SOLA® Access Information Language

SAIL Business Design Guide for BOX

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Document History

VERSION	DATE	CHANGE DESCRIPTION
1.0	2007-02-28	First approved version updated to Intranet
1.1	2007-04-16	• Modified Connections Types - Appendix B. • Removed AR connection type • Minor correction to section 5.1 - added 3 message names • Updates to paragraph B1 and to Table 3 in Appendix B
1.2	2007-07-09	• Minor correction to section 5.8.2 Message Type changed from RQ to Qi. • Max. Quote from 280 to 150 • Updates to section 6.1.1, Figure 23, insert new NZ message arrow
1.3	2008-01-17	• In section 5.2.5, changed Executed in Full to Executed in Full (or Partially for IOC orders) • In section 6.1.1, Figure 23 has been modified: "Eliminated" has been replaced with "Executed"
1.4	2010-09-16	• Section 3 updated to include User Defined Strategies • Sub-section 3.1.2.5 Contingent Trade has been replaced with new, pertinent Strategy information • Chapter 6 updated with 2 Strategy Instrument Creation message flow diagrams.
1.5	2010-11-02	• New section 6.3.3 Quantity Management added to include Order Modification
1.6	2012-03-12	• Section 3.4: Bulk Quote Management added Chapter 5 Sail Messaging modified: • Figure 11 text modified to show Committed Order • Figure 20 added to show Committed Orders Traded • Figure 27 text modified to show Committed Order cancelled • New Section 5.1.10, End-of-Day Process • Figure 44 added to show Committed Order Cancelled at End-of-Day • Section 5.1.11: User Global Cancellation added • Section 5.1.12: Global Cancellation added • Section 5.1.13: Bulk Quote Management added • Section 6.9: Entry of Global Cancellation modified

VERSION	DATE	CHANGE DESCRIPTION
1.7	2012-06-18	• Insertion of legal disclaimer pertaining to Committed Order in Sections 1 & 6. • Added text '(includes both accepted and rejected requests)' in final paragraph of sub-section 2.2.3.6 User Defined Strategy (UDS). • Update of text from Chapter to Section throughout.
1.8	2013-10-11	Update sub-section 3.7.2 Processing Timetable for entering a Bulk Quote (Message Type Qi) message containing separate quotes. Changed '1 to 150' to '1 to 280' separate quotes.
1.9	2014-09-03	New Section 4, Pre-Trade Validation Tools. Addition of: • 6.1.14 Configuration of Netting and of Trader Teams • 6.1.15 Configuration of Global and Default Limits • 6.1.16 Configuration of Group Limits • 6.1.17 Notification of Limits Usage • 6.1.18 Order Rejection: Limit Exceeded
2.0	2015-05-15	5.2.3 Supported Special Price Term • Add definition for Directed Order • Add definition for Preferred Order 6.11 Directed/Routed Order Processing • Add SPT = Directed Order to Figure 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69 6.15 • Preferred Order Processing • Add Preferred Order Entered with/without a Market Maker
2.1	2016-06-13	• Added Section 4: Validation Tools • Moved Section 5 to Section 4.2 Market Maker Protection. • Added 7.20 Lock to SAIL Messages • Replaced Sections 3.6.1 and 3.6.2 by Sections 4.2.1 to 4.2.3 (more details about Standard and advanced protection)
2.2	2016-09-07	Added 7.21 Quality Market Maker Notice to Section 7
2.3	2016-11-07	Added 7.13 Floor Trade Entry
2.4	2017-11-15	6.2.1: Updated to include Floor Trade Orders and IOI Orders 7.14: Indication of Interest Entry added 7.22: Correction to GZ response

Table of Contents

Section 1   Introduction

The SAIL Business Design Guide for BOX, was developed by the Information Technology (IT) division of the Montréal Exchange Inc. (MX), a member of the TMX Group Inc.

1.1   Objective

The main objective of the SAIL Business Design Guide is to provide information to prospective Boston Options Exchange (BOX) participant or Independent Software Vendors (ISV), in the functional design of their application intended to interface with the MX trading engine in its native SOLA® Access Information Language (SAIL) interface.

1.2   Scope

The SAIL Business Design Guide includes a trading overview, and the detail message flow during the connection and trading phases.

1.3   Audience

The target audience for the SAIL Business Design Guide is staff at either the business or IT level of an organization interested in the functional design of the BOX trading platform.

- For Business Analysts and Project Managers: a high-level view of BOX trading features and requirements.
- For Software developers: connectivity and message flow between the BOX trading platform and BOX participants.

1.4   BOX Contact

Market Operation Center Support / Technical Help Desk
Toll Free: 1-866-768- 8845
boxmoc@boxoptions.com

1.5   Services Definitions

The SAIL Interface provides BOX Participants with the functionality required to interact with the BOX market. Services provided are classified into two distinct groups as shown below:

1.5.1   Solicited

- Order entry, modification, and cancellation
- Request for quote
- Bulk quotes and Market Maker functions
- Price improvement period initiation and participation
- Directed orders

1.5.2   Unsolicited

- Market Operations Center (MOC) action notification (order elimination, trade cancellation, etc.)
- Trading phases
- Group and Instrument Status Change Notifications
- Post-Trading session messages.

For detailed explanations of these features, refer to Section 6, Order Management.

Section 2   Trading Overview

Trading has been grouped into three general categories:

- Market Making
- Agency
- Proprietary

Note: Participants who are not involved in Market Making on BOX may also be referred to as Order Flow Providers (OFP).

Market Making

Market Makers are participants who have applied as a Market Maker on BOX and have been allocated one or more market making appointments by BOX (i.e., assigned the rights and responsibilities for making markets on one or more option classes). To assist these participants, the SAIL interface provides the most efficient and responsive functions for all interfacing applications.

Agency Trading

A BOX Participant (and the computer application they use for connection) is viewed to be supporting agency trading if it is executing orders on behalf of customer accounts, including orders for the accounts of other broker/dealers (acting themselves on behalf of their customer accounts or their own proprietary accounts).

Proprietary Trading

A BOX Participant (and the computer application they use for connection) is viewed to be supporting proprietary trading if it is executing orders on behalf of proprietary accounts of the BOX Participant.

Section 3   BOX Features

BOX is a fully automated equity options Exchange. All orders are 'live' and available to all participants.

BOX does not provide or endorse any front-end trading application or platform. However, every application (either developed in-house by a participant or by an ISV) that will interface with the SOLA Trading Engine is certified by BOX.

3.1   Market Model

There are multiple Market Makers in each class of option contracts with none having priority over the others. All orders and quotes are handled on a strict price/time priority without any participant controlling the price.

3.2   Trading Phases Overview

3.2.1   Consultation Start

This phase is reserved for the Market Operation Center (MOC). The MOC can act on instruments for the forthcoming trading day (e.g., reserve instruments). No order entries coming from Participants or the MOC can be accepted during this phase. However, the MOC can perform order deletions for a specific instrument or global deletions of a specific Participant's orders.

3.2.2   Pre-opening

This phase allows Participants to enter, modify, and cancel orders. Orders introduced during this period contribute to the calculation of the Theoretical Opening Price (TOP) but are not traded.

3.2.3   Opening

At the scheduled Opening time, orders are matched and trades are generated at the last calculated TOP. An optimization algorithm maximizes the number of trades and reduces the remaining imbalance. FIFO time priority at each price is used to allocate the trades at the TOP. The automatic phase transition for a group, following an Opening, is Continuous Trading, also known as the Trading Session. For more information on TOP, refer to **BOX Rules**.

3.2.4   Trading Session

This phase is triggered as soon as the Opening phase ends. The switch to the Trading Session phase marks the end of the opening processes. Orders introduced are executed, entered in the Order Book, or eliminated in real time.

3.2.5 Market Operation Center Intervention

This is a period during which the MOC can perform all the modifications necessary to regulate the market and correct errors (deletion of orders for a specific instrument, cancellation of trades, etc.). During this period, neither Participants nor the MOC can place orders. Participants may receive messages during this phase, e.g., Group or Instrument State change notices.

3.2.6 Consultation End

This phase is reserved for the MOC, during which it can only consult the market. During this period, neither Participants nor the MOC can place orders. Participants will not receive any messages during this phase.

3.2.7 Maintenance

This is a phase during which a group switches to next trading day. Orders whose validity date has expired are deleted and statistics for the instruments are reset (high, low, volume). Participants cannot enter orders on any instrument during this phase. Notifications of expired orders are sent to Participants, though Participants are not typically connected during this phase. Such messages would be available upon next connection.

3.2.8 Post-session

This is a weekly session during which various off-line processing takes place - including all Maintenance processing. Participants cannot enter any orders on any instrument during this phase. As in the Maintenance phase, messages to Participants may be created during this phase. However, they would typically be available upon next connection.

