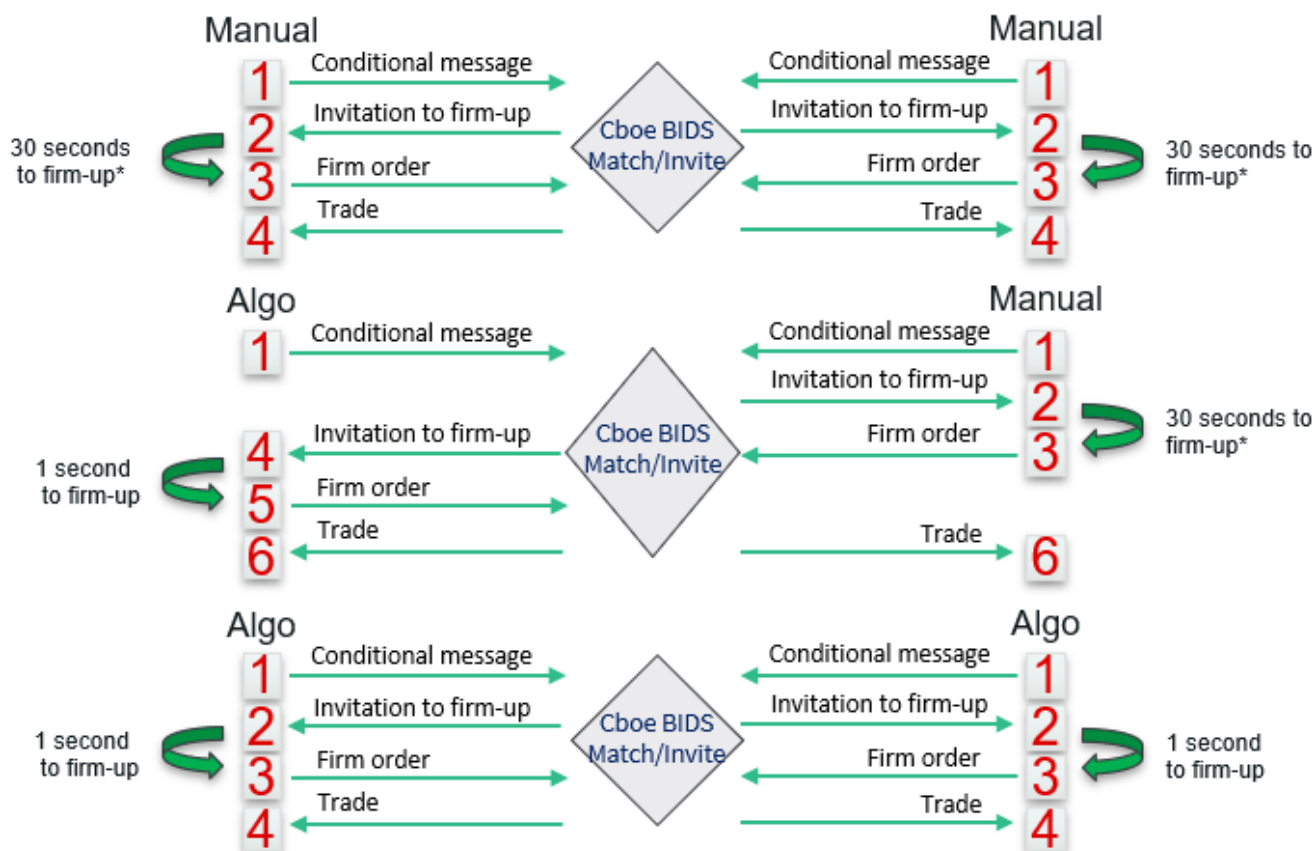
*A manual user can enable auto-firm-ups for **conditional messages**. If this is used, any invitations received by the manual user are automatically accepted using a default **Sponsoring Participant**, and a **firm order** is submitted automatically provided the relevant pre-trade risk limits (refer to section 7.8) and other conditions have passed. This changes the invitation time limit from 30 to 3 seconds.
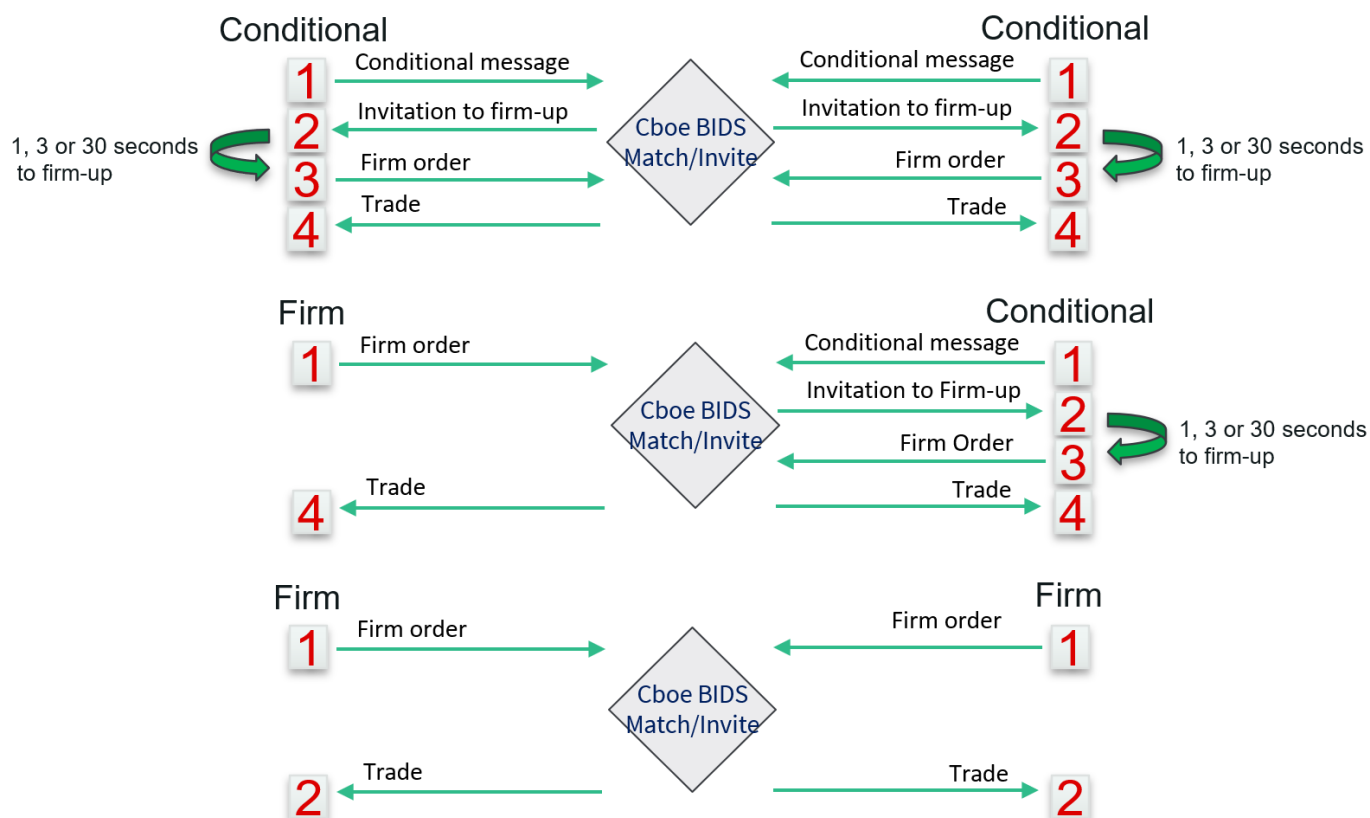
Multiple Contras

