TRADELOGIQ MARKETS INC.

Omega ATS and Lynx ATS

Trading Functionality Guide
v. 2.0

Effective Date:
April 25, 2025

Contents

1. PURPOSE

This document provides details regarding the trading features and functionality of the Omega ATS and Lynx ATS trading venues operated by Tradelogiq Markets Inc. ("Tradelogiq") and will be updated when new features and functionality become available.

Detailed specification documents supporting this guide can be found on the Tradelogiq website.

2. CONTACT INFORMATION

The Tradelogiq Operations and Sales teams are the two main points of contact for questions relating to trading functionality and solutions.

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416-646-2428

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All other inquiries can be directed to the above Operations and Support phone number, or visit tradelogiq.com/about/contact for additional contact information.

3. OVERVIEW

3.1 Trading Venue Key Feature Summary

The key features of each of the Tradelogiq trading venues is summarized in the below table. Additional details, including differences in the functioning of the key features, are provided in the sections that follow.

	OMEGA ATS	LYNX ATS	
		Visible Book	Midpoint Book
Trading hours	8:00am - 5:00pm (ET)	9:30am - 4:00pm (ET)	
Trading model	Continuous auction	Periodic matching	
Matching stages	N/A – Continuous	Stage 1: EOC-to-DAY Stage 2: EOC Final Turn	Single stage
Securities traded	All Canadian listed securities (TSX, TSXV, CSE, Cboe Canada)		
Order book transparency	Visible book with partially and fully hidden order types	Visible book with partially hidden order types	Dark book
Broker attribution	Orders defaulted to anonymous; option to specify attributed	Orders defaulted to attributed; option to specify anonymous	
Matching priority	Price / Broker / Time		
Time-in-force (TIF) conditions	Day Immediate or Cancel (IOC) Fill or Kill (FOK)	Day Event or Cancel (EOC) (Note: EOC identified by presence of IOC TIF.)	
Order types	Limit Iceberg Midpoint Peg	DAY Limit Primary Peg Iceberg (on Day Limit and Primary Peg) EOC Limit Market Peg	Midpoint Peg
Post Only	Supported for visible and hidden Post Only order types, as applicable by book		
OPR Compliance	DAO, OPR Re-price, OPR Cancel		
Self-trade prevention	Trade and Suppress Cancel Newest Cancel Oldest Cancel and Decrement	Trade and Suppress Cancel Newest Cancel Oldest Cancel and Decrement No Cancel	
Odd lots	Separate book for odd lots and odd lot portion of mixed lots	Not supported	
Cross types	Intentional, Internal, Derivatives, Bypass, Special Settlement Terms	Not supported	
Primary fee model	Inverted	Matching stage 1: TBD Matching stage 2: Symmetrical	Symmetrical

3.2   Order Entry and Trade Reporting

Order entry is facilitated through FIX order entry sessions using the FIX 4.2 protocol. Subscribers can access their order and trade information through their FIX order entry sessions, as well as through optional drop copy feeds through a separate FIX drop copy connection.

Available public market data feeds containing full depth-of-book (Level 2) order information are based on the ITCH protocol. See section 8.2 below for additional information regarding the public market data feeds.

Specification documents for FIX order entry and the public market data feeds are available on our website.

3.3   General Operating Hours

Trading on Omega ATS and Lynx ATS is available Monday through Friday, except on holidays where Canadian listing markets are scheduled to be closed.

Regular trading hours for each of Omega ATS and Lynx ATS are as follows:

- Omega ATS: 8:00am - 5:00pm (ET)
- Lynx ATS: 9:30am - 4:00pm (ET)

Orders are only accepted during the respective venue's regular trading hours. All unfilled resting orders at the end of scheduled trading hours are cancelled.

Tradelogiq Operations staff are available to provide support from 7:30am to 5:30pm on days that the Tradelogiq trading venues are open for trading.

3.4   Broker Attribution

Orders entered on Omega ATS are defaulted to anonymous unless the subscriber has specified that the order be attributed.

On Lynx ATS, orders are defaulted to be attributed, but subscribers may specify that their order be anonymous.

Cross orders entered on Omega ATS are attributed by default, unless specifically marked as anonymous.

Attribution of an order can affect its matching priority as described in the next section.

3.5   Matching Priority on Both Omega ATS and Lynx ATS

Matching priority for contra-side resting orders on each of Omega ATS and Lynx ATS is based on price / broker / time priority. Subject to section 3.5.1 below, where there are multiple contra-side orders at the same executable price, orders from the same dealer are executed first according to time priority, followed by all other booked orders according to time.

In accordance with regulatory requirements, displayed resting volume is always executed before non-displayed volume at the same price level (including in relation to the hidden portion of an iceberg order, which is considered non-displayed for priority purposes).

3.5.1 Broker Preferencing

On both Omega ATS and Lynx ATS, there is broker preferencing of attributed displayed orders and the hidden portion of attributed icebergs.

For fully hidden orders in both Omega and Lynx, and for EOC orders participating in the EOC Final Turn stage of matching in the Lynx ATS Visible Book, broker preferencing applies as follows:
- Omega ATS – only to attributed orders
- Lynx ATS – to both attributed and anonymous orders (based on time)

Orders marked as jitney will not be considered for broker preferencing.

4. MARKET MODELS

Order display and matching differs between Omega ATS and the two Lynx ATS books because of differences in their market models. Omega ATS operates as a continuous auction market, while Lynx ATS operates using a unique periodic matching model with different stages of matching occurring within its two separate books. Each of these models is described in more detail in the below sections.

4.1 Omega ATS

Omega ATS operates a traditional continuous auction trading model whereby an order is traded upon entry and/or booked as either a displayed or non-displayed order depending on the specific instructions entered on it.

4.1.1 Key Order Types and Features

Omega ATS offers users the ability to trade using a set of commonly understood order types – Limit, Iceberg and Midpoint Peg orders. See Section 5 of this document for more information on these order types and applicable features.

4.1.2 Order Display

Orders that are booked and displayable are disseminated on the Omega ATS market data feed at their limit price, unless the order has been repriced at entry as the result of a specific instruction entered on it, or if subsequently amended.

Amendments to orders are updated in real-time on the Omega ATS market data feed. An order whose volume is increased or whose price is amended will be assigned a new timestamp, causing it to lose priority for matching (described in the next section).

4.1.3   Matching on Omega ATS

A tradeable order entered onto Omega ATS will execute upon entry against booked resting orders following price / broker / time priority, and with displayed volume having priority ahead of non-displayed volume at each price level, as described in Section 3.5 above.

A simple example of matching on Omega ATS showing the effect of broker preferencing and the other priority logic described earlier is below.

Example – Matching on Omega ATS:

Assume the Protected NBBO is $10.00 x $10.03, and the following buy orders are currently resting in the Omega ATS book, in order of time priority:

BUY						
Order #	Priority Timestamp	Type	Broker	Anon.	Order Quantity	Limit Price
A	10:02:01	Limit	078	N	300	$10.00
B	10:02:10	Limit	153	N	500	$10.00
C	10:03:03	Limit	153	Y	1000	$10.00

A new attributed sell order is then received at 10:04:00:

Order #	Type	Side	Broker	Anon.	Order Quantity	Limit Price
D	Limit	Sell	153	No	1000	$10.00

Order D then against the following orders in the sequence set out below:

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	B	D	$10.00	500	Sell Order D trades 500 shares against Buy Order B at $10.00 due to broker preferencing (Order B is attributed). Sell Order D has 500 shares remaining. Buy Order B is fully filled.
2	A	D	$10.00	300	Sell Order D then trades 300 shares against the 300 shares of Buy Order A at $10.00, which trades ahead of Buy Order C based on time, despite Buy Order C being from the same broker (as there is no anonymous broker preferencing on Omega ATS). Sell Order D has 200 shares remaining. Buy Order A is fully filled.

3	C	D	$10.00	200	Sell Order D then trades its remaining 200 shares against Buy Order C. Sell Order D is fully filled. Buy Order C has 800 shares remaining.

4.2   Lynx ATS

Lynx ATS consists of the following two order books:
- "Visible Book" – A book of visible and partially hidden orders.
- "Midpoint Book" – A dark book consisting only of Midpoint Peg orders.

The two books can be accessed through the same order entry session – the separation is strictly functional, based on order type. Midpoint Pegs participate only in the Midpoint Book. All other order types participate in the Visible Book. There is no order interaction between the two books. Midpoint Peg orders will only trade with other Midpoint Peg orders and will not interact with orders entered onto the Visible Book. Trades from the Midpoint Book will be specifically identified as such on the Lynx ATS market data feed.

Matching in both books occurs under a "periodic matching" model, whereby orders will not be matched immediately upon receipt, but will participate in discrete match events ("Match Events") that will take place on a recurring basis, with each Match Event occurring every few milliseconds (randomized). The period between each Match Event during which orders are collected and displayed (where applicable) is referred to as the "Collection Phase".

The following diagram presents the concept:
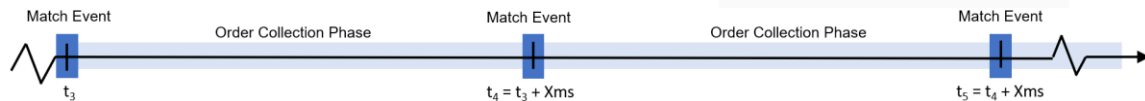
4.2.1   Match Event Frequency

Match Event frequency is determined based on the combination of a static duration component and a randomization window. The maximum static duration will be 5 milliseconds, and a randomization window of no more than 1 millisecond on each side of the static duration may be implemented in order to create some additional uncertainty and reduce the potential for gaming. Different Match Event frequencies may also be established for specific symbol groups. In all cases, changes to Match Event frequency and/or affected symbol sets will be communicated by Subscriber Notice at least 2 months in advance of the change. (Subscriber Notices are posted on the Tradelogiq website at: https://tradelogiq.com/resources/subscriber-notices/.)

The Visible Book and Midpoint Book will follow the same Match Event frequency for any given symbol.

4.2.2   Order Management

New orders, order amends and cancel requests will be processed as received during the Collection Phase. This applies to all order types, regardless of any applied order features and attributes (including the time-in-force condition).

Amendments to displayed orders in the Visible Book are updated in real-time on the public market data feed. An order whose volume is increased or whose price is amended will be assigned a new timestamp and will lose priority for matching (described in the next section).

New orders, order amends and cancel requests received after the commencement of a Match Event will be held and processed after the Match Event has concluded, before transitioning to the next Collection Phase.

4.2.3 Visible Book

4.2.3.1 Key Order Types and Features

Order types for the Visible Book are generally classified as liquidity-taking or liquidity-providing orders based on their time-in-force condition.

"Event or Cancel" (EOC) orders (being orders entered with an "Immediate or Cancel" (IOC) time-in-force condition) are generally classified as liquidity-taking orders and are eligible to match only during the first Match Event after receipt, with any unfilled volume being cancelled at the end of that Match Event.

Orders marked with a "DAY" time-in-force condition are classified as liquidity-providing orders and will remain eligible for participation in subsequent Match Events until fully filled, cancelled by the subscriber, or cancelled by Lynx ATS at the end of scheduled trading hours.