3.3 Instrument Groups

An instrument group is a set of investment instruments or financial instruments governed by the same trading rules. BOX uses the concept of instrument groups in its functioning and dialogue with Participant Firms' Clients.

An instrument's unique code alone is sufficient for Participant Firms Clients to place an order on that given instrument. However, in order to benefit from information messages concerning the status of the trading session, Clients must also understand how the instruments are divided between the various groups.

3.4 Behaviour of an Instrument Independently of its Group

The normal behaviour of an instrument is to follow the rules of its group according to the group status. This section describes certain cases where the instrument behaves independently of its group.

3.4.1   Reservation and Opening of an Instrument

The reservation of an instrument is instigated by the MOC when the instrument undergoes a financial operation. Reservation, triggered manually by the MOC or automatically at Opening, is aimed at controlling the market by limiting the gap between prices.

The impact which the reservation of an instrument has on the processing of orders related to that instrument varies according to the phase in which the group is situated.

Pre-opening

The MOC can forbid an instrument to prevent it from trading when the market opens. The MOC can then authorize the instrument: the rules governing the instrument's group are then reapplied to the instrument, and the instrument opens at the same time as the other instruments in the group, if the calculated Theoretical Opening Price (TOP) for this instrument is within the authorized range.

Opening

If the instrument is forbidden, it remains so during Opening, which consequently will not take place for this instrument, and throughout the trading session. Until further intervention by the MOC, all orders entered for this instrument will be processed in the same way as orders placed during Pre-opening.

If the instrument is reserved at the moment of opening, one of the following occurs:

- If the indicated opening price is once again within the authorized price limits, opening will take place automatically and the reservation will be lifted.
- If the indicated opening price is outside the authorized price limits, the instrument will remain reserved until further intervention by the MOC. All orders entered for this instrument will be processed like Pre-opening orders. If the MOC opens the instrument, the latter will remain reserved or will open, depending on whether the thresholds of the indicated opening price have been exceeded or not.

Trading Session

MOC can forbid an instrument to prevent it from trading.

The MOC can reserve an instrument: the instrument is then set apart from the group and its trading rules. Orders entered are processed like Pre-opening orders.

The MOC can lift the reservation on an instrument by Opening the instrument which is then considered open and follows the trading rules governing its group.

Section 4 Validation Tools

4.1 Overview

BOX Trading System supports various protection mechanisms allowing the configuration of various limits and implementing controls on trading activity.

When a limit is reached, new orders or quotes can be rejected and booked orders cancelled. In addition, notification messages are sent, informing Participants of their status (active or locked).

For this purpose, BOX Trading System maintains counters, cumulating the values over a set period of time.

Limits

There is no hierarchy among overlapping Limits, and all configured Limits are always considered simultaneously, the most restricting one being applied.

For example, if Limits are configured for a Firm, and different Limits are also configured for a Trader Team in this Firm, the activity of the Traders in the Team is subject to both sets of Limits.

Trader Teams

Limits are configured on Trader Teams. A Trader Team is a grouping of Traders and is identified by a Trader ID in that list, referred to as the 'Team Lead'.

A Trader is member of one and only Trader Team. By default, a Trader that is not explicitly configured as part of a Team is considered to be the sole member of the Team of which he is also the Team Lead.

4.2 Market Maker Protection

The BOX Market Maker Protection feature is designed to protect market making participants from "excessive" trades due to the following:

- Technical problem at participant's end preventing normal market updates,
- Quoting errors at participant's end due to erroneous underlying price information,
- Unintentionally being "swept" by another Market Maker.

BOX provides Standard and Advanced Market Maker Protection. The first is enabled by default for all Market Makers, the second is optional and requires special message handling.

4.2.1 Market Maker Protection Counters

The following lists all the Market Maker protection counters available. These counters can be set by the Trader using the message BD: Bulk Quote Data. Functionally, protection counters are provided for each class where the Trader is assigned as Market Maker.

Trade Counter: This counter is incremented by one every time the Trader executes a trade of at least 'N' lots on any instrument of the given class. Once the counter has reached a defined threshold the Bulk Quote Management is triggered.

Formula:

Maximum Trade = $\sum$ *Trade Occurrence (Trade Volume > Minimum Volume)*

Volume Counter: This counter is incremented by the trade volume every time a Trader executes a trade on any instrument of a given class. Once the counter has reached a defined threshold, the counters that are set either at the group level or in the Bulk Quote message are triggered.

Formula:

Maximum Volume = $\sum$ *Volume*

Value Counter: This counter is incremented by the trade value every time the Trader executes a trade on any instrument of a given class.

Formula:

Maximum Value = $\sum$ *(Trade Volume x Price x Contract Size x Tick Value)*

Delta Volume Counter: This counter is incremented or decremented by the trade volume every time the Trader executes a trade on any instrument of a given class. This counter determines the net underlying position using the type of option transacted and the action to buy or sell as conditions.

Formula:

Option Delta Volume = Absolute $\sum$ ((Buy Call Volume + Sell Put Volume) - (Sell Call Volume + Buy Put Volume))

Future Delta Volume = Absolute $\sum$ (Buy Volume - Sell Volume)

Delta Value Counter: This counter is incremented or decremented by the trade value every time the Trader executes a trade on any instrument of a given class. This counter determines the net underlying position using the type of option transacted and the action to buy or sell as conditions. This counter used in combination with the delta volume enables protection against out of the money.

Formula:

Option Delta Value = Absolute ∑ (Buy Call or Sell Put Volume x Price x Contract Size x Tick Value)   - (Sell Call or Buy Put Volume x Price x Contract Size x Tick Value)

Future Delta Value = Absolute ∑ (Buy Volume x Price x Contract Size x Tick Value) - (Sell Volume x Price x Contract Size x Tick Value)

"Percent of Quote"

This protection mechanism calculates the summation of all individual percentage of Quotes that are traded for a given group for this Market Maker during a specific interval of time.

Following each trade involving a quote, whether incoming or resting, the Market Maker «Percent of Quote» counter is incremented for the side of the trade related to the quote (by Trader ID/Group).

Percent of Quote = ∑ (Traded quote volume / Initial quote volume)

Where:

Initial quote volume = Volume of the quote upon its initial reception, prior to any portion of it being traded and/or booked.

This counter is Time Interval related. The Time Interval parameter in the BD message is defined in milliseconds.

4.2.2 Counter Reset

The Trade Counter resets every time the Trader sends a Bulk Quote Data (BD) update on the concerned Group, or when one of the counter is triggered.

4.2.3 Triggered Bulk Quote Management

Once triggered, the Exchange automatically cancels all quotes posted by the Trader on the class. This feature 'protects' both quotes currently booked and incoming quotes that the Market Maker may generate as part of an update. As soon as the Bulk Quote Management is triggered, the participant receives a **Notice Of Cancellation** of all Quotes (**Message Type NP**) message to confirm that the quotes currently live have been removed.

Standard Bulk Quote Management

If the Bulk Quote Management is triggered on an instrument class the counter is reset when the Trader sends a quote message on any instrument of this instrument class.

Advanced Bulk Quote Management

Combined with the Standard Bulk Quote Management, the Advanced Bulk Quote Management provides participants with an additional layer of defence. This feature may be enabled or disabled, on demand, by Market Makers using the **Bulk Quote Participant (BQP) Protection Subscription** (**Message Type RP**) message.

Quoting for the Trader is disabled once the Advanced Bulk Quote Management is triggered. Any subsequent quote update is rejected. The Trader restores its quoting capacity by sending a new **Bulk Quote Participant Protection Subscription** message.

4.3 Order-Entry Related Protection

Maximum Order Quantity (fat finger) for Incoming Orders and Quotes

This trading validation mechanism is used to prevent creating risk exposure with a single order or quote.

Order creation or modification messages (OE and OM) or incoming quotes (Qi) are validated against the configured Limits before being accepted. If a message is rejected, the rejection message contains an Error Code value indicating which Limit caused the rejection.

The Maximum Order Quantity can be set at the exchange level (default exchange setting) by instrument group. Participants can request from the MOC to configure customized values for this limit at the Trader Teams level for quotes and orders including Customer Cross orders and Improvement orders as well as for auctions.

4.4 Trade-Related Protection

4.4.1 Traded Order Protection

A mechanism similar to the Market Maker Protection Counters is implemented for all participant trades resulting from orders. The Traded Order Protection limits are controlled by Trader Team/Group. These limits are Time Interval related.