A single **conditional message** or **firm order** may invite more than one contra to firm-up if each of the multiple contras individually meets the single minimum quantity of the single **conditional message** and the aggregate total order volume of all the contras is not more than that of the single **conditional message** or **firm order**.

When this occurs, the matching engine does not wait for all conditional invitees to firm-up before matching. Responses to firm-up invitations are matched as soon as they are received. Time is of the essence when firming-up. Refer to the examples on pages 25 and 31.

3.8   Invitation Time Limits

There is a time limit set at the system level whereby an invitation is cancelled if a **firm order** has not been received by the time limit.

There are three such settings:

- Automated or Algorithmic trading systems with a direct FIX connection: 1 second.
- Manual users receiving invitations that require manual firm-up: 30 seconds.
- Manual users whose **conditional messages** are set to auto-firm-up: 3 seconds (refer to section 3.6.1).

3.9   Matching Restrictions

Participants can restrict themselves and their **Sponsored Users** from trading any security or list of securities. This is performed directly by **Participants** via the Restricted Symbol List in the BIDS Trading Admin GUI or by issuing written instructions to the Cboe BIDS Australia Support Team to modify the restricted list on the **Participant's** behalf.

Participants can also implement restrictions to avoid self-matching. Refer to section 7.11 for detailed information.

In addition, **Participants** may elect to opt-out of sponsoring specific asset classes. If a **Participant** opts-out of an asset class, their **Sponsored Users** will not be able to select that **Participant** when attempting to firm-up a **conditional message** in respect of a symbol within that asset class. If all of a **Sponsored User**'s **Participants** have opted-out of the asset class, the **Sponsored User** will not be able to submit conditional messages or orders in respect of symbols in that asset class and will receive a reject message in BIDS Trader when attempting to do so. To opt-out of sponsoring specific asset classes, please issue a written instruction to the Cboe BIDS Australia support team.

3.10 Market Conditions

Invitations will not be issued nor will trading be permitted for **BIDS Instructions** under the following conditions:

- A one-sided NBBO.
- Crossed NBBO.
- The symbol is halted or suspended for regulatory reasons.
- Trading is not allowed or orders cannot be accepted for regulatory reasons.

In a locked market, trading is permitted at the locked price (midpoint), but no invitations are issued.

3.11 Automatic Cancellation

Firm orders and **conditional messages** will be automatically cancelled under specific circumstances.

Condition	What is Cancelled
Loss of connection for FIX Session	All **BIDS Instructions** received via the lost connection will be cancelled by Cboe BIDS Australia.
Regulatory halt for a symbol	All **BIDS Instructions** for that symbol are suspended from matching but not deleted. If trading resumes on the same day, they become eligible for matching and invitations.
User, desk, or firm being suspended	All remaining **BIDS Instructions** for that firm, desk, or user, no matter what the source are cancelled
Sponsoring Participant revokes sponsorship relationship for a user	All BIDS **Instructions** for that user in relation to that **Sponsoring Participant** are cancelled

3.12 Firm-Up Scenarios

When firming up via FIX, a user must reference the specific **conditional message** with the order ID of the **conditional message**. To enhance the chance of a **conditional message** matching, automated users will be encouraged to rest their firm-ups for at least 300 milliseconds.

The firm-up messages can be sent with a different TimeInForce (TIF) value to the initial **conditional message**. Once a user firms-up, the **firm order** will remain in the system until:

- It fully trades with the intended contra or is an execute-and-cancel.
- It reaches the specified expiry time.
- The **firm order** is expired by the system i.e., at the end of the day.

It would be considered best practice to enter an expiry time or a TIF value on the firm-up to ensure the firm-up does not remain indefinitely.

4   Conditionals Compliance Mechanism

Cboe uses a scorecard system to promote the fair, orderly and transparent operation of the Cboe BIDS Australia service, to protect users from information leakage, and to ensure users are accountable to their **conditional messages**. Cboe maintains a scorecard for each individual trader and algorithm using the service, which is based on their past trading behaviour.

The scorecard is made up of two components:

Static score: This measures a user's long-term performance in responding to invitations. A user who responds to invitations to firm-up frequently, with the same terms of their **conditional message**, will have a high score. A user who consistently ignores invitations to firm-up or responds with terms less favourable than their **conditional message** will have a low score. A user's static score will place them in one of three categories – high, medium or low.

Dynamic score: This measures a user's short-term performance on a daily, per symbol basis.

Cboe may take disciplinary action, including blocking users from all or part of the service, based on their scorecard.

4.1   Filters

Users may set filters to control which users they interact with based on their static score category. Filters can be used to further protect users from poor performing counterparties, by restricting the ability for those counterparties to interact with the user's **conditional messages**.

Three filter settings can be applied:

- Aggressive
- Normal
- Conservative

The filters operate as follows:

- **Conditional messages** with an aggressive filter may invite **conditional messages** from users in any static score category
- **Conditional messages** with a normal filter will not invite **conditional messages** from users in a low Static Score category
- **Conditional messages** with a conservative filter level will only invite **conditional messages** from users in the same static score category.

Filters prevent a user from invite conditional messages from users of categories better than its own. Consequently, depending on the filter setting applied, a **conditional message** may not interact with some or all the **conditional messages** of other users in Cboe BIDS Australia. The table below summarises the effects of filters.