	LIQUIDITY-TAKING (ACTIVE) (Not Displayed)		LIQUIDITY-PROVIDING (PASSIVE) (Displayed / Partially Displayed)	
Time-in-force	EOC		DAY	
Order type	EOC Limit	Market Peg	Primary Peg	DAY Limit
Limit price required	Y	N	N	Y
Features:				
Peg offset		Y	Y	
Iceberg			Y	Y
MIS (Minimum Interaction Size)			Y	Y

See Section 5 of this document for more information on these and other order features.

4.2.3.2 Order Display and Display Price Constraints

As indicated in the preceding section, EOC orders are never displayed in the Visible Book while DAY orders are always either fully or partially displayed.

Order updates to DAY orders will be reflected in real-time in the Lynx ATS market data feeds. Displayed prices of Primary Pegs will also update in real-time in response to a change in the reference Protected NBB/NBO price.

To prevent the display of locked and crossed resting DAY orders in the Visible Book during the Collection Phase, a DAY order's <u>display price</u> will be constrained to the least aggressive of:
    (1) its limit price;
    (2) its pegged price in the case of a Primary Peg, as applicable; and
    (3) the Protected NBBO midpoint (or inside the Protected NBBO midpoint where the midpoint is an invalid increment for display purposes, or the midpoint price is already occupied for display purposes by a contra-side order.)

Implied from the above is that a DAY order in the Visible Book will generally be displayed at its executable price except where its limit price or pegged price (as applicable) is more aggressive than the Protected NBBO midpoint.

Example – Lynx ATS dynamic display mechanism:

Assume the Protected NBBO is $10.00 x $10.03, and there are no orders in the Visible Book at the commencement of the Collection Phase:

Lynx ATS then receives the following liquidity-providing DAY Limit orders (in sequence):

#	Side	Type	Limit Price
1	Buy	DAY Limit	$10.03
2	Buy	DAY Limit	$10.00
3	Sell	DAY Limit	$10.01
4	Buy	DAY Limit	$10.01
5	Sell	DAY Limit	$10.03

Because Orders 1 and 3 are priced at or through the Protected NBBO midpoint of $10.015, they will be displayed at prices that are constrained to the NBBO midpoint in the manner described above. The order updates sent on the Lynx ATS market data feed will therefore result in display prices for each as follows:

BUY		SELL	
#	Display Price	Display Price	#
1	$10.01	$10.02	3
4	$10.01	$10.03	5
2	$10.00		

Order 1 (buy) is displayed at $10.01 despite its limit price of $10.03 because its display price is constrained by the Protected NBBO midpoint. Order 3 (sell) is displayed at $10.02 because its limit price of $10.01 is constrained by the Protected NBBO midpoint. All other orders are displayed at their limit price because their limit prices are less aggressive than the Protected NBBO midpoint.

The dynamic display mechanism affects only the display price of an order and does not affect the order's executable price. Changes to the display price as a result of changes to the Protected NBBO will be communicated in real time on the Lynx ATS market data feed. Where the display price is affected by a change in the Protected NBBO but the order's executable price remains unchanged, there is no impact on the order's time priority standing. See the next section regarding executable prices and executable price constraints.

4.2.3.3 Executable Prices and Executable Price Constraints

The executable price of an order entered into the Visible Book will generally be determined by its limit price or pegged price.

An EOC order's executable price will be determined by its limit / pegged price at the time of the Match Event, and is subject to the effect of any OPR instruction (see Section 6.2 below for information on available OPR instructions). Because the EOC order's executable price is determined at the time of the Match Event, any changes to the Protected NBBO that might affect its executable price during the Collection Phase will have no bearing on its priority for matching.

For a DAY order, the executable price will similarly be determined by its limit / pegged price, but in all cases will be constrained to the opposite-side NBBO to prevent the appearance of trade-throughs.

A DAY order's executable price at any given time is therefore the least aggressive of:
    (1)   its limit price;
    (2)   its pegged price in the case of a Primary Peg, as applicable; and
    (3)   the opposite-side Protected NBBO.

As noted in the preceding section, and seen in the examples below, the dynamic display mechanism can affect the display price of a DAY order without impacting its executable price. Similarly, the mechanism can lead to a change in executable price without a change to display price in the case of an opposite-side Protected NBBO in certain circumstances. Changes to the executable price of a DAY order will cause the order to lose its time priority standing, while changes that only affect the order's display price will not.

Example – DAY order executable price vs. display price and changes to executable price:

Assume Protected NBBO is $10.00 x $10.05, time of commencement of the Collection Phase is 10:02:03.055000 and there are no orders in the Visible Book.

Lynx then receives the following DAY orders to the Visible Book (in sequence):

#	Timestamp	Side	Type	Limit Price
1	10:02:03.055200	Buy	DAY Limit	$10.04
2	10:02:03.055700	Buy	DAY Limit	$10.02
3	10:02:03.055900	Buy	DAY Limit	$10.01

After receipt, the order book is as follows:

	BUY				
#	Priority Timestamp	Type	Limit Price	Executable Price	Display Price
1	10:02:03.055200	DAY Limit	$10.04	$10.04	$10.02
2	10:02:03.055700	DAY Limit	$10.02	$10.02	$10.02
3	10:02:03.055900	DAY Limit	$10.01	$10.01	$10.01

Notes:
- Order 1 – Executable price = limit price as it is not constrained by opposite-side Protected NBO price of $10.05. Display price constrained by Protected NBBO midpoint of $10.025 (invalid display increment).
- Order 2 – Executable price and display price = limit price. Not constrained.
- Order 3 – Executable price and display price = limit price. Not constrained.

At 10:02:03.056300, Lynx ATS receives an update of the Protected NBO to $10.03 – the Protected NBBO is now $10.00 x $10.03. The order book updates as follows:

	BUY				
#	Priority Timestamp	Type	Limit Price	Executable Price	Display Price
1	10:02:03.056300	DAY Limit	$10.04	$10.03	$10.01
2	10:02:03.055700	DAY Limit	$10.02	$10.02	$10.01
3	10:02:03.055900	DAY Limit	$10.01	$10.01	$10.01

Notes:
- Order 1 – Executable price changes as it is now constrained by opposite-side Protected NBO of $10.03. Display price updated on market data feed as it is further constrained by Protected NBBO midpoint of $10.015 (invalid display increment). Change in executable price causes change to priority timestamp.
- Order 2 – No change to executable price as limit price remains not constrained by opposite-side Protected NBO. Display price updated on market data feed as it is now constrained by Protected NBBO midpoint of $10.015 (invalid display increment). No change to priority timestamp as no change in executable price.
- Order 3 – No changes. Executable price and display price continue to equal limit price and are not constrained by the opposite-side Protected NBO.

For information on changes in executable prices of Primary Pegs as a result of changes in the same-side Protected NBBO, see the explanation of the Primary Peg order type at Section 5.2.2.

4.2.3.4   Matching in the Lynx ATS Visible Book

Matching in the Visible Book will occur in two stages, as described below.

In the event that the Protected NBBO for a symbol is locked or crossed at the time of the Match Event, there will be no trades executed for that symbol during the Match Event.

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Stage 1 – EOC-to-DAY

During this stage, EOC orders will be matched on a "first in, first out" (FIFO) basis against DAY orders.

The price of each trade is based on the executable price of the resting DAY order.

Priority of matching for DAY orders will follow price / broker / time priority. The following also impacts the matching priority for DAY orders:
- Within a given price level, all displayed DAY order volume at a price level will be executed before any hidden iceberg volume is executed.
- Broker preferencing will only apply when both sides of are attributed. This applies both when executing visible DAY order volume and when executing hidden iceberg volume.

Example – EOC-to-DAY matching stage:

Assume at the time of the Match Event, the Protected NBBO is $10.00 x $10.03 and the order book consists of the orders set out in the below tables.

For simplicity, note the following:
- *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
- *"Type" delineates only between DAY and EOC orders.*
- *"Broker" represents the public broker number.*
- *"True Broker" identifies the underlying broker on the order for EOCs.*
- *"Executable Price" represents the order's executable price based on its limit and/or pegged prices.*
- *EOC orders are sorted based on FIFO, DAY orders are presented from most aggressive price to least, followed by Time Rank (i.e., priority timestamp).*
- *EOCs are presented separately from resting DAY orders.*

EOC orders received during Collection Phase:

Time Rank	Type	Side	Broker	True Broker	Order Quantity	Executable Price
A	EOC	Sell	063	063	1500	$10.00
B	EOC	Sell	078	078	500	$10.01
C	EOC	Buy	051	051	1200	$10.03
D	EOC	Sell	001	153	1000	$10.01
E	EOC	Sell	001	095	2000	$10.00
F	EOC	Buy	001	097	1100	$10.03
G	EOC	Buy	153	153	200	$10.03

DAY orders as at the commencement of the Match Event:

BUY					SELL				
Time Rank	Type	Broker	Order Quantity	Executable Price	Executable Price	Order Quantity	Broker	Type	Time Rank
2	DAY	001	1000	$10.01	$10.03	1500	037	DAY	3
1	DAY	120	2000	$10.00					
4	DAY	063	1000	$10.00					

The following represents the trades that will result from the EOC-to-DAY stage of matching.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	DAY 2	EOC A	$10.01	1000	Sell EOC A was the first EOC received, and trades 1000 shares against the 1000 shares of Buy DAY 2 displayed at the best price of $10.01.
2	DAY 4	EOC A	$10.00	500	Sell EOC A then trades its remaining 500 shares against the 1000 shares of Buy DAY 4 at $10.00, which trades ahead of Buy DAY 1 due to broker preferencing (both sides attributed). Buy DAY 4 has 500 shares remaining.
3	EOC C	DAY 3	$10.03	1200	Sell EOC B is next in sequence, but there are no buy DAY orders remaining that are executable at its $10.01 executable price. EOC B remains eligible to trade in the EOC Final Turn stage of matching. Buy EOC C is next in sequence and trades its full 1200 shares against the 1500 shares of Sell DAY 3. Sell DAY 3 has 300 shares remaining.
4	DAY 1	EOC E	$10.00	2000	Sell EOC D is next in sequence but there are no buy DAY orders remaining that are executable at its $10.01 executable price. EOC D remains eligible to trade in the EOC Final Turn stage of matching. Sell EOC E is next in sequence and trades its full 2000 shares against the 2000 shares displayed by Buy DAY 1.
5	EOC F	DAY 3	$10.03	300	Buy EOC F is next in sequence and trades 300 shares against the remaining balance of Sell DAY 3. Buy EOC F has 800 shares remaining. Buy EOC G is last in sequence, but there are no remaining Sell DAY orders. The EOC-to-DAY stage of matching ends.

At the end of the EOC-to-DAY stage of matching, the orders remaining in the Visible Book are as follows:

EOCs:

Time Rank	Type	Side	Broker	True Broker	Order Quantity	Executable Price
B	EOC	Sell	078	078	500	$10.01
D	EOC	Sell	001	153	1000	$10.01
F	EOC	Buy	001	097	800	$10.03
G	EOC	Buy	153	153	200	$10.03

Resting DAY orders:

BUY					SELL				
Time Rank	Type	Broker	Order Quantity	Executable Price	Executable Price	Order Quantity	Broker	Type	Time Rank
4	DAY	063	500	$10.00					

Stage 2 – EOC Final Turn

In this stage, remaining unexecuted EOC orders that are priced at or through the Protected NBBO midpoint have the opportunity to execute against each other at that midpoint price. This will help to mitigate the potential for EOC orders to go unfilled if DAY orders are fully exhausted before EOC demand can be satisfied, including in the case where adjustments / cancels to DAY orders are made by subscribers during the Collection Phase due to changes in market conditions.