Maximum Number of Trades = Count (Trades)

Maximum Traded Volume = ∑ Traded Volume

Maximum Traded Value = ∑ (Trade Volume x Trade Price x Contract Size x Tick Value)

Delta Max Volume = Absolute {∑ ((Buy Call Traded Volume + Sell Put Traded Volume) – (Sell Call Traded Volume + Buy Put Traded Volume))}

Delta Max Value = Absolute {∑ ((Buy Call Traded Volume x Trade Price x Contract Size x Tick Value + Sell Put Traded Volume x Trade Price x Contract Size x Tick Value) – (Sell Call Traded Volume x Trade Price x Contract Size x Tick Value + Buy Put Traded Volume x Trade Price x Contract Size x Tick Value))}

BOX defines default protection for the exchange. Participants can request from the MOC to configure customized values for these limits at the Trader Teams level

4.4.2 Traded Activity Protection

The Traded Activity Protection (same counters asTraded Order Protection limits) is an additional mechanism that controls the traded activity resulting from orders and quotes. Traded Activity Protection limits are controlled by Trade Team, across all names.

Following each trade, the Traded Activity counters set are incremented for each side of the trade, regardless if the side is related to an order or a quote. These limits are also Time Interval related.

When a Traded Activity counter is triggered, all orders and quotes on both sides of the market for the Trader Team are cancelled on all groups, even for instruments that are not in a trading state. NZ: Order Cancellation Notice or NP: Cancellation of all Quotes Notice messages return the cancellation reason (due toTraded Activity protection). If configured, these protections can result in a lock-out of the system.

BOX defines default protections for the exchange. Participants can call the MOC to configure customized values for these limits at the Trader Teams level.

4.4.3 Maximum Triggers Protection

The Maximum Triggers Protection mechanism limits the total position and credit risk a specific team of traders may engage, when a number of their trade related triggers occur within a set period of time. Maximum Triggers Protection limits are controlled by Trade Team, across all names.

When the total amount of triggers (Market Maker Protection, Traded Order Protection or Traded Activity Protection) for a Trader Team exceeds the configured Maximum Triggers limit within the set time-interval:

- The team's orders and quotes across all names are cancelled.
- If so configured, the team is put in a lock-out, i.e., is prohibited from entering new orders and quotes until the MOC' intervention.

BOX defines default protections for the exchange. Participants can call the MOC to configure customized values for these limits at the Trader Teams level.

4.5 Kill Switch Protection

BOX trading platform includes the following "Kill Switch Protection" risk control measures.

4.5.1 Cancel Participants' Orders and Quotes

Cancel-On-Disconnect: If the participant disconnects from the exchange, all session orders are canceled.

Cancel When No Heartbeat: If no heartbeat is detected, the participant is deemed to be disconnected and all orders and quotes are canceled.

In the event the Market Maker is disconnected from BOX (voluntary disconnection or no heartbeat detected), the Market Maker's quotes are cancelled regardless of the instruction specified by the Market Maker in their disconnection instruction.

4.5.2 Cancel All Quotes/Orders with a Single Message (GZ)

Participants have the ability to cancel all orders and/or quotes or to request a lock-out with a single message sent to the exchange.

The Global Cancellation message (GZ message) is available to cancel all orders and/or quotes or to request a lock-out for a specified trader.

4.5.3   Lock-Out of a Trader

Participants can also request from the MOC orders and/or quotes cancellation, or a lock-out of the trader.

While the Trader is locked out, the following entry types are prevented:

- New or modified orders of all types (Regular orders, ISO, Customer Cross, PO, DO, Improvement orders, etc.), whether on a single option instrument or on a strategy instrument
- New or modified Quotes
- All requests for starting a PIP (direct request or via DO Acceptance)
- All requests for starting a Solicitation or Facilitation auction
- All new or modified (solicitation-facilitation) improvement orders on a PIP, solicitation or facilitation

4.5.4   Restrict Automated Re-Entry to Trading after Lock-Out

Upon requesting a lock-out, the trader is restricted from re-entry to trading until MOC's intervention. The MOC is responsible for re-establishing order/quote entry for the trader.

Section 5   Connection Management

This section covers the technical connection management.

Note: Each Participant has a different user ID and password coded in an MD5[1] format using the time present in the message.

Refer to Appendix B, Connection Types for information about Connection Definition and the identification of Message Types that travel through these Connections.

5.1   Legend for Technical Communication Figures

The information provided is useful to understand the figures in the sub-sections.

User Sequence ID

This field is numeric and is present in all business messages. It is a sequential number that is used to check if there is a gap in the incoming message within a connection session. The first business message for the session must be set to 1. All technical messages sent to the client (Heart Beat, Connection Acknowledgement, etc.) show the last User Sequence ID received.

Exchange Sequence ID

This field is a message ID managed by the Exchange. It is present in most of the messages sent by the Exchange to the participant. When the User connects to the Exchange during the day, he can ask for message retransmission from a specific Exchange Message ID.

Message Type

After the message length, the two next characters of all SAIL messages represent the message type (see message format paragraph in the SAIL Specifications Guide).

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[1]MD5 is an algorithm used to verify data integrity through the creation of a 128-bit message digest from data input.

5.2   User Connection and Disconnection

5.2.1   First Time of the Day User Connection (Message Type TC)

Participant	BOX
Trader Connection | TC	0	n/a | ↑ Starting Exchange Message ID	Acknowledgment | TK	n/a	1 | ↑ Expected User Sequence ID
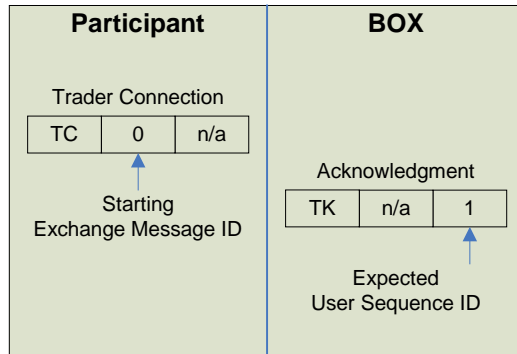
Exchange Message ID (Participant inbound)

For the first connection, the only valid value for the User's Exchange Message ID is zeroes.

Expected User Sequence ID (Exchange outbound)

The Exchange response indicates that the (next) expected User Sequence ID is 1.

Session ID

When the Client connects for the first time, he must set the Session ID to spaces. The acknowledgment contains the current Session ID.

Protocol ID

In the User Connection Message, the user specifies the protocol ID for the connection. When the SAIL protocol version changes, the Client is able to communicate using the previous protocol version for a period. The expiration of the previous protocol time period will be communicated by the Exchange. If the specified protocol ID is not supported, an error message (Message Type TE) is sent.

5.2.2 User Connection during the Session and Retransmission of All Messages

Participant			BOX		
Participant			**BOX**		
Trader Connection					
TC	0	n/a			
			Acknowledgment		
			TK	n/a	5
			Messages retransmission		
			KE	aa1	1
			KE	aa2	2
			NT	aa3	0

Exchange Message ID (Participant inbound)

Setting the Exchange Message ID to 0, the User indicates that they want retransmission of their messages from the beginning of the session. For this example, messages aa1, aa2 and aa3 are retransmitted to the Client (since these are the only these 3 messages that have been sent during this session).

Expected User Sequence ID (Exchange outbound)

When the Client connects, and it is not for the first time, the acknowledgement message indicates the next expected User Sequence ID (5 in this example).

5.2.3 User Connection During the Session, Retransmission from Specific Message

Participant			BOX		
Participant			**BOX**		
Trader Connection					
TC	aa3	n/a			
			Acknowledgment		
			TK	n/a	5
			NT	aa3	0

Exchange Message ID (Participant inbound)

Setting the Exchange Message ID to aa3, the User asks for retransmission of their messages from aa3.

Expected User Sequence ID (Exchange outbound)

When the Client connects, and it is not for the first time, the acknowledgement message indicates the expected User Sequence ID (5 in this example).

5.2.4   Disconnection Instruction Management

Participant	BOX
Participant	**BOX**
Disconnection Instruction	
TA | n/a | n/a	
	TA Acknowledgment
	TM | n/a | 5

This message is used by the Participant to indicate order/quote handling preferences when the connection ends (terminated by the Exchange or by the Participant).

The Disconnection Instructions are managed at the trader level. When a connection is established, one Disconnection Instruction Message must be sent per trader that will use the connection.

Note: This message is optional. If it is not sent by a specific trader, the system does not cancel anything when that trader disconnects, or when the connection is lost.

These instructions are valid only for the current session.

When a disconnection occurs, all the disconnection instructions sent by the traders are executed. For example, if a Market Maker wants to cancel his quotes, all the existing quotes they have on the Exchange are cancelled.