User Category	User's Filter	User can invite High Category Users	User can invite Medium Category Users	User can invite Low Category Users
High	Aggressive	Yes	Yes	Yes
High	Normal	Yes	Yes	No

User Category	User's Filter	User can invite High Category Users	User can invite Medium Category Users	User can invite Low Category Users
High	Conservative	Yes	No	No
Medium	Aggressive	No	Yes	Yes
Medium	Normal	No	Yes	No
Medium	Conservative	No	Yes	No
Low	Aggressive	No	No	Yes
Low	Normal	No	No	Yes
Low	Conservative	No	No	Yes

Note: filters only apply in respect of interactions between **conditional messages**. They do not apply when a **conditional message** interacts with a **firm order**, or when two **firm orders** interact.

Cboe can provide additional information and training to any user regarding how scorecards, blocking and filters operate. However, to reduce gaming risk, the conditionals compliance mechanism methodology is strictly confidential. Cboe will not disclose scorecard values to users, nor will it make public the thresholds for low, medium or high categories, nor will it disclose thresholds for blocking. Cboe may adjust the conditionals compliance mechanism methodology from time-to-time without notifying users. Any such adjustments will apply consistently to all users.

5   Drop Copy Messaging

Participants may receive drop copies of orders and trades from a BIDS drop copy or a Cboe ODROP. The respective specifications are available on the Cboe website.

The following steps describe how a trade is identified by a Trade ID as it flows through the service and how it can then be reconciled against the DROP feeds and information from the CCP:

1. When trade occurs in Cboe BIDS Australia it is assigned both a BIDSTradeID and a CXA TradeID on the fill message.
2. If a DROP is to be obtained from Cboe, the trade will be communicated via an Execution Report in the Cboe ODROP. The TradeID (tag 1003) on the Execution Report is the identifier allocated by Cboe that can be seen on the Cboe market data feed.
3. The TradeID is sent to the CCP for reconciliation purposes.
4. Alternatively, if a DROP is being obtained from a BIDS Drop Copy, the BIDSTradeID (tag 8026) provided on the message in Step 1 is provided on an Execution Report message. The BIDS Execution Report message will additionally contain the CXA TradeID in tag 8016.

5.1   Reject Cboe BIDS Australia Instructions on Admin Gateway Connection Drop

If a **Participant** uses a BIDS FIX Admin gateway to implement pre-trade risk controls (refer to section 7.8), the **Participant** can elect to prevent the submission of orders and resulting trade executions in Cboe BIDS Australia for all its **Sponsored Users** should it lose connectivity to the Cboe BIDS Australia drop feed. Note this functionality is not available if the **Participant** only uses the BIDS Trading Admin Client to implement risk controls.

6 Connectivity to Cboe BIDS Australia and CXA

Sponsored Users of Cboe BIDS Australia, **Participants**, and **Sponsoring Participants** supporting the execution and settlement of Cboe BIDS Australia trades have the following connectivity options:

Sponsored User connectivity options to Cboe BIDS Australia:

- Via their proprietary OMS System utilizing FIX connectivity
- Using BIDS Trader which integrates with existing OMS systems

Participant connectivity options to Cboe BIDS Australia:

- Using a BIDS FIX gateway (for **Participant's** direct order flow)

Sponsoring Participant connectivity options from Cboe BIDS Australia and CXA:

- Trade Data File available via the Cboe customer web portal
- Drop Copy from CXA for the CXA book and Cboe BIDS Australia book (**Cboe ODROP**).
- Drop Copy from BIDS for the Cboe BIDS Australia book only (**BIDS Drop Copy**).

7 Market Configuration

7.1 Operating Hours & Calendar

Subject to the CXA trading calendar, the services are available from 10:00 to 16:00 AEST time with gateways available for connectivity from 6:00 AEST time.

BIDS Instructions may be submitted from 06:35 AEST time to the Cboe BIDS Australia system however matching and invitations will not occur until market open at 10:00 AEST time. However, for ASX symbols, invitations will not be issued and **firm orders** will not match until after the ASX opening auction for that symbol has also completed.

7.1.1 Market States

Market State	Scheduled Time	Web & Gateway Login	Order Actions	Executions
Technical Connectivity	06:00 – 06:35	Yes	No	No
Pre-Market	06:35 – 10:00	Yes	Yes	No
Continuous Trading	10:00* – 16:00	Yes	Yes	Yes
Post-Trading Administration	16:00 – 18:55	Yes	No	No
End of Technical Connectivity	19:00 – 06:00	No	No	No

* For ASX symbols, invitations will not be issued and firm orders will not match until after 10:00 and the ASX opening auction for that symbol has completed. The actual commencement for these symbols is variable rather than fixed at 10:00.

The Services will be offered in accordance with the CXA trading calendar.

7.2 Maximum Allowed Quantity

The maximum supported quantity is 99,999,999,999 units/shares.

7.3 Minimum Lot Size

The minimum lot size is 1 unit/share for all services, fractions are not supported.

7.4 Capacity

For **BIDS Instructions** submitted directly by **Participants**, **Participants** are responsible for denoting individual **BIDS Instructions** with appropriate capacity information and the following capacity types are supported: agency, principal and mixed.

For **firm orders** submitted on behalf a **Sponsored User** through the BIDS software, the only supported capacity type is agency.

7.5 Short Selling

For **BIDS Instructions** submitted directly by **Participants**, **Participants** are responsible for denoting orders as long or short sells appropriately.

For **Conditional messages** submitted on behalf a **Sponsored User** through the BIDS software, the BIDS software integrates with the user's OMS and captures whether any sell is a long or short sell. This information is automatically carried through on any related **firm order** to sell.

A **Sponsored User** may only short sell via a **Sponsoring Participant** if that **Sponsoring Participant** has allowed it to do so. Cboe BIDS Australia includes functionality to implement short selling risk controls (refer to section 7.8).

7.6 Tick Sizes

Cboe BIDS Australia minimum tick increments are the minimum tick increments prescribed by the Market Integrity Rules. **BIDS Instruction** limit prices must match the appropriate tick increment or a half-tick of that increment or will be rejected. Trades will occur at a level that matches the tick increment or a half-tick increment (for midpoint trades where the midpoint is at a half-tick). Refer to page 34 for examples of half-tick limit order support.

7.7 Trade Reporting

Trades are published in real-time by Cboe Australia, with trade deferrals not supported.