EOC orders will participate in the EOC Final Turn by default, but subscribers can choose to opt out. The opt-out can be set at both the session level and on an order-by-order basis. However, where opted-out, subscribers may miss additional opportunities to obtain price improvement for their client orders.

Remaining EOC orders will be made eligible on a FIFO basis to trade against remaining eligible contra-side EOC orders. The priority for contra-side orders will follow broker / time for those contra-side orders with an executable price that is at or through the Protected NBBO midpoint, and anonymous broker preferencing applies.

Example – EOC Final Turn matching stage:

Continuing from the example above as at the end of the EOC-to-DAY stage of matching, the Protected NBBO midpoint at beginning of the Match Event was $10.015, and the remaining EOCs in the Visible Book are as follows:

Time Rank	Type	Side	Broker	True Broker	Order Quantity	Executable Price
B	EOC	Sell	078	078	500	$10.01
D	EOC	Sell	001	153	1000	$10.01
F	EOC	Buy	001	097	800	$10.03
G	EOC	Buy	153	153	200	$10.03

The following represents the trades that will result from the EOC Final Turn stage of matching.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
6	EOC F	EOC B	$10.015	500	Sell EOC B is first based on FIFO and trades its full 500 shares (active) against Buy EOC F at $10.015 based on time. Buy EOC F has 300 shares remaining.
7	EOC G	EOC D	$10.015	200	Sell EOC D is next in sequence, and trades 200 shares (active) against the 200 shares of Buy EOC G at $10.015 due to broker preferencing, despite one side having been marked anonymous (anonymous broker preferencing applies in the EOC Final Turn). Sell EOC D has 800 shares remaining.
8	EOC F	EOC D	$10.015	300	Sell EOC D then trades 300 shares (active) against the remaining 300 shares of Buy EOC F. Sell EOC D has 500 shares remaining, but there are no remaining contra-side buy EOCs.

After Trade #8 above, there are no remaining matchable EOC orders and the Match Event ends. At that point, any unfilled EOC orders (being the remainder of Sell EOC D in the above example) are cancelled, any remaining DAY orders are updated (e.g., display quantities for icebergs are refreshed), order messages received during the Match Event are processed, and the next Collection Phase begins.

Assuming no orders or updates were received during the processing of the Match Event in the above example, the following would reflect the state of the Visible Book at the commencement of the next Collection Phase.

BUY					SELL				
Time Rank	Type	Broker	Order Quantity	Executable Price	Executable Price	Order Quantity	Broker	Type	Time Rank
4	DAY	063	500	$10.00					

4.2.4   Midpoint Book

4.2.4.1   Key Order Types and Features

The Midpoint Book is a fully dark book consisting solely of Midpoint Peg orders with all trades occurring at the Protected NBBO midpoint, subject to the order's limit price.

As all Midpoint Peg orders float with the Protected NBBO midpoint (subject to their limit price) and are only tradeable against other Midpoint Peg orders at the midpoint price at the time of the Match Event, Midpoint Peg orders will maintain their relative time priority when the Protected NBBO midpoint changes.

See Section 5 of this document for more information on the Midpoint Peg order type and applicable order features, including MIS.

4.2.4.2   Matching in the Lynx ATS Midpoint Book

Unlike the two-staged approach for matching in the Visible Book, matching in the Midpoint Book will occur in a single stage, as described below. Only Midpoint Peg orders that have a limit price that is at or through the Protected NBBO midpoint will be eligible to match during a Match Event.

In the event that the Protected NBBO for a symbol is locked or crossed at the time of a Match Event, or if one or both sides of the Protected NBBO are missing, there will be no trades executed for that symbol during the Match Event.

During a Match Event, Midpoint Peg orders will be traded on a FIFO basis against all eligible contra-side Midpoint Peg orders in the Midpoint Book, and regardless of the order's time-in-force conditions. Priority for eligible contra-side Midpoint Peg orders is broker / time, and anonymous broker preferencing will apply.

EOC Midpoint Peg orders will be eligible to participate in multiple trades throughout a Match Event process, and any unfilled EOC Midpoint Peg orders will be cancelled at the end of that Match Event.

Example – Midpoint Book Match Event:

Assume the Protected NBBO midpoint is $10.015 (Protected NBBO is $10.00 x $10.03), and the Midpoint Book at the time of the Match Event consists of the orders set out in the table below.

For simplicity, note the following:

- *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
- *"Type" delineates only between DAY and EOC orders.*
- *"True Broker" identifies the underlying broker on the order for EOCs.*
- *"Executable" reflects whether the Midpoint Peg is executable based on the order's limit price – orders that are not executable due to their limit price are shaded grey.*
- *Orders are sorted by Time Rank.*

BUY						SELL					
Time Rank	Type	True Broker	Order Qty	Limit Price	Executable	Executable	Limit Price	Order Qty	True Broker	Type	Time Rank
A	DAY	165	600	MKT	Y	Y	$10.015	2000	063	EOC	C
B	DAY	112	900	$10.03	Y	N	$10.02	1500	165	DAY	E
D	EOC	097	1500	$10.02	Y	Y	$10.00	800	165	DAY	F

The following represents the trades that will result during the Match Event.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	DAY A	DAY F	$10.015	600	Buy DAY A is first based on FIFO and trades its full 600 shares (active) against Sell DAY F at $10.015 due to broker preferencing. (Sell DAY E from the same broker would have had time priority over Sell DAY F but is non-executable due to its limit price.) Sell DAY F has 200 shares remaining.
2	DAY B	EOC C	$10.015	900	Buy DAY B is next in sequence and trades its full 900 shares (active) against Sell EOC C based on time. Sell EOC C has 1100 shares remaining.
3	EOC D	EOC C	$10.015	1100	Sell EOC C is next in sequence and trades its remaining 1100 shares (active) against Buy EOC D as it is the only remaining executable contra-side order. Buy EOC D has 400 shares remining.
4	EOC D	EOC F	$10.015	200	Buy EOC D is next in sequence and trades 200 shares (active) against the remaining 200 shares of Sell DAY F. Buy EOC D has 200 shares remaining, but there are no remaining executable contra-side sell orders.

After Trade #4 above, there are no remaining matchable orders and the Match Event ends. At that point, any unfilled EOC orders (being the remainder of Buy EOC D in the above example)

are cancelled, order messages received during the Match Event are processed, and the next Collection Phase begins.

The Midpoint Book at the commencement of the subsequent Collection Phase is set out below. Sell DAY E continues to the next Collection Phase in a non-executable state and remains in that state until the Protected NBBO midpoint is at or within its limit price.

BUY						SELL					
Time Rank	Type	True Broker	Order Qty	Limit Price	Executable	Executable	Limit Price	Order Qty	True Broker	Type	Time Rank
						N	$10.02	1500	165	DAY	E

5. ORDER TYPES AND FEATURES

The order types and features described below are available on Omega ATS and/or Lynx ATS unless otherwise indicated. Because of the different market models on each venue, differences in order type functionality can arise as described below.

Booked orders can be amended for price and volume, although an order will lose its time priority and be assigned a new priority timestamp for order amend requests where the volume of the order is increased or its price is amended. For clarity, this also applies to the application of order amend requests received and processed during a Collection Phase to amend the volume or price of an EOC order booked in either of the Lynx ATS Visible Book or Midpoint Book.

5.1 Limit Orders

5.1.1 Omega ATS

On Omega ATS, a limit order has a specified price and may be filled upon entry at prices that are equal to or better than (i.e., less aggressive) the specified limit price. Any remaining volume of the order will be booked at the specified limit price, subject to the time-in-force conditions applied to the order.

5.1.2 Lynx ATS

Limit orders entered onto Lynx ATS participate only in the Visible Book. As discussed earlier in Section 4.2.3.1, Visible Book orders are generally classified as liquidity-taking or liquidity-providing orders based on their time-in-force condition, as further explained below.

- DAY Limit order
  - A limit order that provides liquidity only against contra-side liquidity-taking EOC orders at the DAY Limit order's executable price.
  - Always displayed.
  - The executable price is constrained by the opposite-side Protected NBBO as described in Section 4.2.3.3. The order's display price is also constrained by the Protected NBBO midpoint as described in Section 4.2.3.2.

- o As an order with a DAY time-in-force condition, it will persist through multiple Match Events until either fully filled or cancelled by the user.

- EOC Limit order
    - o A limit order that takes liquidity against contra-side resting DAY orders (DAY Limit or Primary Peg orders) up to the limit price in the first EOC-to-DAY stage of matching, and which otherwise may trade at the Protected NBBO midpoint against other EOC orders (EOC Limit or Market Peg orders) in the EOC Final Turn stage of matching, as described in Section 4.2.3.4.
    - o Not displayed (like IOC orders on other marketplaces).
    - o Will participate only in the first Match Event following receipt.

5.2 Pegged Orders

Tradelogiq offers pegged orders, i.e., orders with executable prices that float in reference to the Protected NBBO. Midpoint Pegs are available on both Omega ATS and Lynx ATS, while Primary Pegs and Market Pegs are available only on Lynx ATS.

Because Lynx ATS is unprotected for the purposes of OPR compliance, displayed prices of orders on Lynx ATS do not update the Protected NBBO and will not affect pricing of pegged orders on either of Omega ATS or Lynx ATS.

Pegged order types available on Omega ATS and/or Lynx ATS can be entered and are tradeable during each venue's regular trading hours. (See Section 3.3 for information on trading hours.)

5.2.1 Midpoint Peg

Midpoint Peg orders are available on both Omega ATS and Lynx ATS. They can be entered and are tradeable during each venue's respective regular trading hours.

A Midpoint Peg's executable price floats in reference to the Protected NBBO midpoint, subject to the order's limit price. A limit price can be entered with a price that is either a full or half trading increment (i.e., full- or half-tick) to allow users to better manage their execution risk.

A Midpoint Peg order is executable so long as its limit price is at or through the Protected NBBO midpoint. A Midpoint Peg order with a limit price that does not meet or exceed the Protected NBBO midpoint will be held in a non-executable state until a change in the Protected NBBO allows the order to be executable. Similarly, if the Protected NBBO is locked or crossed, or if one side of the Protected NBBO is missing, Midpoint Peg orders will be held in a non-executable state until a valid Protected NBBO is available.

Midpoint Peg orders must always be entered in round board lot sizes and will be rejected if entered in odd lot or mixed lot quantities.

The differences in Midpoint Peg functionality between Omega ATS and the Lynx ATS Midpoint Book are summarized in the below table.

	Omega ATS	Lynx ATS Midpoint Book
Limit price required	Yes	No
Trades against	*Upon entry:* Contra-side Midpoint Pegs only. *Once resting:* Trades against any incoming orders subject to any constraints on those incoming orders (e.g., bypass)	*At Match Event:* Contra-side Midpoint Peg orders only.
Effect of changes to Protected NBBO midpoint on priority	New priority timestamp assigned at each repricing. Repricing can cause order to be re-entered to order book and may remove liquidity against other orders.	None. At Match Event, relative time priority is maintained.
Eligible to be used with "Minimum Interaction Size"	No	Yes

Example – Midpoint Peg Functionality – Omega ATS

Assume the Protected NBBO midpoint is $10.015 (Protected NBBO is $10.00 x $10.03), and the Omega ATS book consists of the Midpoint Peg orders set out in the table below.