5.2.5 User Disconnection by Exchange: Heartbeat Missing

Participant	BOX

BOX

Heartbeat

TH	n/a	5

Heartbeat

TH	n/a	5

Participant

Heartbeat

TI	n/a	5

Order Entry

OE	n/a	5

Acknowledgment

KE	aa7	5

Heartbeat

TH	n/a	6

1 Heartbeat Period

Trader Disconnection and
Execute Disconnection
Instructions
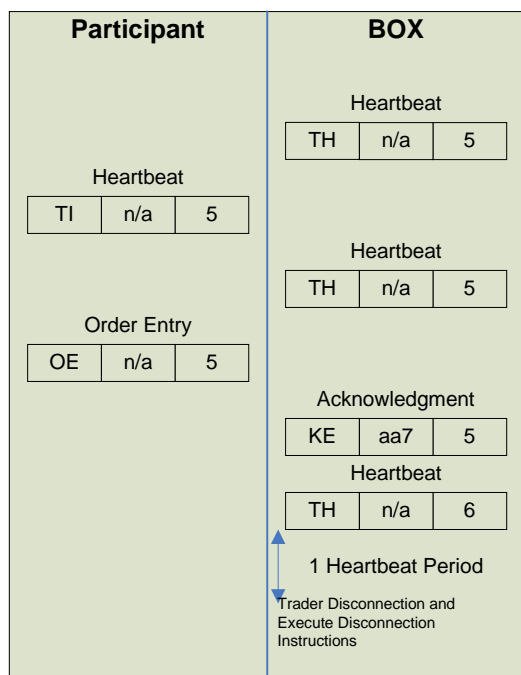
When the Client connects, they specify the inactivity interval corresponding to the number of non-responded heartbeat messages (Message Type TH) the Exchange must count before disconnecting. A Heartbeat message can be responded to by a Heartbeat Response (Message Type TI) or by any other message.

If the connection is disconnected, the Disconnection Instructions (Message Type TA) are processed. The disconnection instructions are set at trader ID level. It must be cancel quotes.

In the example above, the Client has requested to be disconnected after a period of one heartbeat.

After a period of two heartbeats without any Heartbeat Response from the Client, the Client is disconnected and their trader's disconnection instructions are processed.

5.2.6 User Disconnection by Client

Participant	BOX
	Heartbeat
	TH / n/a / 3
Heartbeat	
TI / n/a / 3	
Trader Disconnection	
TD / n/a / n/a	
	Acknowledgment
	TL / n/a / 3
	Trader Disconnection and Execute Disconnection Instructions
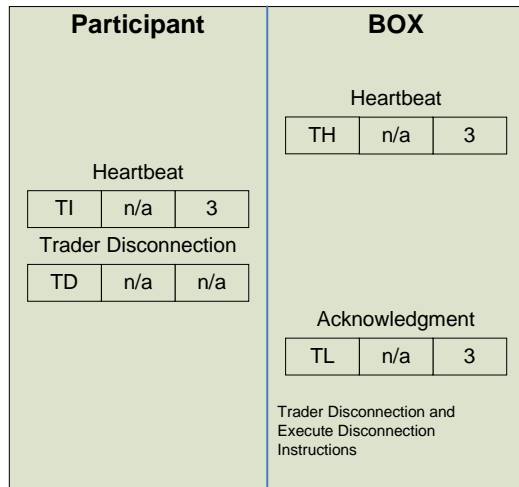
The Client requests a disconnection.

The User is disconnected and their disconnection Instructions, if any, are processed.

5.3 Error Management

5.3.1 Incorrect Incoming Message

Participant	BOX
	Heartbeat
	TH / n/a / 3
Heartbeat	
TI / n/a / 3	
Erroneous message	
XX / n/a / 3	
	Error Notice
	TE / n/a / 3
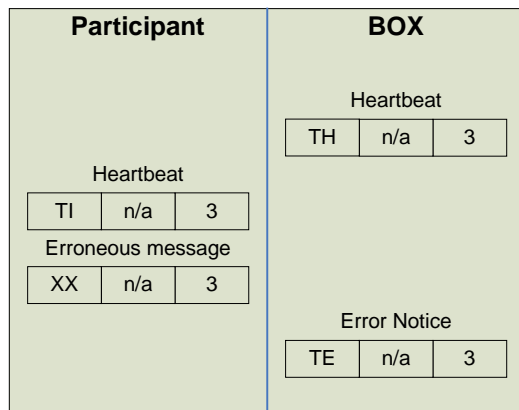
The Technical Error message (Message Type TE) explains the error (here Message Type unknown).

The Client remains connected.

5.3.2   Out of Sequence

Out of Sequence at Connection

Participant			BOX		

Connection

TC	0	n/a

Acknowledgment

TK	n/a	1

Disconnection Instruction

TA	n/a	n/a

Acknowledgment

TM	n/a	1

Regular Order

OE	n/a	5

Out of sequence

TO	n/a	1[*]

Client is disconnected
Must send a Connection message

[*]: Expected User Sequence ID

Out of Sequence after Connection

Participant			BOX		

Regular Order

OE	n/a	4

Acknowledgment

KE	aa7	4

Regular Order

OE	n/a	5

Acknowledgment

KE	aa8	5

Regular Order

OE	n/a	7

Out of sequence

TO	n/a	6[*]

Client is disconnected
Must send a Connection message

[*]: Expected User Sequence ID

When the Client does not send the right User Message ID, the Exchange responds with an 'Out of Sequence' message (Message Type TO). The incoming message is not processed and the user is disconnected. The 'Out of Sequence' message indicates the expected User Sequence Number. The user must reconnect and restart with its User Sequence ID equal to the value indicated in the User Connection Acknowledgement message (Message Type TK).

5.3.3   End of Transmission

Participant			BOX		
Regular Order					
OE	n/a	4			
			Acknowledgment		
			KE	aa7	4
Regular Order					
OE	n/a	5			
			Heartbeat		
			TH	n/a	6
			Acknowlegment		
			KE	aa8	5
Heartbeat					
TI	n/a	6			
			End of Transmission		
			TT	n/a	6
Regular Order					
OE	n/a	6	Client is disconnected		
			Not responded		

BOX sends an 'End of Transmission' message (Message Type TT), indicating the end of the session.

The next day, Clients must start the connection cycle and reset their User Sequence ID counter (refer to section 5.1, User Sequence ID)

In this example the last inbound message has not received a response.

Section 6 Order Management

6.1 User Sequence ID

The Client must include a User Sequence ID in any business message. This counter must be set to 1 for the first business message of the day and must be sequential for all business messages. The next message must be set with the expected User Sequence ID. The acknowledgements to a business message (Message types KI, KE, LA,) or an Error Notice (Message types TE, ER) are populated with the same User Sequence ID present in the incoming message.

6.2 Order Entry

Order entry allows Clients to enter orders to be traded on BOX.

6.2.1 Supported Types of Orders

BOX supports the following Order types:

Limit Orders

Limit Orders entered into the BOX Book are executed at the price stated or better. Any residual volume, left after part of a Limit Order has traded, is retained in the BOX Book until it is withdrawn or traded (unless designated Immediate). A limit order is submitted by setting the Price Type field of Order Entry message (Message Type OE) to 'L'.

BOX-Market Order

BOX-Market Orders entered into the BOX Book are executed at the best price available in the market for the total quantity available from any contra bid (offer). Any residual volume, left after part of a BOX-Top Order has been executed, is automatically converted to a limit order at the price at which it was just executed. A BOX-Market Order is submitted by setting the Price Type field of Order Entry message (Message Type OE) to 'W'.

Market-on-Opening Order

Market-on-Opening Orders entered into the BOX Book are executed on the market opening at the best price available in the market until all available volume on the opposite side of the market has been traded. Any residual volume, left after part of a Market-on-Opening Order has been executed, is automatically converted to a limit order at the price at which the original Market-on-Opening Order was executed. Market-on-Opening Orders have priority over Limit Orders. A Market-on-Opening order is submitted by setting the Price Type field of ORDER ENTRY message (Message Type OE) to "O". This type of order is available only in the Pre-opening market phase (see section Pre-opening).

For Complex Order instrument, they may trade at multiple different prices at the opening.

Floor Trade Orders

A floor trade order mimics the trading floor model and adapts it to an existing electronic marketplace to allow for regulatory compliance. This order type enables BOX Participants to enter trades that have been agreed upon into the electronic platform. These electronic floor trades must respect the market rules.

A floor trade is an agreement between two counterparties, the Must-Be-Filled (MBF) side and the non-MBF side (InitO), to execute a trade on a given product and at a given price.

Indication of Interest (IOI) Orders

This type of orders can be entered by a floor broker to indicate its interest to participate in a floor trade. Only the configured floor brokers are allowed to enter IOI messages.

6.2.2 Supported Order Duration Types

When submitting an order to BOX, Clients must provide one of the following duration types.

Day

Orders designated as 'Day' will remain in the BOX Book until the order:

- Trades
- Is withdrawn by the relevant responsible trader or BOX at the Options Participant's request
- Is automatically cancelled by BOX at the end of the current trading day

A 'Day' order is submitted by setting the Duration Type field of Order Entry message (Message Type OE) to 'J'.