7.8 Risk Management

Cboe BIDS Australia includes functionality to set various constraints on **firm orders** for pre-trade protection. **Participants** can choose to implement pre-trade risk controls through the BIDS Trading Admin GUI or through a BIDS FIX Admin gateway. These controls include price and value limits, restricted lists, and short-selling risk controls. Please refer to the **BIDS Trading Admin Guide** or the **BIDS Trading Australia FIX Admin Function Specification** for a complete guide on the available functionality and features. **Sponsoring Participants** can apply pre-trade risk controls at an overall level and/or at individual level for each of its **Sponsored Users** and **Introducing Brokers** (refer to section 10). Any limits applied to an **Introducing Broker** will apply to all **Sponsored Users** under the **Introducing Broker**. An **Introducing Broker** may implement further pre-trade risk controls for each of its **Sponsored Users**.

7.9 MIR Regulatory Data

For **firm orders** sent directly by **Participants**, **Participants** are responsible for denoting them with appropriate Regulatory Data information.

For **firm orders** submitted on behalf a **Sponsored User** through the BIDS software, Cboe will provide default values for the Regulatory Data fields, except for origin of order, as set out in the table below. The origin of order field can be directly managed by **Participants** and/or **Introducing Brokers** in the BIDS Admin Trading GUI. This information will be carried on all orders and trades and provided on both the Cboe and BIDS drops.

Capacity of Participant	Agency
Origin of Order or Transaction	This field is managed by the Participant or the Introducing Broker in the BIDS Trading Admin GUI and should be populated as per ASIC guidance
Intermediary ID	If an Australian Introducing Broker is used, their AFSL number, otherwise blank
Directed wholesale indicator	"Y"

7.10 Sponsored User Identification

Drop copies of orders and trades provided to **Participants** through the BIDS drop copy contain the identity of the **Sponsored User**, the identity of the specific trader at the **Sponsored User** (first name and last name), and a sender sub-ID, which is always set to "BIDS". Note: ODROP, the Cboe drop copy, does not contain the identity of the specific trader at the **Sponsored User** or the sender sub-ID. **Participants** that require this information on a real-time basis must use the BIDS Drop copy.

Alternatively, **Participants** can receive a machine-readable file that contains the identity of the **Sponsored User**, the identity of the specific trader at the **Sponsored User**, and a sender sub-ID, which is always set to "BIDS", for orders and trades at the end of each day.

7.11 Self-Match Prevention

Self-match prevention operates as follows:

1. **Sponsored Users** will always have self-match prevention enforced within Cboe BIDS Australia (and only agency trading is supported for **Sponsored Users**)
2. **Participants** will not have self-match prevention enforced by default. Instead, it must be opted-into, and **Participants** must provide appropriate instructions to Cboe. Based on the instructions provided, non-sponsored-to-non-sponsored, sponsored-to-sponsored, and non-sponsored-to-sponsored self-matches for that **Participant** can prevented.

Self-match prevention prevents appropriately tagged orders from matching. Other functionalities available on the primary Cboe order book, such as BPXT or cancel-newest are not available.

8 Surveillance

CXA monitors all activity on Cboe BIDS Australia. Monitoring, investigation and disciplinary action in respect of users takes place in accordance with the Operating Rules.

9 Trade Desk/Operations

9.1 Software Alerts and Escalation

CXA Trade Desk will monitor system performance and will receive notifications via automated email alerts. Upon receiving an email (where required), CXA Trade Desk will escalate any network issues to the CXA NOC team and any software issues to BIDS development team using a pre-agreed escalation process.

9.2 BIDS Super Admin

The BIDS Super Admin is used by CXA Trade Desk and is similar in functionality to the BIDS Trading Admin GUI available to **Sponsoring Participants**. The Super Admin provides added administrative functionality required when setting up and managing the Cboe BIDS Australia system.

The BIDS Super Admin GUI is a full-function browser-based application. The application allows access to various settings and features for users, some of which have been highlighted below:

- Username & Password set up for internal Cboe BIDS Australia and external users
- **Participant** Relationship control functions
- Risk Management settings
- System Operations including cancellation of all **BIDS Instructions** (kill switch)
- **Conditional message** and **firm order** inquiries and history

10 Introducing Brokers

Cboe BIDS Australia supports **Introducing Brokers** in accordance with the Operating Rules and Operating Rules: Procedures. **Introducing Brokers** are generally used to enable an offshore **Sponsored User** to access the service. In this use case, the **Introducing Broker** faces off with the **Sponsoring Participant** and orders from **Sponsored Users** flow through the risk limits set by the **Sponsoring Participant** for the **Introducing Broker** within Cboe BIDS Australia, as well as any further risk limits set by the **Introducing Broker** for the **Sponsored Users** within Cboe BIDS Australia.

For **Sponsored Users** in certain offshore jurisdictions, as set out in the Operating Rules: Procedures, an **Introducing Broker** must be used, and it must be based in the same offshore jurisdiction as the **Sponsored User**.

An **Introducing Broker** must sign a connectivity agreement.

11 On-boarding Requirements & Processes

The requirements a prospective user must meet before being granted access to use Cboe BIDS Australia are set out in the Cboe Operating Rules and Cboe Operating Rules: Procedures.

The table below summarises the processes:

Firm	Notification to Cboe	Sponsoring Participant Agreement	Connectivity Agreement	Welcome letter	Risk limits
Participant	Yes	Only if seeking to act as Sponsoring Participant	Yes*	N/A	Managed by Participant
Introducing Broker	Yes	N/A	Yes	N/A	Set by Sponsoring Participant
Sponsored User	Yes	N/A	N/A	Issued by Cboe	Set by Sponsoring Participant and/or Introducing Broker

*See the Cboe Australia Customer Contract. This contract will have already been signed by **Participants** for their connectivity to the Cboe Market.

12 Post Trade Clearing Process

12.1 Clearing

All trades are sent to the **central counterparty** in real-time for novation via CXA in accordance with the Cboe Operating Rules. The **CCP** will allocate to the **Sponsoring Participant's** clearing account and net down positions accordingly.

12.2 Settlement

All trades processed by CXA and subsequently sent for settlement through the **CCP** will be for the standard settlement cycle in the CHESS system in in accordance with the Cboe Operating Rules.

13 Trade Reconciliation

Separate trading identifiers ('CXAI' for BIDS **Trades with Price Improvement** and 'CXAB' for **BIDS Block Trades**) are used to distinguish Cboe BIDS Australia trades from other CXA market trades.

Sponsoring Participants are given the following reconciliation options:

- Real-time drop copy of trades via Cboe ODROP
- End of Day trade data downloads accessible via the Cboe Australia web portal Trade Data File
- Real-time drop copy of trades via BIDS Drop Copy (recommended if the **Participant** requires **Sponsored User** information as set out in section 7.10, contains Cboe BIDS Australia trades only)

14 Finance

14.1 Fees and Tariff

Cboe will charge users fees on the following basis.