> *For simplicity, note the following:*
> - *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
> - *"Type" identifies type of order.*
> - *"Executable" reflects whether a Midpoint Peg is executable based on the order's limit price – orders that are not executable due to their limit price are shaded grey.*
> - *All orders have a "DAY" time-in-force condition.*
> - *All orders are anonymous to remove the effect of broker preferencing. (No anonymous broker preferencing of fully-hidden orders on Omega ATS.)*
> - *Orders are sorted by Time Rank.*

BUY					SELL				
Time Rank	Type	Order Qty	Limit Price	Executable	Executable	Limit Price	Order Qty	Type	Time Rank
A	Midpoint Peg	300	$10.02	Y					
B	Midpoint Peg	600	$10.01	N					
C	Limit	900	$10.00						

Time 1: The following marketable sell limit order is then received:

Time Rank	Type	Side	Order Quantity	Limit Price
D	Limit	Sell	500	$10.00

The following represents the trades that will result upon receipt of Order D at Time 1.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	A	D	$10.015	300	Sell Order D trades 300 shares against the hidden volume of Sell Order A at the Protected NBBO midpoint of $10.015. Sell Order D has 200 shares remaining. Buy Order A is fully filled.
2	C	D	$10.00	200	Sell Order D does not trade with Buy Order B (Midpoint Peg) because it is non-executable due to the midpoint price of $10.015 violating the order's limit price of $10.01. Sell Order D then trades its remaining 200 shares against the displayed volume of Buy Order C at $10.00. Sell Order D is fully filled. Buy Order C has 700 shares remaining.

The Omega ATS order book immediately after the above trades is as follows:

	BUY				SELL				
Time Rank	Type	Order Qty	Limit Price	Executable	Executable	Limit Price	Order Qty	Type	Time Rank
B	Midpoint Peg	600	$10.01	N					
C	Limit	700	$10.00						

Time 2: The following sell Midpoint Peg order is then received:

Time Rank	Type	Side	Order Quantity	Limit Price
E	Midpoint Peg	Sell	500	$10.01

No trades occur upon entry as Sell Order E as a Midpoint Peg order will seek to trade against resting orders at the midpoint upon entry, and Buy Order B (a resting contra-side Midpoint Peg order) is non-executable due to the midpoint price violating the order's limit price (and despite the two orders having a limit price that would otherwise be tradeable if these orders were not Midpoint Peg orders).

The Omega ATS order book immediately after the entry of Sell Order E is as follows:

	BUY				SELL				
Time Rank	Type	Order Qty	Limit Price	Executable	Executable	Limit Price	Order Qty	Type	Time Rank
B	Midpoint Peg	600	$10.01	N	Y	$10.01	500	Midpoint Peg	E
C	Limit	700	$10.00						

Time 3: The Protected NBBO midpoint updates to $10.01 as a result of an update to the Protected NBBO, which is now $10.00 x $10.02.

Buy Order B becomes executable as the Protected NBBO midpoint of $10.01 is now equal to or within the order's limit price. The following trade occurs upon Buy Order B becoming executable.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	B	E	$10.015	500	Sell Order E trades 500 shares against the hidden volume of Buy Order B at the Protected NBBO midpoint of $10.01. Sell Order E is fully filled. Buy Order B has 100 shares remaining.

Example – Midpoint Peg Functionality – Lynx ATS

See Section 4.2.4.2 for examples of the matching of Midpoint Peg orders during a Match Event for the Lynx ATS Midpoint Book. See Section 5.5.2 below for information on the use of MIS on Midpoint Peg orders in the Lynx ATS Midpoint Book, and for a related example.

5.2.2   Primary Peg – Lynx ATS Only

A Primary Peg only participates in the Lynx ATS Visible Book, and can only be entered with a DAY time-in-force condition. As a result, Primary Pegs only provide liquidity against contra-side liquidity-taking EOC orders, and do so at the Primary Peg's executable price.

As DAY orders, Primary Pegs are always displayed (or partially displayed if paired with an iceberg instruction).

A Primary Peg's price will float in reference to the same-side Protected NBBO, subject to the order's limit price and any other applicable instruction or pricing constraint. A buy Primary Peg will be priced in reference to the same-side Protected NBB, while a sell Primary Peg will be priced in reference to the same-side Protected NBO.

Primary Pegs can be entered with or without a limit price, and can include an offset value that specifies the distance in number of trading increments from the reference price that the Primary Peg's price should be set. A positive offset will indicate a more aggressive price relative to the same-side Protected NBBO, while a negative offset will indicate a less aggressive price. For example, where the Protected NBB is $10.00, a buy Primary Peg with a positive (negative) offset of +1 (-1) will result in the Primary Peg being priced at $10.01 ($9.99). If no offset is entered, a default offset of 0 is applied.

The executable price of a Primary Peg is constrained by its limit price and by the opposite-side Protected NBBO as described in Section 4.2.3.3. The order's display price is also constrained by both its limit price and the Protected NBBO midpoint as described in Section 4.2.3.2. Changes to a Primary Peg's executable price arising from a change in the Protected NBBO will result in the assignment of a new priority timestamp.

A Primary Peg will be held in a non-executable state (and therefore will not be displayed and will not participate in a Match Event) at any time where there is no same-side Protected NBBO to serve as a reference price, or at any time that its executable price is invalid (i.e., 0 or less than 0 in the case of a low-priced security).

Example of Primary Peg orders in Lynx ATS Visible Book:

Assume Protected NBBO is $10.00 x $10.04, time of commencement of the Collection Phase is 10:02:03.055000 and there are no orders in the Visible Book.

Lynx ATS then receives the following DAY Limit and Primary Peg orders to the Visible Book (in sequence):

#	Timestamp	Side	Type	Offset	Limit Price
A	10:02:03.055200	Buy	Primary Peg	+2	$10.03
B	10:02:03.055700	Buy	Primary Peg	0	$10.01
C	10:02:03.055900	Buy	Primary Peg	+1	$10.01
D	10:02:03.056200	Buy	DAY Limit	N/A	$10.01

After receipt, the order book is as follows, ordered by executable price and then time priority:

BUY					
#	Priority Timestamp	Type	Offset	Limit Price	Executable Price	Display Price
A	10:02:03.055200	Primary Peg	+2	$10.03	$10.02	$10.02
C	10:02:03.055900	Primary Peg	+1	$10.01	$10.01	$10.01
D	10:02:03.056200	DAY Limit	N/A	$10.01	$10.01	$10.01
B	10:02:03.055700	Primary Peg	0	$10.01	$10.00	$10.00

Notes:
- Order A – Executable price = pegged price of $10.02 which does not violate limit price of $10.03. Displayed at executable price, which is not constrained by Protected NBBO midpoint of $10.02.
- Order B – Executable price = pegged price of $10.00 which does not violate limit price of $10.01. Displayed at executable price of $10.00.
- Order C – Executable price = pegged price of $10.01 which is equal to limit price. Displayed at executable price of $10.01.
- Order D – Executable price = limit price (not pegged). Displayed at executable price.

At 10:02:03.056300, Lynx ATS receives an update to the Protected NBB to $10.01 – the Protected NBBO is now $10.01 x $10.04. The order book updates as follows (reordered by price and then time priority):

BUY						
#	**Priority Timestamp**	**Type**	**Offset**	**Limit Price**	**Executable Price**	**Display Price**
A	10:02:03.056300	Primary Peg	+2	$10.03	$10.03	$10.02
C	10:02:03.055900	Primary Peg	+1	$10.01	$10.01	$10.01
D	10:02:03.056200	DAY Limit	N/A	$10.01	$10.01	$10.01
B	10:02:03.056300	Primary Peg	0	$10.01	$10.01	$10.01

Notes:
- Order A – Executable price updates to new pegged price of $10.03, which does not violate limit price of $10.03. Display price was already constrained by Protected NBBO midpoint at $10.02 so display price remains unchanged despite change in executable price. New priority timestamp assigned due to change in executable price.
- Order B – Executable price updates to new pegged price of $10.01 which is equal to limit price of $10.01. Displayed price updates to executable price of $10.01. New priority timestamp assigned due to change in executable price.
- Order C – No change to executable price as new pegged price of $10.02 violates limit price of $10.01. Display price remains unchanged.
- Order D – Executable price continues to equal limit price (not pegged). Display price remains unchanged.

Note that constraints on a Primary Peg's executable price would apply in the same manner as explained in Section 4.2.3.3 if its pegged price in the above example was to exceed the opposite-side NBBO (assuming no violation of limit price).

5.2.3   Market Peg – Lynx ATS Only

A Market Peg participates only in the Lynx ATS Visible Book, and can only be entered with an EOC time-in-force condition (represented through use of the IOC marker).

As EOCs, Market Pegs will take liquidity only against contra-side liquidity-providing DAY Limit and Primary Peg orders during the first EOC-to-DAY stage of matching in the Visible Book, and will trade up to the less aggressive of the Market Peg's pegged price or limit price. Unfilled Market Peg orders will then be eligible to participate in the EOC Final Turn stage of matching where they will have the opportunity to trade against other EOC orders (EOC Limit or other Market Peg orders) at the Protected NBBO midpoint as described in Section 4.2.3.4.

Like EOC Limit orders, Market Pegs are not displayed.

A Market Peg's executable price will be determined only at the time of the Match Event in reference to the opposite-side Protected NBBO, subject to the order's limit price and any other applicable order instruction (e.g., OPR instruction). A buy Market Peg will be priced in reference to the opposite-side Protected NBO, while a sell Market Peg will be priced in reference to the opposite-side Protected NBB.

Market Pegs can be entered with or without a limit price, and can include an offset value that specifies the distance in number of trading increments from the reference price that the Market Peg's price

should be set. A positive offset will indicate a more aggressive price relative to the opposite-side Protected NBBO, while a negative offset will indicate a less aggressive price. For example, where the Protected NBO is $10.05, a buy Market Peg with a positive (negative) offset of +1 (-1) will result in the Primary Peg being priced at $10.06 ($10.04). If no offset is entered, a default offset of 0 is applied.

At the time of the Match Event, Market Pegs as EOCs will trade on a FIFO basis against contra-side liquidity along with all other EOCs (whether EOC Limits or other Market pegs) in the manner described in Section 4.2.3.4.

A Market Peg will be held in a non-executable state (and therefore will not participate in a Match Event) at any time where there is no opposite-side Protected NBBO to serve as a reference price, or at any time that its executable price is invalid (i.e., 0 or less than 0 in the case of a low-priced security).

Example of Market Peg orders entered to the Lynx ATS Visible Book:

Assume that during the Collection Phase the below EOC orders were received (in sequence) and that the last Protected NBBO update received prior to the commencement of the Match Event indicated a Protected NBBO of $10.00 x $10.03.

At the start of the Match Event, as already described at Section 4.2.3.4, the EOCs would commence trading against contra-side liquidity-providing DAY orders in the order received, and would trade up to their executable prices determined as at the time of the Match Event as shown below – being the less aggressive of order's limit price and the pegged price in the case of a Market Peg.