Good Till Date (GTD)

Orders designated as 'Good Till Date' will remain in the BOX Book until the order:

- Trades
- Is withdrawn by the relevant responsible trader or BOX at the Options Participant's request
- Is automatically cancelled by BOX at the end of the day specified in the Date field

A GTD order is submitted by setting the Duration Type field of Order Entry message (Message type OE) to 'D'. The Date field is set to the date on which the order must expire.

Good Till Cancelled (GTC)

Orders designated as 'Good Till Cancelled' will remain in the BOX Book until the order:

- Trades
- Is withdrawn by the relevant responsible trader or BOX at the Options Participant's request
- Is automatically cancelled by BOX on expiration of the contract month to which the order is related

A GTC order is submitted by setting the Duration Type field of Order Entry message (Message type OE) to 'F'.

Immediate Orders

Immediate Orders (also known as Immediate or Cancel (IOC)) are immediately executed against any existing orders at the specified price or better up to the volume of the Immediate Order. Any residual volume, left after part of the Immediate Order has traded, will be automatically cancelled by the BOX.

An Immediate Order is submitted by setting the Duration Type field of Order Entry message (Message Type OE) to "E".

Session Orders

Session Orders will remain in the BOX Book until the order:

- Trades,
- Is withdrawn by the relevant responsible trader or BOX at the Options Participant's request,
- Is automatically cancelled by BOX at the end of the current trading day,
- The participant's application loses or terminates its connection to the BOX trading system. Orders that are exposed, being processed by an away exchanges after routed by BOX and Directed Orders not acknowledged by the executing participant are not cancelled in this case.

A Session order is submitted by setting the Duration Type field of Order Entry message (Message Type OE) to "W".

6.2.3 Supported Special Price Terms

BOX supports the following Special Price Terms.

Directed Order

The Directed Order is directed/routed to the Executing Participant specified on the order for potential price improvement. See "Directed Orders in Support of PIP" for a detailed description of the Directed Order.

Preferenced Order

A Preferenced Order allows participants to designate a Market Maker (PO-MM) who is entitled to a guaranteed percentage of the order, as long as this Market Maker is quoting at NBBO.

6.2.4 General Processing (Buy or Sell Order)

To enter an order, the Client sends an Order Entry (Message Type OE) message. For the specifications of these messages, refer to the BOX SAIL protocol guide. This message will contain the Client's User Sequence ID.

BOX performs various validations on the parameters of the Order Entry (Message Type OE) message received.

If one of these validations fails, BOX sends an Error Message (Message Type ER or TE) rejecting the message received, and indicating the code for the first error detected and the message type for the message generating the error along with its User Sequence ID.

If all validations are successful, BOX accepts the message received and attributes an Order ID to the order entered. This ID is unique by instrument. BOX sends the Client an acknowledgement for the order entered via an Order Acknowledgement message (Message Type KE). The Order Acknowledgement message contains, among other things, the Order ID. It also contains the User Sequence ID that enables the Client to identify the original message to which the message received refers. If the order status changes, the participant receives another Order Acknowledgement message. This new message indicates the new status of the order.

An Order Acknowledgement indicates that the order has been:

- Entered in the Order Book (a part of the order having possibly been executed),
- Eliminated,
- Exposed for NBBO matching,
- Executed in full (or Partially for IOC orders),
- Directed to the Executing participant,
- Routed to an away Exchange.

If an order is either partially or fully executed, the Client receives, immediately after the Order Acknowledgement (Message Type KE) message, one or several

Execution Notice (Message Type NT) messages providing additional information related to the transaction that took place.

If the order has been booked, the Client will automatically receive one of the following messages at a later time:

- One (or several) Execution Notice (Message Type NT) messages,
- An Order Elimination (Message Type NZ) message.

All the messages related to an order (execution notice, cancellation notice, order acknowledgement) contain the current Order ID and the Original Order ID. The User Sequence Id is set to zeroes.

Order Entry with Rejection

Participant			BOX		
Order Entry: O1					
OE	n/a	n/a			
			Error		
			ER	n/a	n/a
Message type					
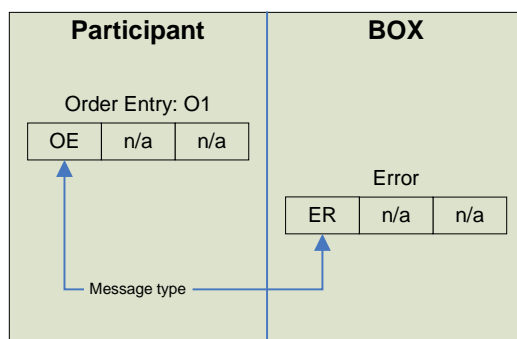
Order Entry without Matching (Acceptance)

Participant			BOX		
Order Entry: O1					
OE	n/a	n/a			
			Acknowledgment		
			KE	2	2
Order ID					
Original Order ID					
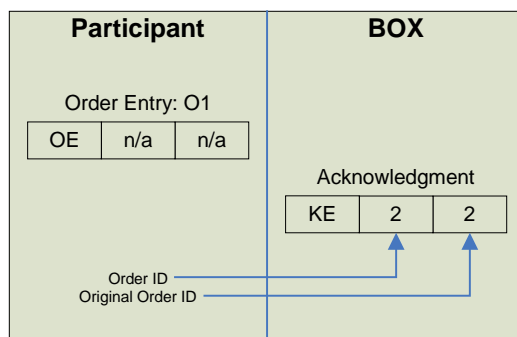
Acceptance and Execution of an Order

Participant	BOX

Order Entry: O1

OE	n/a	n/a

Acknowledgment

KE	2	2

Order ID ————
Original Order ID ————

Trade

NT	2	2
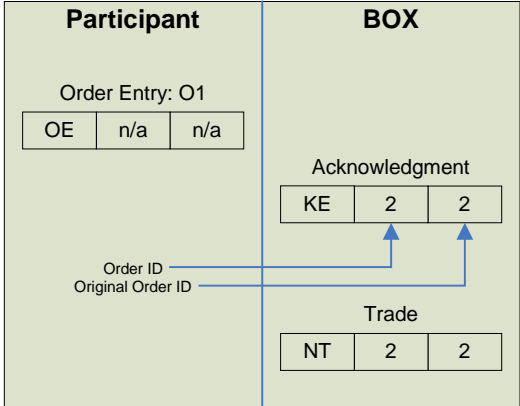
6.3   Modifying an Order

Order modification allows Traders to modify orders that are currently booked.

6.3.1   Functions Available when Modifying an Order

A Trader may amend all booked orders, either self-entered, or by the BOX MOC on their behalf. A Trader cannot modify an order that has not been booked. That is, a Trader cannot modify an order if it has been fully executed, cancelled, or eliminated.

A Trader cannot modify the instrument ID, or the side of the order. With the exception of a quantity reduction, or the modification of the client account number, in which case the order retains price/time priority. A modified order is eliminated from the Order Book and replaced by a new one.

6.3.2   General Processing

To modify an order, the CLIENT sends an Order Modification (Message Type OM) message. In this message, the Client must enter information in all required fields. BOX performs various validations on the order details received. When an error is detected in the incoming message, BOX returns an Error Message (Message Type ER or TE) specifying the error.

If the message is valid, BOX eliminates the old order from the Order Book and replaces it with the new one, to which it attributes a new order ID. It sends the acknowledgement of the modification in the form of an Order Acknowledgement (Message Type KM) message. This message contains the new order ID of the modified order, the Original Order ID (Order ID of the modified Order) and the revised characteristics of the order. The modified order's status takes the same values as for Order Entry acknowledgements.

Participant			BOX		
Order Entry: O1					
OE	n/a	n/a			
			Acknowledgment / no trade		
			KE	2	2
Order Modification					
OM	2	2			
			Acknowledgment / no trade		
			KM	4	2

Order ID ———————————— ↑
Original Order ID —————————— ↑

Trade notice for O1

NT	4	2

Order ID ———————————— ↑
Original Order ID —————————— ↑
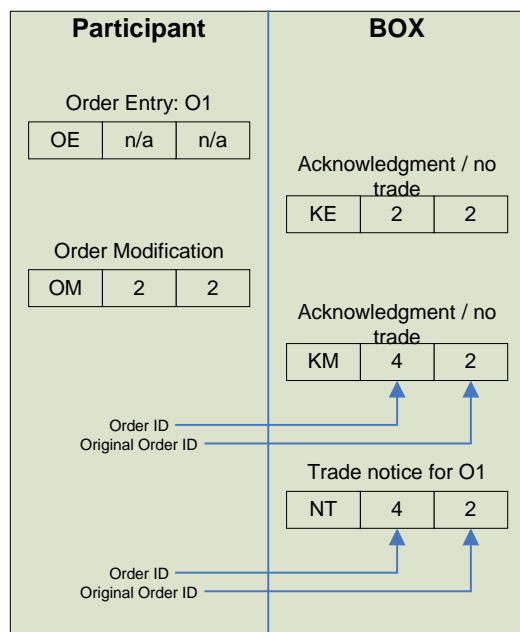
6.4 Cancellation of an Order

Order cancellation allows Traders to cancel orders that are currently booked.