Firm type	Execution fee	Connectivity fee*	Comments
Participant (trading on behalf of a Sponsored User as Sponsoring Participant)	2.9bps	Drop copy**	Itemised within Participant's existing CXA invoice
Participant (not trading on behalf of a Sponsored User)	0.6bps	Drop copy** Logical FIX port***	Itemised within Participant's existing CXA invoice
Introducing Broker	N/A	N/A	Invoiced by their Sponsoring Participant
Sponsored User	N/A	N/A	Invoiced by their Sponsoring Participant
OMS	N/A	N/A	OMS will contract directly with BIDS (US)

*See the Cboe Australia Customer Contract Payment Schedule for the current fees.
**Drop copy may be a Cboe ODROP or a BIDS Drop Copy – See sections 6 and 7.10 for more information.
***Required to be a BIDS FIX gateway rather than Cboe FIX gateway.

15 Document History

Effective Date	Notes	Version No	Approval Date
20 March 2023	Initial release	1.0	14 March 2023
13 June 2023	Update for half-tick support (section 7.6)	1.1	02 June 2023
18 September 2023	Updates to matching restriction (section 3.9), operating hours (section 7.1), MIR regulatory data (section 7.9) and consequential changes	1.2	15 September 2023

16 Appendix 1 – Invitation Scenarios

Examples for At or Above Block Size

Note: In this Appendix, 'Conditional' is used instead of 'Conditional Message' for brevity

Example 1: no fall-down, no change in quantity, Volume Priority, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	75,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 2 and 3 receive invitations to firm-up

Result, step ii:
Conditional 2 sends a firm order back to sell 100,000 shares @ 10.01
Conditional 3 sends a firm order back to buy 75,000 shares @ 10.02

Result, step iii:
Firm Order 2 gets a partial fill for 75,000 shares at 10.01
Firm Order 3 gets fully filled for 75,000 shares at 10.01

Example 2: no fall-down, no change in quantity, Price Priority, Block Tier $200k

NBBO: 10 x 10.10

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Far	10.07	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Far	10.08	11:00 AM	Broker B	Algo
Conditional 3	75,000	BUY	P Far	10.10	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1 and 3 receive invitations to firm-up because 1 has a better price than 2, given that price priority is in place

Result, step ii:
Conditional 1 sends a firm order back to sell 50,000 shares @ 10.07
Conditional 3 sends a firm order back to buy 75,000 shares @ 10.10

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares at 10.07 (this is as close to the midpoint as possible)
Firm Order 3 gets a partial fill for 50,000 shares at 10.07

Note: In this example, if priority were volume instead of price, the reverse would happen. The invitation would go to Conditional 2 because it is larger, even though it has a worse price.

Example 3: no fall-down, change in quantity, Price Priority, human vs algo, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Far	None	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.02	11:00 AM	Broker B	Algo
Conditional 3	75,000	BUY	P Near +1	None	11:15 AM	Not yet selected	Human

Result, step i:
Conditional 3 receives an invitation to firm-up first (30s max)

Result, step ii:
Conditional 3 sends a Firm Order back to buy 50,000 shares (Broker C selected) @ Peg Near +1

Result, step iii:
Conditional 1 receives an invitation to firm-up second (1s max)

Result step iv:
Conditional 1 sends a Firm Order back to sell 40,000 shares @ Peg Mid

Result, step v:
Firm Order 1 gets fully filled for 40,000 shares at 10.01
Firm Order 3 gets partially filled for 40,000 shares at 10.01

Example 4: no fall-down, no change in quantity, Price Priority + Broker Preferencing, algo vs algo, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	None	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	None	11:00 AM	Broker B	Algo
Firm Order 3	75,000	BUY	P Mid	None	11:15 AM	Broker A	Algo or Human

Result, step i:
Conditional 1 receives an invitation to firm-up

Result, step ii:
Conditional 1 sends a Firm Order back to sell 50,000 shares @ Peg Mid

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares at 10.01
Firm Order 3 gets partially filled for 50,000 shares at 10.01

Example 5: fall-down, no change in quantity, Price Priority, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.00	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.02	11:00 AM	Broker B	Algo
Conditional 3	75,000	BUY	P Far	10.01	11:15 AM	Broker C	Algo

Result, step i:
Conditional 1 receives an invitation to firm-up
Conditional 3 receives an invitation to firm-up

Result, step ii:

Conditional 1 sends a Firm Order back to sell 50,000 shares @ 10.02

Conditional 3 does not send in a Firm Order

Result, step iii:

No trade occurs

The user that submitted Conditional 3 is marked down on their scorecard

Example 6: no fall-down, no changes in quantity, multiple contra invites, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	150,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:

Conditionals 1, 2, and 3 each receive an invitation to firm-up

Result, step ii:

Conditional 1 sends a Firm Order back to sell 50,000 shares @ 10.01

Conditional 2 sends a Firm Order back to sell 100,000 shares @ 10.01

Conditional 3 sends a Firm Order back to buy 150,000 shares @ 10.02

Result, step iii:

Firm Order 1 gets fully filled for 50,000 shares at 10.01

Firm Order 2 gets fully filled for 100,000 shares at 10.01

Firm Order 3 gets a partial fill for 100,000 shares and a complete fill for 50,000 shares both at 10.01

Example 7: no fall-down, change in quantity, multiple contra invites, Size Priority, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	150,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:

Conditionals 1, 2, and 3 each receive an invitation to firm-up

Result, step ii -- Brokers A and B both firm up before Broker C:

Conditional 1 sends a Firm Order (1) back to sell 50,000 shares @ 10.01

Conditional 2 sends a Firm Order (2) back to sell 100,000 shares @ 10.01

Conditional 3 sends a Firm Order (3) back to buy 100,000 shares @ 10.02

Result, step iii:

Firm Order 1 gets no fill

Firm Order 2 gets fully filled for 100,000 shares at 10.01

Firm Order 3 gets a fully filled for 100,000 shares at 10.01

Example 8: no fall-down, change in quantity, multiple contra invites, Price Priority, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	150,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1, 2, and 3 each receive an invitation to firm-up

Result, step ii – Broker C firms up first, then Broker A, then Broker B:
Conditional 1 sends a Firm Order back to sell 50,000 shares @ 10.01
Conditional 2 sends a Firm Order back to sell 100,000 shares @ 10.01
Conditional 3 sends a Firm Order back to buy 100,000 shares @ 10.02

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares at 10.01
Firm Order 2 gets partially filled for 50,000 shares at 10.01
Firm Order 3 gets a fully filled for 100,000 shares at 10.01

Note: the purpose of this example is to demonstrate that responses to firm-up invitations will be matched as soon as they are received and that the time taken to send a firm-up in response to an invitation may result in a different outcome.