> *For simplicity, note the following:*
> - *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
> - *EOC orders are sorted based on FIFO.*

Time Rank	Type	Peg Offset	Side	Limit Price	Executable Price
A	EOC Limit	N/A	Sell	$10.01	$10.01
B	Market Peg	-1	Sell	$10.00	$10.01
C	Market Peg	0	Buy	$10.02	$10.02
D	EOC Limit	N/A	Buy	$10.03	$10.03
E	Market Peg	0	Sell	$9.98	$10.00

Notes:
- Order A – Executable price = limit price (not pegged).
- Order B – Executable price = pegged price of $10.01, which does not violate limit price of $10.00.
- Order C – Executable price = limit price of $10.02 because pegged price of $10.03 would violate limit price.
- Order D – Executable price = limit price (not pegged).
- Order E – Executable price = pegged price of $10.00, which does not violate limit price of $9.98.

5.3   Iceberg Orders

The following order types can be turned into iceberg orders by specifying a display quantity on an order that is less than the total order quantity specified:

- Omega ATS: Limit order
- Lynx ATS (for use in the Visible Book):
    - DAY Limit order
    - Primary Peg order

On Lynx ATS, when the iceberg instruction is paired with the Primary Peg order type, the order becomes a floating iceberg where the price of both the visible and hidden portion of the order floats in reference to the same-side Protected NBBO. As icebergs on Lynx ATS are only eligible to be entered with a DAY time-in-force condition, they will only trade as liquidity-providing orders in the first EOC-to-DAY matching stage.

As indicated above, iceberg orders allow users to specify both a total order size and the amount of that total size to be displayed in the order book, thereby allowing users to manage the risk of information leakage risk with large-sized orders. Users of iceberg orders on Lynx ATS can also specify a MIS to be applied when matching contra-side EOC orders against the iceberg order's hidden reserve portion. The MIS sets a minimum counterparty order size to be met by each contra-side EOC order. See Section 5.5.2 below for more details on MIS.

Priority of matching for the displayed portion of an iceberg is subject to the same price / broker / time matching priority as other displayed orders at the same price level. Where an active / liquidity-taking order has executed all displayed resting liquidity at a given price level, it will then execute against the hidden reserve quantities of iceberg orders at that price following the same price / broker / time matching priority. When broker preferencing is applied to either the displayed or hidden portion of an iceberg order, both sides of the trade must be attributed – i.e., anonymous broker preferencing does not apply to the hidden of portion of an iceberg order.

When an iceberg order is refreshed, the displayed portion receives a new priority timestamp. The displayed portion will continue to refresh until the hidden reserve quantity has been fully exhausted. The refresh size will generally be the lesser of the specified original display size and the remaining order quantity. Differences in the refresh mechanism exist between Omega ATS and Lynx ATS. See the below table for information on these differences, and the examples that follow the table.

Iceberg orders must always be entered in round board lot sizes. Iceberg orders entered in odd lot or mixed lot quantities will be rejected.

The differences in iceberg functionality between Omega ATS and the Lynx ATS Visible Book are summarized in the below table.

	Omega ATS	Lynx ATS Visible Book
Order types on which iceberg instruction available	Limit order	DAY Limit Primary Peg
Refresh mechanism	Refreshes immediately once the displayed quantity has been exhausted. Where an incoming order has executed all displayed liquidity at a given price level, iceberg orders (based on priority) whose hidden	Refreshes if the displayed quantity has been fully traded during a Match Event, but only at the end of the Match Event, before transition to the next Collection Phase.

	Omega ATS	Lynx ATS Visible Book
	reserve can trade against the remainder of the incoming order will refresh in a size that will satisfy the remainder of the incoming order, immediately followed by the associated trades – the refresh size for a particular iceberg order in this case may be a multiple of its original display size in order to facilitate the subsequent trades, but limited by the total remaining size of the iceberg order. Otherwise, the refresh size will be the lesser of the iceberg's specified display quantity or its remaining order size.	Where the displayed quantity of an iceberg at a price level has been fully traded in a Match Event, it will not refresh immediately. The hidden reserve portion will remain available to be traded against by subsequent liquidity-taking orders until the Match Event has concluded, at which time the iceberg's displayed portion will be refreshed to the lesser of the iceberg's specified display quantity or its remaining order size.
Eligible to be used with "Minimum Interaction Size" (MIS) feature for application on iceberg's hidden reserve portion	No	Yes

Example – Iceberg order execution – Omega ATS:

Assume the Protected NBBO is $10.00 x $10.03 and the Omega ATS order book consists of the buy orders set out in the below table.

For simplicity, note the following:
- *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
- *"Type" delineates only between DAY and EOC orders.*
- *"Broker" represents the public broker number.*
- *"True Broker" identifies the underlying broker on the order.*

BUY						
Time Rank	Type	Broker	True Broker	Hidden Reserve Quantity	Display Quantity	Limit Price
A	Limit (Iceberg)	063	063	800	200	$10.00
B	Limit (Iceberg)	001	120	1000	500	$10.00
C	Limit (Iceberg)	120	120	2000	300	$10.00

<u>Time 1:</u> The following marketable sell limit order is then received:

Time Rank	Type	Side	Broker	Order Quantity	Limit Price
D	Limit	Sell	120	2100	$10.00

The following represents the trades that will result upon receipt of Order D at Time 1.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	C	D	$10.00	300	Sell Order D trades 300 shares against the 300 displayed shares of Buy Order C at $10.00 due to broker preferencing. (Buy Order B is also from the same broker but is anonymous.) Sell Order D does not trade against the hidden reserve quantity of Buy Order C at this point as there are still other orders with displayed volume at the same price level. Sell Order D has 1800 shares remaining. Buy Order C has 2000 shares in reserve remaining.
2	A	D	$10.00	200	Sell Order D then trades with the 200 displayed shares of Buy Order A based on time priority amongst the remaining displayed volume. Sell Order D has 1600 shares remaining. Buy Order A has 800 shares in reserve remaining.
3	B	D	$10.00	500	Sell Order D then trades with the 500 displayed shares of Buy Order B, being the only buy order with any displayed volume remaining. Sell Order D has 1100 shares remaining. Buy Order B has 1000 shares in reserve remaining.
4	C	D	1100	$10.00	All displayed quantity has been exhausted. The hidden reserve quantity of Buy Order C is prioritized over the reserve quantity of Buy Order A due to broker preferencing and is prioritized over the reserve quantity of Buy Order B despite being from the same broker, as Buy Order B is anonymous (there is no anonymous broker preferencing on the reserve portion of icebergs). To facilitate this outcome, Buy Order C is refreshed with 1200 shares (4 x its original display quantity of 300 shares) to be able to satisfy the 1100 shares remainder of Sell Order D. Sell Order D then trades its remaining 1100 shares against the refreshed 1200 share quantity of Buy Order C at $10.00. Sell Order D is fully filled. Buy Order C has 100 shares displayed and 800 shares in reserve remaining.

The displayed quantities of orders A and B subsequently refresh, but time priority of each remaining refreshed amount is determined by their original relative time priority. After the refresh, the buy orders resting in Omega ATS are as follows:

BUY						
Time Rank	Type	Broker	True Broker	Hidden Reserve Quantity	Display Quantity	Limit Price
A	Limit (Iceberg)	063	063	600	200	$10.00
B	Limit (Iceberg)	001	120	500	500	$10.00
C	Limit (Iceberg)	120	120	800	100	$10.00

Example – Iceberg order execution – Lynx ATS Visible Book:

Assume at the time of the Match Event, the Protected NBBO is $10.00 x $10.03 and the order book consists of the orders set out in the below tables.

For simplicity, note the following:
- *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
- *"Type" delineates only between DAY and EOC orders.*
- *"Broker" represents the public broker number.*
- *"Executable Price" represents the order's executable price based on its limit and/or pegged prices.*
- *EOC orders are sorted based on FIFO, DAY orders are presented from most aggressive price to least, followed by Time Rank (i.e., priority timestamp).*
- *EOCs are presented separately from resting DAY orders.*

Sell EOC orders received during Collection Phase:

Time Rank	Type	Side	Broker	Order Quantity	Executable Price
A	EOC	Sell	120	2500	$10.00

Buy DAY iceberg orders as at the commencement of the Match Event:

BUY						
Time Rank	Type	Offset	Broker	Hidden Reserve Quantity	Display Quantity	Executable Price
1	DAY Limit	N/A	001	700	300	$10.00
2	Primary Peg	0	120	1000	500	$10.00
3	DAY Limit	N/A	063	800	200	$10.00

The following represents the trades that will result from the EOC-to-DAY stage of matching.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	DAY 2	EOC A	$10.00	500	Sell EOC A was the first EOC received, and trades 500 shares against the 500 shares of Buy DAY 2 displayed at $10.00 due to broker preferencing (both sides attributed). Sell EOC A has 2000 shares remaining. Buy DAY 2 has 1000 shares in reserve remaining.
2	DAY 1	EOC A	$10.00	300	Sell EOC A then trades 300 shares against the 300 displayed shares of Buy DAY 1 at $10.00 based on time priority amongst remaining displayed volume. (The reserve portion of Buy Day 2 does not have priority despite being from the same attributed broker as all displayed volume must be traded before any hidden volume at each price level.) Sell EOC A has 1700 shares remaining. Buy DAY 1 has 700 shares in reserve remaining.
3	DAY 3	EOC A	$10.00	200	Sell EOC A then trades 200 shares against the 200 displayed shares of Buy DAY 3 at $10.00 as all displayed volume at a price level must be traded before any hidden volume at each price level. (Buy DAY 3 was the only DAY order with displayed volume remaining.) Sell EOC A has 1500 shares remaining. Buy DAY 3 has 800 shares in reserve remaining.
4	DAY 2	EOC A	$10.00	1000	Sell EOC A trades 1000 shares against the remaining 1000 share reserve portion of Buy DAY 2 at $10.00 due to broker preferencing. (Attributed broker preferencing applies to the reserve portion of an iceberg. All displayed volume at $10.00 had already been extinguished by the preceding trades.) Sell EOC A has 500 shares remaining. Buy DAY 2 is fully traded.
5	DAY 1	EOC A	$10.00	500	Sell EOC A trades its remaining 500 shares against the remaining 700 share reserve portion of Buy DAY 1 at $10.00 based on time priority. Sell EOC A is fully traded. Buy DAY 1 has 200 shares remaining in reserve.

As there are no sell EOCs remaining, the Match Event ends as there can be no EOC Final Turn without both buy and sell EOCs. The display portions of the remaining icebergs would refresh and the state of the buy DAY orders in the Visible Book at the commencement of the next Collection Phase would be as follows:

BUY						
Time Rank	Type	Offset	Broker	Hidden Reserve Quantity	Display Quantity	Executable Price
1	DAY Limit	N/A	001	0	200	$10.00
3	DAY Limit	N/A	063	600	200	$10.00

Notes:
- DAY Limit 1 had 200 shares in reserve remaining and an original display quantity of 300 shares, so its refresh size is limited to the remaining order quantity.
- DAY Limit 3 had 800 shares in reserve remaining and an original display quantity 200 shares, so its displayed quantity is refreshed to its original display quantity of 200 shares, leaving 600 shares in reserve.