6.4.1 Functions Available when Cancelling an Order

Clients may cancel all orders entered either by themselves or on their behalf by the BOX MOC. This cancellation will only be considered if the order, or a part of the order, is currently booked.

A Client can also cancel an order entered by another Client belonging to the same Participant. The Client that sent the cancellation request will, however, take ownership of the order and receive the Order Acknowledgement (Message Type KE) message confirming the cancellation.

6.4.2 Processing Timetable

To cancel an order, the Client sends an ORDER CANCELLATION (Message Type XE) message. In this message, the Client specifies the following information enabling MX to locate the order:

- Instrument ID code
- Order ID
- Original Order ID
- Order side
- Trader ID code

BOX performs various validations on the parameters received. If the Order Cancellation is not valid, MX sends an Error Message (Message Type ER/TE) indicating the error code for the first error detected.

Participant	BOX
Order Entry: O1	
OE | n/a | n/a	
	Acknowledgment
	KE | 2 | 2
Order Cancellation	
XE | 2 | 2	
	Acknowledgment
	KZ | 2 | 2
Order ID	
Original Order ID	
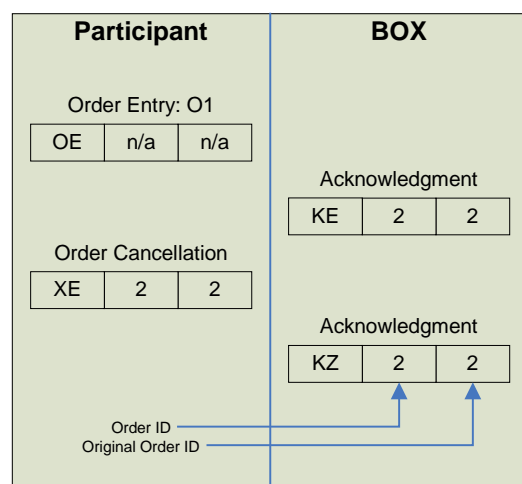
If the Order Cancellation is valid, BOX sends the acknowledgement of the cancellation in the form of an Order Acknowledgement (Message Type KE) message specifying the outcome reserved for the order. The outcome will be: "Order cancelled by the trader".

6.5 Entry of a Request for Quote

Request for Quote entry allows participants to broadcast a Request for Quote (Message Type RQ) message.

6.5.1 Functions Available when Entering a Request for Quote

The Request for Quote (Message Type RQ) message contains the Instrument ID Code, Trader's ID Code, and possibly a Quantity. To comply with the BOX anonymity principle, the Traders' ID Code is not broadcast in the corresponding message dissemination. Please Refer to market dissemination messages for Market Data message information.

6.5.2 Processing Timetable

The Client enters a Request for Quote. BOX validates the message. If the Request for Quote (Message Type RQ) message is not valid, BOX sends an Error Message (Message Type ER/TE) indicating the error code for the first error detected. If the message is valid, the Client receives a Standard Acknowledgement (Message Type KO) message.

6.6 Entry of a Bulk Quote Data

Before entering a Bulk Quote, the participant has to send to the trading system the clearing data that is going to be attached to all trades issued from his Quotes.

The Market Maker must send his data using the Bulk Quote Data Message (Message Type BD) for each group for which he is Market Maker.

A Bulk Quote Data message is acknowledged by a message (Message Type KD) containing a Quote ID. This Quote ID references the current Order ID and the Original Order ID for all trades issued from a Quote on any instrument of the group for the trader.

6.7 Entry of a Bulk Quote

Bulk Quote entry allows traders to enter multiple quotes within the same message for instruments in the same group. Consequently, they provide a more efficient way for a Market Maker to send orders to the Trading System.

6.7.1 Functions Available when Entering a Bulk Quote

Quotes are kept in memory only. They are not saved on disk except when they get traded. The portion that gets traded then becomes an order and is written to disk. In case of a server crash, all quotes handled by that server are not retained and they then need to be re-entered.

Price Type: Only quotes with limit price are accepted.

Validity Type: Quotes are valid only for the current Trading Day. Quotes participate at the CTO calculation.

Authorized Quantities: Special quantity terms are not supported.

6.7.2 Processing Timetable

The Client enters a Bulk Quote (Message Type Qi) message containing 1 to 280 separate quote(s). In the SAIL protocol, a quote represents a Buy or Sell price on an instrument.

BOX validates the message and each quote within the message.

If the Bulk Quote (Message Type Qi) message is not valid, BOX returns an Error Message (Message Type ER, TE) indicating the error code for the first error detected.

If the message is valid, BOX sends a Bulk Quote Confirmation (Message Type LA). If a particular quote cannot be processed, the Bulk Quote Confirmation indicates the Quote number and the error code for this particular quote.

Each quote received replaces an existing quotes. Consequently, a Market Maker cannot have two quotes on the same side for the same instrument. A Market Maker may choose to replace the quantity and/or price on his quote. They may also remove one single quote by specifying -99999 (negative value) in the quantity field in the Bulk Quote SAIL message.

6.8 Entry of a Global Cancellation

The Global Cancellation (Message Type GC) message allows the participant to cancel all quotes related to a specific trader on all instruments in the same class with one message. The Trader ID and the instrument Group ID are used to specify which quotes to cancel.

The Global Cancellation (Message Type GC) message is available to all participants to cancel quotes and orders placed with Bulk Quote (Message Type Qi). The Global Cancellation message is acknowledged by the Global Cancellation Confirmation (Message Type KG) message.

6.9   Unsolicited Services

6.9.1   Entry, Modification, Cancellation of an Order by Market Operation Center

MOC can, at the request of a Participant or on its own initiative, enter, modify, and cancel orders on the behalf of a Participant.

The modification and cancellation can be done for orders entered by MOC in the Participant's account as well as orders entered by the Participant itself.

When the BOX MOC enters an order on the behalf of a participant, the client receives an Order Acknowledgement (Message Type KE) message. It will also receive all messages related to this order: Execution Notice (Message Type NT), Order Elimination (Message Type NZ). All messages related to orders entered by the MOC are sent to all Participants' connections with a User Sequence ID set to zeroes.

In the case of a modification or a cancellation done by MOC, the Client that owns the order receives the Notice Of Cancellation (Message Type NZ) or Order Modification Acknowledgement message corresponding to the modification or the cancellation.

6.9.2   Elimination of an Order

This section describes all the cases of order elimination by the system or by MOC that do not occur as the result of the transmission of an order cancellation message from the Participant.

Table 1:   Order Elimination

REASON FOR ELIMINATION	BOX
Cancellation of an order by MOC	• Possible during: Pre-opening, Opening, Trading Session, Market Operation Center Intervention, Consultation End of Day, and Group Interruption. • Order Elimination (Message Type NZ) messages are sent to the Clients concerned.
Elimination because the Instrument has expired or is updated or is deleted	• Carried out during Maintenance or Post-session. • Order Elimination (Message Type NZ) messages are sent to the Clients concerned.
Elimination of IOC orders partially filled or not filled at opening	• Carried out on the Opening of the instrument. • Order Elimination (Message Type NZ) messages are sent to the Clients concerned.
Elimination because the validity of the order is reached	Carried out at the end of each trading day: • During the week just before Maintenance or during Maintenance • At the end of the week (last trading day of the weekly session) just before Post-session

REASON FOR ELIMINATION	BOX
Eliminated Due to Trade Limit Exceeded	Protection mechanisms
Eliminated Due to Trade Activity Limit Exceeded	
Eliminated Due to Maximum Nb Triggers Limit Exceeded	
Eliminated Due to Drill Through Protection	
Eliminated Out of Limits	

6.9.3 Cancellation of a Trade by Market Operation Center

When required, MOC can cancel a trade that took place during the day. This cancellation can be initiated in accordance with BOX rules.

BOX sends the two Clients concerned a Trade Cancellation Notice (Message type NX) message. This message specifies all the parameters related to the cancelled trade.

6.9.4 Group State Change Notifications

BOX notifies all Clients when a group of instruments switches to a different trading state by sending an Instruments Group Status Change Notice message (Message type NG), indicating the group's new status. This can be done during:

- Pre-opening
- Opening
- Trading Session
- Market Operation Center Intervention
- Consultation End
- Maintenance
- Post-trading
- Interrupted
- Halted

When trading is interrupted for all instrument groups, Clients will receive one Instruments Group Status Change Notice (Message Type NG) for each group available on BOX. Each message will indicate that the trading session has been interrupted. An interruption in trading can be due to either a technical incident or a decision by MOC.