In this case, because broker C firmed-up first, and broker A firmed-up before broker B, two opposing firm orders exist and are matched, and volume is not used as a tiebreaker as there aren't two firm sell orders resting on the book for different quantities. During the firm-up process, the matching engine does not wait for all conditional invitees to firm up before matching.

If the sequence of firm-up were broker A, then B, then C, the outcome would be different. Firm Order 3 would be fully filled for 100,000 shares with firm Order B because B has higher volume than A.

Example 9: firmed-up Conditional, fall-down, no partial, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.00	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.00	11:00 AM	Broker B	Algo
Conditional 3	75,000	BUY	P Far	10.01	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 2 and 3 each receive an invitation to firm-up

Result, step ii:
Conditional 2 does not send in a Firm Order – invite times out after 1 second (Conditional is effectively cancelled)
Conditional 3 sends a Firm Order to buy 75,000 shares @ 10.01 with a TIF of 5 seconds

Result, step iii:
Conditional 1 receives invitation to firm up
The user that submitted Conditional 2 is marked down on their scorecard

Result, step iii:
Conditional 1 sends a Firm Order back to sell 50,000 shares @ 10.00 (before 5-second TIF expires)

Result, step iv:
Firm Order 1 gets fully filled for 50,000 shares @ 10.01
Firm Order 3 gets a partial fill for 50,000 shares @ 10.01

Result, step v:
Firm Order 3 remaining quantity of 25,000 shares is cancelled after TIF expires

Example 10: firmed-up Conditional, partial, Block Tier $200k

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.00	10:00 AM	Broker A	Algo
Conditional 2	50,000	SELL	P Mid	10.00	11:00 AM	Broker B	Algo
Conditional 3	75,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1 and 3 each receive an invitation to firm up

Result, step ii:
Conditional 1 sends a Firm Order back to sell 50,000 shares @ 10.00
Conditional 3 sends a Firm Order back to buy 75,000 shares @ 10.02 with a TIF of 5 seconds

Result, step iii:
Conditional 1 gets fully filled for 50,000 shares @ 10.01
Conditional 3 gets a partial fill for 50,000 shares @ 10.01

Result, step iv:
Conditional 2 receives an invitation to firm up

Result, step v:
Conditional 2 sends a Firm Order back to sell 50,000 shares @ 10.00

Result, step vi:
Firm Order 2 gets a partial fill for 25,000 shares @ 10.01
Firm Order 3 gets fully filled for 25,000 shares @ 10.01

Example 11: no fall-down, Peg near with offset, no trade, Block Tier $200k

NBBO: 10 x 10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	BUY	P Near +0.03	None	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Near -0.01	None	11:00 AM	Broker B	Algo

Result, step i:
No invites are sent
Conditional 1: buy near +0.03, tradable up to 10.03
Conditional 2: sell near - 0.01, tradable down to 10.04

Result, step ii:
No invite/trade

Example 12: no fall-down, Peg near with offset, trade, Block Tier $200k

NBBO: 10 x 10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	BUY	P Near +0.04	None	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Near -0.01	None	11:00 AM	Broker B	Algo

Result, step i:
Conditionals 1 and 2 each receive an invitation to firm up

Result, step ii – Broker B firms up first, then Broker A:
Conditional 1 sends a Firm Order back to buy 50,000 shares @ P Near +0.04, tradable up to 10.04
Conditional 2 sends a Firm Order back to sell 100,000 shares @ P Near -0.01, tradable down to 10.04

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares @ 10.04
Firm Order 2 gets a partial fill for 50,000 shares @ 10.04

Example 13: no fall-down, Peg near with offset, trade, closest to midpoint, Block Tier $200k

NBBO: 10 x 10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	BUY	P Near +0.04	None	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Near -0.02	None	11:00 AM	Broker B	Algo

Result, step i:
Conditionals 1 and 2 each receive an invitation to firm up

Result, step ii – Broker A firms up first, then Broker B:
Conditional 1 sends a Firm Order back to buy 50,000 shares @ P Near +0.04, tradable up to 10.04
Conditional 2 sends a Firm Order back to sell 100,000 shares @ P Near -0.02, tradable down to 10.03

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares @ 10.03
Firm Order 2 gets a partial fill for 50,000 shares @ 10.03
10.03 is selected as the trade price, as it is the price closest to the midpoint

Example 14: no fall-down, Peg near with offset, trade, midpoint, Block Tier $200k

NBBO: 10 x 10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	BUY	P Near +0.03	None	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Near -0.03	None	11:00 AM	Broker B	Algo

Result, step i:
Conditionals 1 and 2 each receive an invitation to firm up

Result, step ii – Broker A firms up first, then Broker B:
Conditional 1 sends a Firm Order back to buy 50,000 shares @ P Near +0.03, tradable up to 10.03
Conditional 2 sends a Firm Order back to sell 100,000 shares @ P Near -0.03, tradable down to 10.02

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares @ 10.025
Firm Order 2 gets a partial fill for 50,000 shares @ 10.025
Midpoint Trade

Example 15: no fall-down, no change in quantity, Price Priority, Block Tier $200k, NBBO pricing exclusion

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Mid	10.03	11:00 AM	Broker B	Algo
Conditional 3	75,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1 and 3 each receive an invitation to firm-up. Conditional 2 is excluded as it is outside the NBBO

Result, step ii:
Conditional 1 sends a firm order back to sell 50,000 shares @ 10.01
Conditional 3 sends a firm order back to buy 75,000 shares @ 10.02

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares at 10.01 (i.e., this is the midpoint of the NBBO)
Firm Order 3 gets a partial fill for 50,000 shares at 10.01

Examples for Trades with Price Improvement

Example 1: no fall-down, no change in quantity, Volume Priority

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	7,500	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 2 and 3 each receive an invitation to firm-up

Result, step ii:
Conditional 2 sends a firm order back to sell 10,000 shares @ 10.01
Conditional 3 sends a firm order back to buy 7,500 shares @ 10.02

Result, step iii:
Firm Order 2 gets a partial fill for 7,500 shares at 10.01 (midpoint)
Firm Order 3 gets fully filled for 7,500 shares at 10.01 (midpoint)

Example 2: no fall-down, no change in quantity, Price Priority

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.02	11:00 AM	Broker B	Algo
Conditional 3	7,500	BUY	P Far	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1 and 3 each receive an invitation to firm-up