5.4   Time-in-Force Conditions

The following time-in-force conditions are supported for orders entered on Omega ATS and Lynx ATS, except where otherwise specified.

5.4.1   DAY Orders

By default, all orders entered on Omega ATS or Lynx ATS are treated as 'day' orders unless another time-in-force condition has been specified.

DAY orders remain eligible to trade for the duration of the trading day, until fully filled or cancelled by the subscriber. Open DAY orders at end of trading hours for the particular venue will receive 'done for day' messages indicating the order has been cancelled.

Good Til Cancelled (GTC) and Good Til Date (GTD) conditions are not currently supported.

On Lynx ATS, as indicated in preceding sections, a DAY time-in-force condition is only available for use on Limit, Primary Peg and Midpoint Peg orders (including Limit and Primary Peg iceberg orders), and has implications for order matching and order display. See Sections 5.1 through 5.3 for more information.

5.4.2   Immediate or Cancel (IOC)

On Omega ATS, an order marked as IOC will attempt to execute immediately upon entry up to its specified limit price and quantity, and may receive a partial fill. After exhausting all available contra-side liquidity, any unfilled amount of an IOC order will be cancelled. See Section 4.1, and Sections 5.1 through 5.3 for more information.

On Lynx ATS, as indicated in preceding sections, orders marked as IOC are referred to as "Event or Cancel" or "EOC" orders as they will participate only in the first Match Event following receipt, with any unfilled volume of the EOC order being cancelled at the end of that Match Event. Use of EOC on Lynx ATS is only available for Limit, Market Peg and Midpoint Peg orders, and has implications for order matching. EOC orders on Lynx ATS are never displayed. See Section 4.2, and Sections 5.1 through 5.3 for more information.

5.4.3   Fill or Kill (FOK) / All or None – Omega ATS Only

On Omega ATS, an FOK order will attempt to immediately execute in full against one or more resting orders. Unlike an IOC order, if the FOK order cannot be fully filled upon entry, the entire order receives no fills and is cancelled.

Orders marked as 'All or None' are also accepted on Omega ATS but are treated as FOK.

On Lynx ATS, orders marked either FOK or 'All or None' will be rejected.

5.5   Specialized Order Markers / Features

The below specialized order markers / features are available and apply similarly on both Omega ATS and Lynx ATS, unless otherwise indicated.

5.5.1   Post Only

Orders marked with a Post Only identifier are entered by subscribers with the intent that the order not trade actively on entry and be booked as a resting passive order only.

On Omega ATS, orders marked as Post Only will be rejected upon entry if any portion of the order is immediately executable against another order resting in the order book.

On Lynx ATS:

- Visible Book – DAY orders (which may be liquidity-providing DAY Limit or Primary Peg orders) are functionally passive-only orders and will not trade with other resting liquidity-providing DAY orders during a Visible Book Match Event. As a result, the presence of a Post Only instruction on these orders has no impact and will be ignored.

- Midpoint Book – The Post Only instruction will apply to Midpoint Peg orders with a DAY time-in-force condition and will only be applied during a Match Event. The presence of the Post Only instruction will have no impact upon entry as the Midpoint Peg will be allowed to book and lock with a pre-existing contra-side Midpoint Peg order.

On both Omega ATS and during a Match Event for the Lynx ATS Midpoint Book, in a situation where two already-resting Midpoint Peg orders marked Post Only would otherwise be tradeable against each other, these two orders will remain booked and locked with respect to each other, but will remain available for execution against incoming / liquidity-taking contra-side orders. (Note: On Omega ATS, this scenario can arise where two contra-side resting Midpoint Peg orders become executable against each other as a result of a change in the Protected NBBO midpoint.)

5.5.2   Minimum Interaction Size (MIS) – Lynx ATS Only

Users can specify a minimum interaction size (MIS) for certain orders on Lynx ATS. For the Lynx ATS Visible Book, MIS is available for use with DAY Limit icebergs and Primary Peg icebergs. For the Lynx ATS Midpoint Book, MIS is available for use with Midpoint Peg orders (whether with a DAY or EOC time-in-force condition).

The MIS condition can be used to specify contra-party order size to limit exposure to small information-seeking orders. The specified MIS value is compared against the original size of the contra-side order, regardless of the contra-side order's remaining size after having been partially filled against other orders.

Where the remaining size of an order with an MIS condition is less than the MIS specified on the order, the MIS adjusts to the remaining order size.

An example of the use of the MIS condition with iceberg orders in the Lynx ATS Visible Book is below. When specified on a Midpoint Peg in the Lynx ATS Midpoint Book, MIS will work in the same way, except that it could be possible for both sides of a potential trade to have an MIS condition attached. In that case, each side's MIS must be satisfied in order for a trade to occur.

Example – Impact of MIS on iceberg orders – Lynx ATS Visible Book:

Assume at the time of the Match Event, the Protected NBBO is $10.00 x $10.03 and the order book consists of the orders set out in the below tables.

   For simplicity, note the following:
   - _"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp)._
   - _"Type" delineates only between DAY and EOC orders._
   - _"Executable Price" represents the order's executable price based on its limit and/or pegged prices._
   - _EOC orders are sorted based on FIFO, DAY orders are presented from most aggressive price to least, followed by Time Rank (i.e., priority timestamp)._
   - _All orders are anonymous to remove any broker preferencing considerations._
   - _EOCs are presented separately from resting DAY orders._

Sell EOC orders received during Collection Phase:

Time Rank	Type	Side	Order Quantity	Executable Price
A	EOC	Sell	900	$10.00
B	EOC	Sell	400	$10.00

Buy DAY iceberg orders at the commencement of the Match Event:

BUY						
Time Rank	Type	Offset	MIS	Hidden Reserve Quantity	Display Quantity	Executable Price
1	DAY Limit	N/A	500	1000	500	$10.00
2	Primary Peg (DAY)	0	300	800	200	$10.00

The following represents the trades that will result from the EOC-to-DAY stage of matching.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	DAY 1	EOC A	$10.00	500	Sell EOC A was the first EOC received and trades 500 shares against the 500 displayed shares of Buy DAY 1 at $10.00. The MIS instruction on Buy DAY 1 does not apply to trades against its visible portion. Sell EOC A has 400 shares remaining. Buy DAY 1 has 1000 shares in reserve remaining.
2	DAY 2	EOC A	$10.00	200	Sell EOC A then trades against the 200 displayed shares of Buy DAY 2 at $10.00 based on displayed volume before iceberg reserve volume at the same price. At this point all buy displayed volume has been exhausted. Sell EOC A has 200 shares remaining. Buy DAY 2 has 800 shares in reserve remaining.
3	DAY 1	EOC A	$10.00	200	The remaining 200 shares of Sell EOC A then trades against the 1000 share reserve portion of Buy DAY 1. Sell EOC A's original size of 900 shares satisfied Buy DAY 1's MIS condition of 500 shares. (Application of MIS takes into consideration the contra-side order's original size, not its size at the time of the trade.) Sell EOC A has is fully filled. Buy DAY 1 has 800 shares in reserve remaining.
4	DAY 2	EOC B	$10.00	400	Sell EOC B is next in sequence and attempts to trade first against the reserve portion of Buy DAY 1, but its original size of 400 shares does not satisfy the 500 share MIS of Buy DAY 1. Sell EOC B will then trade its full 400 shares against the 800-share reserve volume of Buy DAY 2 as its original size of 400 shares satisfies the 300 share MIS of Buy DAY 2. EOC B is fully filled. Buy DAY 2 has 400 shares in reserve remaining.

As there are no sell EOCs remaining, the Match Event ends as there can be no EOC Final Turn without both buy and sell EOCs. Any remaining DAY orders are then updated (e.g., display quantities for icebergs are refreshed), order messages received during the Match Event are processed, and the next Collection Phase begins.

5.5.3   Bypass Order

On Omega ATS, orders marked as bypass will only interact with resting displayed liquidity, and will bypass any hidden orders (including the reserve portion of icebergs). Bypass orders will only be accepted if also marked as IOC.

On Lynx ATS, the use of bypass is not necessary because of its periodic matching model, the separation of the dark Midpoint Book from the Visible Book, and because displayed orders on Lynx ATS are not protected for OPR purposes and can be traded-through. As a result, the presence of a bypass marker on an order entered onto Lynx will be ignored.

Refer to CIRO UMIR requirements and guidance for information pertaining to the use of a 'bypass order'.

5.5.4   Short Sale Orders and Related Identifiers

Generally speaking, a short sale is an order to sell shares the seller does not own.[1] CIRO UMIR imposes requirements to identify a short sale order upon entry unless the order is designated by the user as a 'short-marking exempt order'.

5.5.4.1   Short Sell Orders

Subscribers may enter a sell order as a Short Sell order. There is no difference in order handling and matching on either of Omega ATS or Lynx ATS for Short Sell orders as compared to regular sell orders.

5.5.4.2   Short-marking Exempt Orders

Subscribers may identify their orders as being short-marking exempt (SME) where eligible to do so under CIRO UMIR. The presence of the SME flag has no effect on how an order is handled or matched on Omega ATS or Lynx ATS.

5.5.5   NCIB Identifiers

Subscribers have the ability to tag their entered orders on Omega ATS and Lynx ATS, as well as crosses on Omega ATS, as being associated with a trade being carried out under a Normal Course Issuer Bid (NCIB). Such orders are entered using a private tag that is echoed back to the subscriber through the FIX order entry session. The tag is not publicly disseminated.

Users of the NCIB identifier that wish their NCIB orders and trades to be attributed should note the earlier section on broker attribution that explains the circumstances in which received orders are defaulted to anonymous unless specified as attributed.

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[1] See CIRO UMIR for detailed definition of "short sale".

5.5.6   Jitney

Orders entered by an executing dealer on behalf of another dealer should be marked as jitney where required by CIRO UMIR. Orders marked as jitney are not eligible for broker preferencing on either of Omega ATS and Lynx ATS.

5.6   Odd Lots and Mixed Lots – Omega ATS Only

Odd lots are order quantities that do not conform to regular board lot sizes. Mixed lots are orders consisting of at least one board lot and one odd lot. (See Section 7.2 regarding board lot sizes.)

On Lynx ATS, orders can only be entered in board lot quantities. Orders entered onto Lynx ATS in odd lot or mixed lot sizes will be rejected.

On Omega ATS, subscribers can submit their orders as odd lots or mixed lots, except in the case of Iceberg and Midpoint Peg orders which must always be entered in board lot quantities. Mixed lot orders will be separated upon receipt into their respective board lot and odd lot portions and sent to the applicable order book.

Odd lots entered onto Omega ATS, including the odd lot portion of a mixed lot order, will seek to execute against resting odd lot orders upon entry. Any unfilled amount of an odd lot order that is marked as a 'day order' will be booked.

Incoming odd lots on Omega ATS may execute against resting odd lots at prices outside of the Protected NBBO as a result of the presence of the DAO instruction on the incoming order.

Pre-trade transparency of booked odd lot orders on Omega ATS is facilitated by the Omega ATS market data feed.

5.7   Cross Types and Features – Omega ATS Only

The following intentional cross types and features are supported only on Omega ATS. Crosses entered onto Lynx ATS will be rejected.

Crosses entered onto Omega ATS are attributed by default unless specifically marked as anonymous. Crosses are not subject to interference from resting booked orders, meaning intentional crosses will execute without interference from resting orders, and may be subject to constraints that would restrict a cross from executing outside of prevailing best prices.