This is an example of the normal sequencing of the phases in a trading day for continuously traded instruments:

- Consultation Start
- Pre-opening
- Opening
- Trading Sessions
- Market Operation Center Intervention
- Consultation End
- Daily Maintenance or Weekly Post Session

6.9.5 Instruments State Change Notifications

The status of an instrument can be modified by BOX independently of the group to which it belongs. In such cases, BOX sends to all Clients an Instrument State Change Notice (Message Type NI) message specifying, amongst other parameters, the new status of the instrument, as well as the type of action which triggered this change.

Note: In some cases, when an action affects an instrument without modifying its status, the Instrument State Change Notice (Message Type NI) message is sent to indicate this action.

There are three valid states for an instrument on BOX, as given below:

Forbidden: Order entry is forbidden and no trading activities are available

Reserved: Order entry is authorized but the trading mode is limited to Pre-opening (if Group trading mode is Trading or Pre-opening). This may be changed by the BOX MOC.

Normal: Follows group trading rules

The reservation and forbidding of an instrument are carried over from one session to the next unless there is a change in instrument status. If changed, an Instrument State Change Notice (Message Type NI) message is sent to Clients. An Instrument State Change Notice (Message Type NI) message is nevertheless sent at the start of each session as a reminder of any reservation or forbidden conditions.

6.10 Price Improvement Period

The Price Improvement Period (PIP) is a mini auction phase in which a single order (the "Must Be Filled" order or MBF) is exposed to the BOX market in order to trade at a price better than the current NBBO (National Best Bid and Offer). The PIP allows authorized participants to compete by posting prices in penny increments.

6.10.1 PIP Initiation and Participation

All orders designated for price improvement must be submitted to the BOX market along with a contra order (the improvement order). An MBF order along with its Auction Order is submitted to the market using an Auction Order Entry (Message Type OA) message. If this message is successful, a PIP will begin. To be accepted, all Improvement orders must fulfil the following conditions:

- Be on the opposite side of the MBF order,
- From the MBF order perspective, provide a price better than the current NBBO (National Best Bid and Offer).

Participants (including the participant who has started the PIP) may match or improve the contra side of this order during a period of n seconds after which the MBF order will be executed against the best contra prices available from the PIP.

Participants may enter PIP Improvement orders by using the Improvement Order Entry (Message Type OI) messages to compete against the original contra order. Each participant may only have one PIP Improvement order live for any given improvement process. Any change to a previously submitted order cancels the former and modifications may only be made to improve the price. Upon such improvement though, quantity may be adjusted up or down; cancellations are permitted during the PIP. Quantity on Improvement orders must not be greater than the quantity of the MBF order.

In order to secure its share of the MBF order, the initiator of the PIP (or dealer side) may improve the contra side of their Auction Order by modifying its price in reaction to other participants' Improvement orders. The initiator of the PIP improves his price using the Improvement Order Entry (Message Type OI) messages containing the improved price and referencing the auction ID of the ongoing PIP.

6.10.2 Maximum Improvement Price (MIP)

In addition to the auction start price, the MIP functionality allows the PIP initiator to specify a maximum improvement price up to which the participant is willing to match the price and quantity of any competing improvement orders. The BOX Trading system will automatically match the price of the dealer side of the auction order each time an improvement orders is received at a better price.

Key features of MIP are:

- MIP can be entered directly in a PIP or through a Directed Order (DO).
- The maximum improvement price can be a limit or market (match all improvements) order.
- The dealer side will "auto match" at all better price levels, including the maximum improvement price.
- The dealer side will "auto match" for the entire quantity at each improved price level, except the level where the MBF will be completely filled.
- The dealer side will have the lowest priority at each improved price level.
- No dissemination of "auto improvements" by the dealer side to the market.

- Any Improvement Order entered by the dealer side while a MIP is in progress will be rejected.

6.10.3 Market Conditions Required for PIP Initiation

Refer to BOX Rules 7150.

6.10.4 PIP Information Broadcast

Active participation in the PIP requires processing of the PIP messages contained in BOX's market data feed (HSVF). Based on PIP messages received through BOX HSVF, the initiator of the PIP will post the required price improvements using the Auction Order Entry (Message Type OA) message. Participants authorized to use the Improvement Order message (Message Type OI) will also react with price improvements.

Refer to the *HSVF-BX-001E SOLA® HSVF Specifications Guide* for Market Data message information.

6.10.5 End of the PIP

At the completion of the PIP and following execution of all PIP related orders, any unfilled order balance of all PIP related orders are purged. The Confirmation and Notice of Cancellation of Initial and Improvement Order (Message Type KI) messages are sent to the appropriate Clients for PIP related orders that have not received an Execution Notice (Message Type NT) message.

6.10.6 Trade Matching Process

Refer to BOX Rules 7150.

6.10.7 Directed Orders in Support of PIP

Any BOX Participant may route orders to other BOX Participants for potential price improvement (typically, this occurs between a participant acting in their capacity as an order flow provider and a Market Making Participant.) Participants will be able to submit orders (the "directed order" or "DO" and the "routed order" or "RO") to any other BOX Participant of their choice (the "Executing Participant" or "EP") in order for the EP to originate a price improvement period (PIP) (see "Normal Course" below). This is in the case where the Participant is not able or does not wish to provide price improvement via the PIP himself. The EP must process immediately the DO or RO upon receipt.

Order routing as described in this section may take one of three forms:

- The Directed Order (DO) where the Executing Participant ("EP") is a BOX Market Maker on the class to where the instrument included in the DO belongs and the Market Maker **does not** have a quote at NBBO that could trade with the DO or
- The Directed Order or DO where the Executing Participant ("EP") is a BOX Market Maker on the class to where the instrument included in the DO belongs and the Market Maker **does** have a quote at NBBO that could trade with the DO, this is known as a Guaranteed Directed Order or GDO, or
- The Routed Order or RO where the EP is NOT a BOX Market Maker on the instrument in the RO from the originating BOX Participant's point of view.

Normal Course DO and RO

A Participant places an Order Entry (Message Type OE) message specifying it is to be considered for PIP and identifying the specific EP to whom to submit the directed order. The Trading Engine sends a Directed Order Notice (Message Type ND) to the EP. The EP accepts the proposition and originates a Directed Order Acceptation (Message Type OD). In The Directed Order Acceptation the EP indicates the Auction (PIP) starting Price and the clearing data. The Auction starting Price must meet price checks vs. NBBO and must always be equal to or better than the price appearing in the DO/RO. As soon as PIP is started by the trading engine, the DO/RO ceases to exist. Therefore, at this point the DO/RO can neither be modified nor cancelled. Once the PIP is originated each part (EP and owner of the DO/RO) receives his own acknowledgements and trade notices.

Normal Course GDO

A Participant places an Order Entry (Message Type OE) message specifying it is to be considered for PIP and identifying the specific EP to whom to submit the directed order. The Trading Engine sends a Directed Order Notice (Message Type ND) to the EP. Because the EP has a quote at NBBO at a price that could trade against the DO, the quote is shelved until the participant sends a response or until the time-out period ends. The Trading Engine sends a Quote Notice (Message Type NU) with the field 'Action' set to 'S' (Shelved). The quote is released or un-shelved to the BOX book when one of the following event occurs:

- The Directed Order is modified by the submitting participant,
- The EP accepts the DO and starts a PIP and normal DO processing starts.
- The EP refuses the DO or does not respond within the valid configured period and the DO is released to the BOX book.

When the Market Maker quote is unshelved, the Trading Engine sends a Quote Notice (Message Type NU) with the 'Action' field set to 'U' (Unshelved).

Alternate Course: Rejection When the EP Is not Registered (Identical for DO and RO)

If the EP to whom the DO/RO is directed is not registered at the time the order is sent, the DO/RO will be transformed into a regular order and submitted to BOX. In this event, the participant will only receive the standard Order Acknowledgement message (Message Type KE) indicating that the order was entered on BOX.

Alternate Course: Rejection or Timeout by the Registered EP (DO)

If the EP is a BOX MM who has received a DO declines to offer price improvement (or does not respond), they may refuse the DO and return it to the BOX trading engine for submission to the BOX order book and eventual execution as a regular order.

Alternate Course: Rejection of PIP Initiation by the Registered EP for a Routed Order (RO)

When a Routed Order for which the EP is NOT a BOX Market Maker and who declines to offer price improvement via the PIP, the BOX trading engine will automatically, upon receipt of the rejection from the EP, process the Routed Order as a normal order according to its original terms.

Registration of Executing Participants

Participants wishing to perform the duties of an EP must register this intention with BOX by placing an EP Connection (Message Type RE) message. Confirmation is provided by the Standard Acknowledgment (Message Type KO) message. **Only one registration as an EP connection is allowed at any point in time for each approved participant.**

Registration as an EP is valid only for a specific time period that will be established by the Exchange. (This time period will either be day or trading session.) The EP Disconnection (Message Type RF) message is used to de-register as an EP. Confirmation is provided by Standard Acknowledgment (Message Type KO) message. Since only one registration per participant is allowed at any given time, to change the EP registration information the participant must de-register the existing EP information and Register with the new EP information. If the EP to whom the DO/RO is sent is not registered at the time the order is sent, the DO/RO will be transformed into a regular order and submitted to BOX.