Result, step ii:
Conditional 1 sends a firm order back to sell 5,000 shares @ 10.01
Conditional 3 sends a firm order back to buy 7,500 shares @ 10.02

Result, step iii:
Firm Order 1 gets fully filled for 5,000 shares at 10.01 (midpoint)
Firm Order 3 gets a partial fill for 5,000 shares at 10.01 (midpoint)

Example 3: no fall-down, change in quantity, Price Priority, human vs algo

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Far	None	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.02	11:00 AM	Broker B	Algo
Conditional 3	7,500	BUY	P Near +1	None	11:15 AM	Not yet selected	Human

Result, step i:
Conditional 3 receives an invitation to firm-up first (30s max)

Result, step ii:
Conditional 3 sends a Firm Order back to buy 5,000 shares (Broker C selected) @ Peg Near +1

Result, step iii:
Conditional 1 receives an invitation to firm-up second (1s max)

Result step iv:
Conditional 1 sends a Firm Order back to sell 4,000 shares @ Peg Mid

Result, step v:
Firm Order 1 gets fully filled for 4,000 shares at 10.01 (midpoint)
Firm Order 3 gets partially filled for 4,000 shares at 10.01 (midpoint)

Example 4: no fall-down, no change in quantity, Price Priority with Broker Preferencing, algo vs algo

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	None	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	None	11:00 AM	Broker B	Algo
Firm Order 3	7,500	BUY	P Mid	None	11:15 AM	Broker A	Algo

Result, step i:
Conditional 1 receives an invitation to firm-up

Result, step ii:
Conditional 1 sends a Firm Order back to sell 5,000 shares @ Peg Mid

Result, step iii:
Firm Order 1 gets fully filled for 5,000 shares at 10.01 (midpoint)
Firm Order 3 gets partially filled for 5,000 shares at 10.01 (midpoint)

Example 5: fall-down, no change in quantity, Price Priority

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.00	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.02	11:00 AM	Broker B	Algo
Conditional 3	7,500	BUY	P Far	10.01	11:15 AM	Broker C	Algo

Result, step i:
Conditional 1 receives an invitation to firm-up
Conditional 3 receives an invitation to firm-up

Result, step ii:
Conditional 1 sends a Firm Order back to sell 5,000 shares @ 10.02
Conditional 3 does not send in a Firm Order

Result, step iii:
No trade occurs
The user that submitted Conditional 3 is marked down on their scorecard

Example 6: no fall-down, no changes in quantity, multiple contra invites

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	15,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1, 2, and 3 each receive an invitation to firm-up

Result, step ii:
Conditional 1 sends a Firm Order back to sell 5,000 shares @ 10.01
Conditional 2 sends a Firm Order back to sell 10,000 shares @ 10.01
Conditional 3 sends a Firm Order back to buy 15,000 shares @ 10.02

Result, step iii:
Firm Order 1 gets fully filled for 5,000 shares at 10.01 (midpoint)
Firm Order 2 gets fully filled for 10,000 shares at 10.01 (midpoint)
Firm Order 3 gets a partial fill for 10,000 shares and a complete fill for 5,000 shares both at 10.01 (midpoint)

Example 7: no fall-down, change in quantity, multiple contra invites, Volume Priority

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	15,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1, 2, and 3 each receive an invitation to firm-up

Result, step ii -- Brokers A and B both firm up before Broker C:
Conditional 1 sends a Firm Order (1) back to sell 5,000 shares @ 10.01
Conditional 2 sends a Firm Order (2) back to sell 10,000 shares @ 10.01
Conditional 3 sends a Firm Order (3) back to buy 10,000 shares @ 10.02

Result, step iii:
Firm Order 1 gets no fill
Firm Order 2 gets fully filled for 10,000 shares at 10.01 (midpoint)
Firm Order 3 gets a fully filled for 10,000 shares at 10.01 (midpoint)

Example 8: no fall-down, change in quantity, multiple contra invites, Price Priority

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	15,000	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1, 2, and 3 each receive an invitation to firm-up

Result, step ii – Broker C firms up first, then Broker A, then Broker B:
Conditional 1 sends a Firm Order back to sell 5,000 shares @ 10.01
Conditional 2 sends a Firm Order back to sell 10,000 shares @ 10.01
Conditional 3 sends a Firm Order back to buy 10,000 shares @ 10.02

Result, step iii:
Firm Order 1 gets fully filled for 5,000 shares at 10.01 (midpoint)
Firm Order 2 gets partially filled for 5,000 shares at 10.01 (midpoint)
Firm Order 3 gets a fully filled for 10,000 shares at 10.01 (midpoint)

Note: the purpose of this example is to demonstrate that responses to firm-up invitations will be matched as soon as they are received and that the time taken to send a firm-up in response to an invitation may result in a different outcome.

In this case, because broker C firmed-up first, and broker A firmed-up before broker B, two opposing firm orders exist and are matched, and volume is not used as a tiebreaker as there aren't two firm sell orders resting on the book for different quantities. During the firm-up process, the matching engine does not wait for all conditional invitees to firm-up before matching.

If the sequence of firm-up were broker A, then B, then C, the outcome would be different. Firm Order 3 would be fully filled for 10,000 shares with firm Order B because B has higher volume than A.

Example 9: firmed-up Conditional, fall-down, no partial, Volume priority

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.00	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Mid	10.00	11:00 AM	Broker B	Algo
Conditional 3	7,500	BUY	P Far	10.01	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 2 and 3 each receive an invitation to firm-up

Result, step ii:
Conditional 2 does not send in a Firm Order – invite times out after 1 second (Conditional is effectively cancelled)
Conditional 3 sends a Firm Order to buy 7,500 shares @ 10.01 with a TIF of 5 seconds

Result, step iii:
Conditional 1 receives invitation to firm up
The user that submitted Conditional 2 is marked down on their scorecard

Result, step iii:
Conditional 1 sends a Firm Order back to sell 5,000 shares @ 10.00 (before 5-second TIF expires)

Result, step iv:
Firm Order 1 gets fully filled for 5,000 shares @ 10.01 (midpoint)
Firm Order 3 gets a partial fill for 5,000 shares @ 10.01 (midpoint)

Result, step v:
Firm Order 3 remaining quantity of 2,500 shares is cancelled after TIF expires

Example 10: firmed-up Conditional, partial

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.00	10:00 AM	Broker A	Algo
Conditional 2	5,000	SELL	P Mid	10.00	11:00 AM	Broker B	Algo
Conditional 3	7,500	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1 and 3 each receive an invitation to firm up