Crosses entered on Omega ATS are accepted in board lots, mixed lots, and odd lots.

5.7.1   Intentional Cross

Subscribers must identify a cross as an Intentional Cross where not otherwise identifying the cross as an Internal Cross or Derivatives Cross.

5.7.2   Internal Cross

An Internal Cross, defined in CIRO UMIR, is an Intentional Cross between two accounts that are managed by the same portfolio manager.

5.7.3   Derivatives Cross

Subscribers must specify a cross as a Derivatives Cross upon entry if intending to execute a pre-arranged trade to offset a trade in a related derivative instrument. See the definition of 'derivative-related cross' and any associated requirements in CIRO UMIR.

5.7.4   Bypass Cross

Crosses may be marked with or without the bypass marker. Crosses entered with the bypass marker are permitted to execute outside of the Protected NBBO. Crosses without the bypass marker will be rejected if the entered trade price is outside of the Protected NBBO.

Users of the bypass marker on crosses have the responsibility to displace all better-priced visible volume before printing the cross. This is generally achieved through the use of bypass orders.

5.7.5   Special Settlement Terms

Subscribers have the option of specifying settlement terms other than regular settlement (T+1) for the above cross types. These terms include cash settlement and the ability to specify delayed delivery dates. Crosses with special settlement terms will be permitted to execute outside of the Protected NBBO.

5.8   Order Protection Rule (OPR) Features

Under OPR requirements, Tradelogiq is required to have reasonable policies and procedures to prevent trade-throughs of better-priced displayed orders on protected markets. Various order features are supported to facilitate compliance with OPR.

Users will specify a default OPR treatment to be applied to orders at the session level when a new order entry session is created, but may designate specific OPR handling on an order-by-order basis to override the default. Where the user has not specified OPR handling instructions on an order, the session-level default will apply.

5.8.1   Directed Action Order (DAO)

DAO is defined in National Instrument 23-101 *Trading Rules*.[2]

Orders marked by a subscriber as DAO indicate that the subscriber has already checked the displayed prices on all other protected markets before routing the order to either of Omega ATS or Lynx ATS. DAO orders indicate that the subscriber is opting out of the marketplace's OPR compliance mechanisms

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[2] Visit the "Instrument, rules and policies" section of the OSC's website at www.osc.ca.

and is taking responsibility for preventing trade-throughs and locked or crossed markets in relation to the entered DAO order.

DAO orders are not re-priced by the Tradelogiq trading books and will trade with the best-priced contra-side orders without consideration of prices available on other marketplaces.

5.8.2   OPR Re-price

OPR Re-price will prevent an order that is priced at or through the opposite side of the Protected NBBO from violating OPR when it is taking liquidity. It does this by allowing the order, upon entry onto Omega ATS or at the time of the Match Event on Lynx ATS, to only trade at prices up to and including the opposite side of the Protected NBBO.

On Omega ATS, any unfilled portion of an order with a DAY time-in-force condition will then re-price to book at a price that is one tick inside of the opposite side Protected NBBO. An order marked OPR Re-price will only be re-priced once upon booking. Once booked, it will not subsequently re-price based on changes to the opposite side Protected NBBO.

On Lynx ATS, because all DAY orders entered onto the Visible Book (DAY Limit and Primary Peg orders) will only trade as liquidity-providing orders and will already be subject to constraints that prevent their executable price from being more aggressive than the opposite-side Protected NBBO, the presence of this instruction on a DAY order will have no effect and will be ignored. EOC orders entered onto the Visible Book with an OPR Re-price instruction will not re-price once they have traded in the first EOC-to-DAY stage of matching against contra-side DAY orders at prices up to and including the opposite-side Protected NBBO. Rather, any unfilled amounts of those EOC orders will remain booked to participate in the EOC Final Turn where they will have the opportunity to trade at the Protected NBBO midpoint against any unfilled contra-side EOCs, after which any remaining unfilled EOCs are cancelled.

5.8.3   OPR Cancel

OPR Cancel will prevent an order that is priced at or through the opposite side of the Protected NBBO from violating OPR. It does this by allowing the order upon entry to only trade at prices up to and including the opposite side of the Protected NBBO.

On Omega ATS, any unfilled portion of an order will then be cancelled to prevent the order from locking or crossing the Protected NBBO.

On Lynx ATS, for the same reasons as explained for OPR Re-price in the preceding sections, an OPR Cancel instruction on a DAY order entered to the Visible Book will be ignored. An EOC order entered to the Visible Book with an OPR Cancel instruction will work the same way as described in the preceding section regarding OPR Re-price.

6. SUBSCRIBER RISK MANAGEMENT TOOLS

The following subscriber risk management tools are supported on each of Omega ATS and Lynx ATS.

6.1 Cancel on Disconnect

Subscribers will specify whether to enable 'cancel on disconnect' for each new order entry session. Where 'cancel on disconnect' has been enabled, and a subscriber's FIX session is disconnected, all open orders associated with the session will be cancelled.

6.2 Self-Trade Prevention (STP)

Tradelogiq offers self-trade prevention features to help manage the risk of unintentional wash trades on both Omega ATS and Lynx ATS. These include 'Trade and Suppress', 'Cancel and Decrement', 'Cancel Newest' and 'Cancel Oldest'. An additional "No Cancel" feature is also available for use on Lynx ATS for Market Peg and EOC Limit orders in the Visible Book and for any Midpoint Peg order in the Midpoint Book.

These STP features apply certain restrictions where two offsetting orders for the same symbol, from the same subscriber, and containing the same user-generated 'key' value would otherwise result in a trade. Because STP features rely on a user-generated key, STP is enabled on an order-by-order basis.

For STP to apply, both sides of the order must contain a valid STP instruction, but the instructions do not need to match. Where two offsetting orders with the same symbol, dealer and key contain different STP instructions, the STP instruction assigned to the active / liquidity-taking order will determine the STP instruction to be applied.

The STP features are applied on Omega ATS on a continuous basis as incoming orders are received and attempt to match with resting orders. On Lynx ATS, the STP features are applied as matching occurs during each Match Event.

6.2.1 Trade and Suppress

Subscribers have the option of their STP orders matching, but with the trade being suppressed from the public market data feeds. Instead, the public data feeds will reflect a cancellation of the displayed order's size for any such displayed resting order that was matched. The suppressed trade will still be reported through the user's private FIX order entry session and will also be reported in the daily trade files sent to CDS for clearing and settlement.

Example – Trade and Suppress

Assume the Protected NBBO is $10.00 x $10.03 and the Omega ATS order book consists of the buy orders set out in the below table.

For simplicity, note the following:
- _"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp)._
- _"Broker" represents the public broker number._

BUY						
Time Rank	Type	Broker	STP Instruction	STP Key	Order Quantity	Limit Price
A	Limit	063	Cancel Oldest (OM)	ABCDEF	100	$10.00
B	Limit	063	Cancel and Decrement (DM)	D33JF5	500	$10.00
C	Limit	120	Cancel Newest (NM)	MYKEY1	100	$10.00

Time 1: The following marketable sell limit order is then received:

Time Rank	Type	Side	Broker	STP Instruction	STP Key	Order Quantity	Limit Price
D	Limit (IOC)	Sell	063	Trade and Suppress (EM)	ABCDEF	500	$10.00

The following represents the trades that will result upon receipt of Order D at Time 1.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	A	D	$10.00	100	Sell Order D trades 100 shares against the 100 shares of Buy Order A at $10.00, based on time priority, but the **trade is suppressed from the public market data feed** as a result the matching orders being from the same broker and containing the same STP key, with the 'EM' STP instruction on the active order (Order D) determining which instruction to apply.
2	B	D	$10.00	400	Sell Order A then trades its remaining 400 shares against Sell Order B at $10.00 based on time priority. No STP applied despite the order being from same broker, and containing STP instruction, due to mismatch in STP keys.

6.2.2   Cancel and Decrement

The Cancel and Decrement STP feature will result in the cancellation of the smaller order and a corresponding reduction in the size of the larger order.

Example – Cancel and Decrement

Assume the Protected NBBO is $10.00 x $10.03 and the Omega ATS order book consists of the buy orders set out in the below table.

For simplicity, note the following:
- *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
- *"Broker" represents the public broker number.*

BUY						
Time Rank	Type	Broker	STP Instruction	STP Key	Order Quantity	Limit Price
A	Limit	063	Cancel Oldest (OM)	ABCDEF	100	$10.00
B	Limit	063	Cancel and Decrement (DM)	D33JF5	500	$10.00
C	Limit	120	Cancel Newest (NM)	MYKEY1	100	$10.00

Time 1: The following marketable sell limit order is then received:

Time Rank	Type	Side	Broker	STP Instruction	STP Key	Order Quantity	Limit Price
D	Limit (IOC)	Sell	063	Decrement and Cancel (DM)	ABCDEF	500	$10.00

The following represents the trades that will result upon receipt of Order D at Time 1.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	B	D	$10.00	400	Sell Order D attempts to match first with Buy Order A based on time priority. Due to same broker and same STP key on both orders, the 'DM' STP instruction on the active Sell Order D is applied. Buy Order A is cancelled as the smaller order, and Sell Order D is decremented by 100 to 400 and then trades against the next order, being Buy Order B. Sell Order D trades its remaining 400 shares against Buy Order B. No STP applied despite order being from the same broker, and containing STP instruction, due to mismatch in STP keys.

6.2.3 Cancel Newest / Cancel Oldest

Subscribers can also choose to cancel the incoming order (newest) or the resting order (oldest).

Note that on Lynx ATS, the following applies for the purposes of identifying which order is newest / oldest:
- During the EOC-to-DAY stage of matching in the Visible Book, the EOC will be considered the newest order in all cases.
- During the EOC Final Turn in the Visible Book and for all trades in the Midpoint Book, the original timestamp of the two matched orders will determine which is newest and oldest.

Example – Cancel and Decrement

Assume the Protected NBBO is $10.00 x $10.03 and the Omega ATS order book consists of the buy orders set out in the below table.

> *For simplicity, note the following:*
> - *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
> - *"Broker" represents the public broker number.*

BUY						
Time Rank	Type	Broker	STP Instruction	STP Key	Order Quantity	Limit Price
A	Limit	063	Cancel Oldest (OM)	ABCDEF	100	$10.00
B	Limit	063	Cancel and Decrement (DM)	D33JF5	500	$10.00
C	Limit	120	Cancel Newest (NM)	MYKEY1	100	$10.00

<u>Time 1</u>: The following marketable sell limit order is then received:

Time Rank	Type	Side	Broker	STP Instruction	STP Key	Order Quantity	Limit Price
D	Limit (IOC)	Sell	063	Cancel Newest	ABCDEF	500	$10.00

No trades occur.

Sell Order D would seek to trade first against Order A based on time priority, but Sell Order D is cancelled due to matching broker and STP keys and the presence of the NM instruction on the active Sell Order D.

Note that had Sell Order D contained the Cancel Oldest instruction, Buy Order A would have been cancelled as the older order, and Sell Order D would have gone on to trade with Buy Order B.