Result, step ii:
Conditional 1 sends a Firm Order back to sell 5,000 shares @ 10.00
Conditional 3 sends a Firm Order back to buy 7,500 shares @ 10.02 with a TIF of 5 seconds

Result, step iii:
Conditional 1 gets fully filled for 5,000 shares @ 10.01
Conditional 3 gets a partial fill for 5,000 shares @ 10.01

Result, step iv:
Conditional 2 receives invitation to firm up

Result, step v:
Conditional 2 sends a Firm Order back to sell 5,000 shares @ 10.00

Result, step vi:
Firm Order 2 gets a partial fill for 2,500 shares @ 10.01 (midpoint)
Firm Order 3 gets fully filled for 2,500 shares @ 10.01 (midpoint)

Example 11: no fall-down, Peg near with offset, no trade

NBBO: 10 x 10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	BUY	P Near +0.03		10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Near -0.01		11:00 AM	Broker B	Algo

Result, step i:
No invites are sent
Conditional 1: buy near +0.03, tradable up to 10.03
Conditional 2: sell near -0.01, tradable down to 10.04

Result, step ii:
No invite/trade, as prices do not overlap.

Example 12: no fall-down, Peg near with offset, no trade,

NBBO: 10 x 10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	BUY	P Near +0.04	None	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Near -0.01	None	11:00 AM	Broker B	Algo

Result, step i:
No invitations sent because, while prices overlap, midpoint execution is not possible.

Example 13: no fall-down, Peg near with offset, trade, midpoint

NBBO: 10 x 10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	BUY	P Near +0.03	None	10:00 AM	Broker A	Algo
Conditional 2	10,000	SELL	P Near -0.03	None	11:00 AM	Broker B	Algo

Result, step i:
Conditionals 1 and 2 each receive an invitation to firm up

Result, step ii – Broker A firms up first, then Broker B:
Conditional 1 sends a Firm Order back to buy 5,000 shares @ P Near +0.03, tradable up to 10.03
Conditional 2 sends a Firm Order back to sell 10,000 shares @ P Near -0.03, tradable down to 10.02

Result, step iii:
Firm Order 1 gets fully filled for 5,000 shares @ 10.025 (midpoint)
Firm Order 2 gets a partial fill for 5,000 shares @ 10.025 (midpoint)

Example 14: no fall-down, Peg near with offset, trade, midpoint

NBBO: 0.49 x 0.51

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	50,000	BUY	P Near +0.03	None	10:00 AM	Broker A	Algo
Conditional 2	100,000	SELL	P Near - 0.01	None	11:00 AM	Broker B	Algo

Result, step i:
Conditionals 1 and 2 each receive an invitation to firm up

Result, step ii – Broker A firms up first, then Broker B:
Conditional 1 sends a Firm Order back to sell 50,000 shares @ P Near +0.03, tradable up to 0.52
Conditional 2 sends a Firm Order back to sell 100,000 shares @ P Near -0.01, tradable down to 0.50

Result, step iii:
Firm Order 1 gets fully filled for 50,000 shares @ 0.50 (midpoint)
Firm Order 2 gets a partial filled for 50,000 shares @ 0.50 (midpoint)

Example 15: no fall-down, no change in quantity, Volume Priority, Bigger contra not invited due to minimum volume requirement

NBBO: 10 x 10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Conditional 1	5,000	SELL	P Mid	10.01	10:00 AM	Broker A	Algo
Conditional 2	20,000 (Min 10,000)	SELL	P Mid	10.01	11:00 AM	Broker B	Algo
Conditional 3	7,500	BUY	P Mid	10.02	11:15 AM	Broker C	Algo

Result, step i:
Conditionals 1 and 3 receive invitations to firm-up (because 3's volume does not meet 2's minimum)

Result, step ii:
Conditional 1 sends a firm order back to sell 5,000 shares @ 10.01
Conditional 3 sends a firm order back to buy 7,500 shares @ 10.02

Result, step iii:
Firm Order 1 gets fully filled for 5,000 shares at 10.01 (midpoint)
Firm Order 3 gets partial fill for 5,000 shares at 10.01 (midpoint)

Examples for Half-Tick Limit Orders

For simplicity, the examples in this section only include firm orders as Conditionals are treated no differently.

Example 1: sub-block trade with half-tick limit

NBBO: $10.00 x $10.01

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Firm Order 1	5,000	BUY	Limit	$10.005	11:00 AM	Broker A	Algo
Firm Order 2	5,000	SELL	Peg Mid	$10.00	11:05 AM	Broker B	Algo

Result:
Firm orders 1 and 2 fully filled for 5,000 shares @ $10.005

Example 2: sub-block trade with half-tick limit, no price priority given

NBBO: $10.00 x $10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Firm Order 1	5,000	BUY	Limit	$10.01	11:00 AM	Broker A	Algo
Firm Order 2	5,000	BUY	Limit	$10.015	11:05 AM	Broker B	Algo
Firm Order 3	5,000	SELL	Peg Mid	$10.00	11:10 AM	Broker C	Algo

Result:
Firm orders 1 and 3 are fully filled for 5,000 shares @ $10.01.
Firm order 2 does not receive a fill as the 'effective' limit price and volume is the same as firm order 1, therefore time priority applies.

Example 3: block trade with half tick limit which is not the current midpoint

NBBO: $10.00 x $10.05

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Firm Order 1	100,000	BUY	Limit	$10.015	11:00 AM	Broker A	Algo
Firm Order 2	100,000	SELL	Limit	$10.00	11:05 AM	Broker B	Algo

Result:
Firm orders 1 and 2 are fully filled for 100,000 shares @ $10.01. Block trades only occur on a valid tick increment or midpoint if that is a half-tick.

Example 4: order received with sub-half-tick limit

NBBO: $10.00 x $10.02

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Firm Order 1	100,000	BUY	Limit	$10.014	11:00 AM	Broker A	Algo

Result:
Firm order 1 rejected as price limit does not fall on a valid half-tick.

Example 5: sub-block trade with half-tick limit and NBBO straddling a tick boundary

NBBO: $1.995 x $2.01

Order	Quantity	Side	Type	Limit	Time	Broker	Human/Algo
Firm Order 1	5,000	BUY	Limit	$2.005	11:00 AM	Broker A	Algo
Firm Order 2	5,000	SELL	Limit	$2.00	11:05 AM	Broker B	Algo

Result:
Firm orders 1 and 2 are fully filled for 5,000 shares @ $2.0025.