6.2.4   No Cancel – Lynx ATS Only

On Lynx ATS, a "No Cancel" feature applicable only to orders that are not displayed (Market Peg, EOC Limit and Midpoint Peg order types) is also available. Where applied, an active order with a No Cancel instruction will be prevented from trading against a contra-side order from the same broker with the same self-trade key but will remain executable for subsequent matching opportunities – including for participation in the EOC Final Turn in the case where the No Cancel was applied to a prospective match during the first EOC-to-DAY stage of matching in the Lynx ATS Visible Book.

An example of No Cancel on Lynx ATS is provided below. Note that the application of "No Cancel" in the example would be the same regardless of book or matching stage.

Example – Impact of No Cancel – Lynx ATS

Assume at the time of the Match Event, the Protected NBBO is $10.00 x $10.03 and the order book consists of the orders set out in the below tables.

For simplicity, note the following:
- *"Time Rank" assigned to each order below represents the order's position based on its priority timestamp (lowest number / letter = oldest timestamp).*
- *"Type" delineates only between DAY and EOC orders.*
- *"Broker" represents the public broker number.*
- *"Executable Price" represents the order's executable price based on its limit and/or pegged prices.*
- *EOCs are presented separately from resting DAY orders.*

Sell EOC orders received during Collection Phase:

Time Rank	Type	Side	Broker	STP Instruction	STP Key	Order Quantity	Executable Price
A	EOC	Sell	063	No Cancel (XM)	ABC123	1000	$10.00

Buy DAY orders as at the commencement of the Match Event:

BUY						
Time Rank	Type	Broker	STP Instruction	STP Key	Order Quantity	Executable Price
1	DAY	037			500	$10.01
2	DAY	120			500	$10.00
3	DAY	063	Cancel Oldest (OM)	ABC123	500	$10.00

The following represents the trades that will result from the EOC-to-DAY stage of matching.

Trade #	Buy Order	Sell Order	Price	Quantity	Notes
1	DAY 1	EOC A	$10.01	500	Sell EOC A trades 500 shares against the 500 shares of Buy DAY 1 at $10.01 based on price. Sell EOC A then seeks to trade against Buy DAY orders 2 and 3 – both priced at the next price level of $10.00. Buy DAY 3 has priority due to broker preferencing, but both Sell EOC A and Buy DAY 3 are from the same broker and have the same self-trade key. The self-trade instruction of 'XM' (No Trade) is applied as Sell EOC A is the active order. Sell EOC A stops trading at this point but remains eligible to participate in the EOC-to-EOC matching stage. Sell EOC A has 500 shares remaining. Buy DAY 1 is fully filled.

7.   OTHER MARKETPLACE INFORMATION

7.1   Minimum Trading Increments

Orders may only be entered on Omega ATS and Lynx ATS with valid trading increments based on the minimum trading increments permitted under CIRO UMIR.

Minimum (i.e., full tick) trading increments for order entry are as follows:
- Orders priced ≥ $0.50:   Minimum increment is $0.01
- Orders priced < $0.50:   Minimum increment is $0.005

Midpoint Peg orders may be entered with a limit price set at a half-tick.

7.2   Board Lot Sizes

Board lot sizes for trading on Omega ATS and Lynx ATS are determined based on the CIRO UMIR definition of 'standard trading unit' and take into consideration the previous day's closing price on the applicable listing exchange.

Board lot sizes adhere to the following conventions:

Prior Day Closing Price	Board Lot Size
$1.00 and over	100 shares
At least $0.10 and less than $1.00	500 shares
Under $0.10	1,000 shares
Debentures	$1,000 face value

Tradelogiq publishes each security's board lot size in the start of day Stock Directory messages provided through Tradelogiq's public market data feeds.

See Section 5.6 for information regarding the handling of orders that are received in sizes other than board lots.

7.3   Market Regulation and Trading Controls

7.3.1   Market Regulation

CIRO[3] has been retained to act as the regulation services provider for Tradelogiq and conducts market surveillance to ensure that trading is carried out in accordance with UMIR and other CIRO rules. Visit CIRO's website at www.ciro.ca for more information.

Tradelogiq provides streaming data to CIRO to facilitate CIRO's real-time surveillance activities.

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[3] CIRO is the self-regulatory organization for investment dealers and mutual fund dealers that is the result of an amalgamation between IIROC and the MFDA in January 2023.

7.3.2 Trading Halts

CIRO may, at its sole discretion, impose trading halts or suspensions for regulatory purposes. This includes in relation to the triggering of market-wide circuit breakers. The timing for the resumption of trading after a trading halt is also determined by CIRO.

Trading halts other than regulatory halts imposed by the Canadian listing exchanges are co-ordinated with Tradelogiq by CIRO.

Where a trading halt is implemented, all open orders on Omega ATS and Lynx ATS in the halted security (or securities) are cancelled.

7.3.3 Single Stock Circuit Breakers

Single stock circuit breakers (SSCBs) are designed to help mitigate market volatility. SSCBs are applicable to constituents of the S&P/TSX Composite Index, ETFs composed primarily of listed securities, Canadian Depositary Receipts, and securities that otherwise meet activity levels specified by CIRO.

SSCBs are automatically triggered for an SSCB-eligible security by CIRO and implemented across all Canadian marketplaces. In general, an SSCB will be triggered if the price of an eligible security changes by 10% or more within a five-minute period. Trading in the security will then be initially halted for 5 minutes.

Where an SSCB is triggered, all open orders on Omega ATS and Lynx ATS in that security are cancelled.

Based on CIRO instructions, all trades executed at more than 5% beyond the price that triggered the SSCB will be cancelled.

7.3.4 Marketplace Thresholds

Marketplaces are required to restrict trades that exceed price and volume thresholds set by their regulation services provider. CIRO sets the minimum thresholds.

Marketplace thresholds on each of Omega ATS and Lynx ATS are applied during core Canadian trading hours of 9:30am to 4:00pm.

The triggering prices for the application of marketplace thresholds are determined in reference to both the most recent National Last Sale Price and the National Last Sale Price, as of the beginning of the current minute, in accordance with CIRO guidance.

Incoming orders will be permitted to execute up to the threshold, but any amount of an incoming order that would execute beyond the threshold will be rejected.

The marketplace threshold levels applied on Omega ATS and Lynx ATS are as follows:

Class of Security	Price Category	Threshold Level
Securities not subject to SSCBs	$0.00 > to < $0.50	300%
	$0.50 ≥ to < $1.00	50%
	$1.00 ≥ to < $5.00	30%
	$5.00 ≥ to < $10.00	20%
	$10.00 ≥ to < $30.00	15%
	$30.00 and over	10%
Exchange-listed debt	All price categories	20%
ETFs other than Leveraged ETFs	All price categories	10%
Leveraged ETFS	All price categories	Multiple of leverage x 10%
Securities subject to SSCBs (excluding ETFs)	All price categories	10%

7.3.5 Trade Cancellation and Correction Policy

CIRO has the authority to instruct Tradelogiq to cancel or amend trades that have occurred on Omega ATS and Lynx ATS.

Subscribers may also request a cancellation or amendment of a trade by contacting Tradelogiq Operations staff. All requests will be confirmed by email. Tradelogiq Operations staff will contact the trade counterparty to request their agreement to cancel or amend the trade, which will also be confirmed by email. Where both parties have agreed to a trade cancellation or amendment, CIRO and the trade counterparties will be notified when the cancellation or amendment has been made. If the counterparty to a trade does not agree to a request to cancel or amend the trade, Tradelogiq will take no further action and the requesting party may contact CIRO to request a trade review.

Tradelogiq is also permitted to cancel or amend a trade that is necessary to correct an error caused by a system or technological malfunction. Tradelogiq will obtain CIRO approval before cancelling or amending a trade in these circumstances.

8. OTHER SERVICES

Tradelogiq also offers smart order router (SOR) and market data services, and provides facilities for users to conduct functional testing.

8.1 Tradelogiq SOR

The Tradelogiq SOR provides customers the option of having their orders routed to trade against the best displayed prices on Canadian protected marketplaces using an iterative sequential routing strategy.

The SOR supports trading in all Canadian listed securities, and currently routes orders to both Omega ATS and Lynx ATS plus all visible protected marketplaces in the following order – Omega ATS; Lynx ATS; Nasdaq CX2; Nasdaq CXC; CSE; TSX/TSXV; NEO-L.

Orders submitted to the SOR will be checked against the opposite side of the Protected NBBO. If the order price is not immediately executable based on displayed volume and OPR considerations, it will be cancelled or posted to Omega ATS or Lynx ATS based on the instructions on the order. Routed orders are sent to each destination marketplace as IOCs and have the opportunity to interact with any hidden liquidity, including midpoint orders, resting on those markets.

Users wishing to take advantage of the free Tradelogiq SOR must first complete an initial set-up consultation with Tradelogiq Operations staff. Subscribers are responsible for ensuring they are approved and enabled members / subscribers of the protected marketplaces serviced by the Tradelogiq SOR.

8.2   Tradelogiq Public Market Data

Tradelogiq offers full depth-of-book (Level 2) public data via multicast that recipients may use to obtain order depth and trade information for each of Omega ATS and Lynx ATS in real-time.

Tradelogiq market data feeds are provided using the ITCH 5.0 message protocol and QTP delivery protocol, via two synchronized multicast ITCH Feed servers. Omega ATS and Lynx ATS multicast events are delivered using unique multicast addresses for each marketplace for each instance. Tradelogiq also provides various options for recovering missed packets / messages, including through message arbitration and a unicast QTP recovery channel.

For further information regarding access to market data or for the technical data specifications, please visit https://tradelogiq.com/market-data/ or contact market data services at marketdata@tradelogiq.com.

8.3   General Testing

Users can access Tradelogiq's General Test Environment ("GTE") to perform functional testing. New functionality and code changes to be deployed in production will be deployed first within GTE to provide users with an opportunity to test. If no new functionality is pending, our GTE environment will reflect our live production environment.

We also offer GTE market data to customers that will reflect orders and trades that have been processed by our GTE trading engine.

Access to GTE is available to permissioned users through their existing connectivity and is accessible on regular trading days between 7:00am and 9:30pm, Monday through Friday, excluding holidays.

Note that that our GTE leverages live prices from our production environment for the purposes of testing OPR compliance, order pricing, and marketplace thresholds. Call our Operations team if you would like to adjust a threshold for testing purposes.

8.3.1   Testing with Uniform Test Symbols in Production Environment

Testing within the production environment is possible using the available Uniform Test Symbols ("UTS"). To conduct testing with UTS in the production environment, the following processes must be observed:

- The user must send an email to operations@tradelogiq.com requesting that the desired UTS be made available at a specific time and date. (UTS symbols can only be enabled between 8:00am and 9:00am.) Once the set testing window expires, the symbol will be closed for testing.
- Tradelogiq will contact the TMX IP and inform them of the symbol and test time, and will confirm the nature of the testing to be performed.

NOTE: Under no circumstances will Tradelogiq send any orders to production or set the NBBO for any testing being conducted by users involving UTS within the production environment. Tradelogiq may only accommodate such requests for testing conducted within GTE.

9. Revision History

Date	Revision	Description of Change
June 1, 2023	1.0	Initial Version
November 6, 2023	1.01	Clarifications to Trade Cancellation and Correction Policy
May 27, 2024	1.02	Updates for industry migration to T+1 settlement
April 25, 2025	2.0	Revisions to reflect introduction of Periodic Matching trading model on Lynx ATS