6.10.8 Exposed Order (Fixed Price Auction)

If an executable customer order is received by BOX at a time when the NBBO price is better than the current BOX price, BOX will "expose" this order to all BOX Participants in the hope of causing the order to be traded, on BOX, at the NBBO price. The Order Entry message (Message Type OE) or Order Modification message (Message Type OM) issues an order acknowledgement (Message Type KE or KM) with a status set to Exposed. If the order is not traded during n seconds, then the order is revaluated against the current BOX market. A new Order Acknowledgement is sent to the participant indicating if the order is Eliminated, Booked or Traded.

6.11 Complex Order

Complex Order also known as multi-leg option order or Strategy order allows participants to simultaneously buy or sell a number of different options (from 2 to 4) that normally could only be achieved by placing separate orders

6.11.1 Instrument Creation

Complex Order instrument, as opposed to regular option instrument, must be created on Participant's request before they can trade, unless another Participant has already created it.

Complex Order instrument are created by the participants during the normal trading session by sending a '**ON: New Complex Order Instrument**' message type. They are created only if there is no instrument with the same definition that exists.

The rules for Complex Order instrument creation request are:

- The number of legs must be between 2 and 4.
- All legs must be for the same underlying.
- The maximum leg ratio for each leg is 99.
- The maximum leg ratio percentage between the lowest and the highest leg ratio is 300% (or 3 times).
- After they are created, the Instruments are available for trading for the current day only. They expire at the end of their creation day. The next day, if required, the instrument must be recreated using the same procedure.
- Leg ratios provided are reduced to the smallest ratio unit possible. Participants must adjust their order quantity and price accordingly. This will result in the creation of a Complex Order instrument with modifications from the original definition provided by the Participant although the trading strategy will remain unchanged.
- A Complex Order instrument may already exists but in reverse order. In this case the creation request does not create a new instrument. Participants must adjust their order verb and price accordingly. This will result in the creation of a Complex Order instrument with modifications from the original definition provided by the Participant although the trading strategy will remain unchanged
- Similar to the previous rule, if the Complex Order instrument request is for an instrument for which all legs are negative (to Sell), then all legs of the instrument

created are reversed. Participants must adjust their order verb and price accordingly. This will result in the creation of a Complex Order instrument with modifications from the original definition provided by the Participant although the trading strategy will remain unchanged

- The position of each leg of the Complex Order instrument created uses the following sort criteria (in priority). This might result in the creation of a Complex Order instrument with modifications from the original definition provided by the Participant although the trading strategy will remain unchanged:
  a. Ascending expiration date (nearest to farthest date)
  b. Ascending strike price (from lowest to highest price)
  c. Call, Put
  d. Ascending leg ratio (from lowest to highest ratio number)
  e. Alphabetical SAIL Instrument ID

Examples:

The following examples are using the format S = A + B + C - D where:

- 'S' is the Complex Order instrument
- 'A', 'B', 'C' and 'D' are the individual legs
- The signs '+' and '-' are the verb for each leg:
  o '+' = Buying the leg
  o '-' = Selling the leg

COMPLEX ORDER INSTRUMENT REQUEST	RESULT (INSTRUMENT CREATED)	RULE TO REFERENCE
S = A + 3B	**S = A + 3B** created if it does not already exist	1.
S = A + B + C	**S = A + B + C** created if it does not already exist	1.
S = A + B + C + D	**S = A + B + C + D** created if it does not already exist	1.
S = 90A - 100B	Request invalid Ratio of 100 is invalid (greater than 99)	3.
S = 90A - 99B	**S = 90 A - 99B** created if it does not already exist	3.
S = 16A - 50B	Request invalid 50/16=3.125 which is greater than 3	4.
S = 15A - 44B	**S = 15A - 44B** created if it does not already exist 44/15=2.93, which is less than 3	4.
S = 10A - 20B	**S = A - 2B** created if it does not already exist If a participant wants to Buy 5@20.00 of (10A - 20B), then he needs now to Buy 50@2.00 of (A -2B)	6.

COMPLEX ORDER INSTRUMENT REQUEST	RESULT (INSTRUMENT CREATED)	RULE TO REFERENCE
S = A - B	No new instrument is created if **S = B - A** exists If a participant wants to Buy 5@1.50 of (A - B), then he needs now to Sell 5@-1.50	7.
S = - A - B	**S = A + B** created if it does not already exist If a participant wants to buy 5@1.00 of (- A - B), then he needs now to sell 5@-1.00 of (A + B)	8.

6.11.2   Order Management

The following order types are accepted for Complex Order instrument:

- Market
- Limit Day
- Immediate or Cancel (IOC)
- Session

The orders on Complex Order instrument are managed on a separate book but are actively interacting with the leg book. See Implied / Legging Orders for more details.

As with regular option instrument, cancellation and modification or Complex Orders are allowed. The mechanisms used are the same as for orders on option instruments.

6.11.3   Exposure Functionality

This feature gives Participants the ability to expose their Complex Orders to the BOX Market in order to solicit liquidity before being booked or cancelled.

For each Complex Order sent to BOX, Participants can specify if they want it exposed or not. If the Participant elects not to have the Complex Order exposed, the order is following standard processing, the order being traded, booked or cancelled without the current exposure process.

If no specific instruction is provided on the order, the default behaviour for Complex Orders is be to expose, if possible. The instruction not to expose is provided with the field 'IML Handling' set to '6'.

This exposure enhancement is only applies to Complex Orders. The NBBO exposure period for standard option instruments under BOX Rule 7130 remains unchanged.

An incoming Complex Order requesting to be exposed trades immediately what it can and any remaining quantity, if any, is exposed.

The exposure period is set at 100 milliseconds.

At the end of the exposure period, any remaining quantity of the Complex Order is booked, if possible, or cancelled ('Duration Type' = 'E').

A Complex Order may be cancelled at the end of the exposure period based on the Participant's initial instruction.

Complex Orders being exposed are broadcast through the BOX HSVF Market Data Feed.

Complex Orders are exposed at the following prices:

COMPLEX ORDER TYPE	ORIGINAL COMPLEX ORDER PRICE	EXPOSED PRICE
Limit	Outside same side CNBBO[2]	Never expose
Limit	Outside opposite side CNBBO or equal to opposite side CNBBO	Opposite side CNBBO
Limit	Inside CNBBO	Original Order Price
Market	n/a	Opposite side CNBBO

6.11.4 Auctions

The following auction types are accepted for Complex Order instrument:

- PIP
- Solicitation
- Facilitation
- Customer Cross Order.

The Directed Order mechanism for PIP is also supported although the GDO procedure does not apply. The different auction rules for regular option instrument apply for Complex Order instrument.

6.11.5 Trading

A Complex Order instrument can start trading as soon as all its legs are opened for trading. No orders are allowed in pre-opening on Complex Order instruments. When two Complex Orders trade together, trades for each individual leg are calculated. Trades involving a Complex Order instrument are always controlled against the NBBO market (at or better than the NBBO).

When a Complex Order instrument trades, the Participant receives 1 trade for the Complex Order instrument that includes the net price, and 1 trade for each individual leg.

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[2]CNBBO means the best net bid and offer price for a Complex Order Strategy based on the NBBO of the individual options instruments of such Strategy.

6.11.6   Market Data

The Implieds / Legging Orders are included in the BOX proprietary HSVF Market Data feed. In the 'H-Option Market Depth / HS-Complex Order Market Depth' message types, they are included in a separate level identified with and 'A'.

The best limit broadcasts to OPRA may contain Legging Orders (see Implied / Legging Orders) should they be part of the best limit of BOX.

Limits on Complex Order instruments are not broadcast to OPRA.

6.11.7   Post-Trading

Only the leg trades are cleared at OCC, included in TMS and in the ATR feed. The Complex Order instrument trades are not processed by the BOX post-trading system.

In TMS, leg trades related to a specific Complex Order trade can be traced by using the column TradeSymbol which contains the symbol of the Complex Order instrument and the MatchNumber value which is an unique identifier linking all the leg trades of a specific Complex Order trade. The AllocationSymbol contains the symbol of the leg.

6.11.8   Implied / Legging Orders

Implied Orders are orders on the Complex Order book that are derived or calculated from the option leg book market. The following table indicates **Implied Orders** (shown in yellow).

COMPLEX ORDER A+B		LEG A		LEG B	
BID	ASK	BID	ASK	BID	ASK
3.00	3.05	1.00	1.10	2.00	2.20
2.90	3.10	0.90	1.20	1.95	2.40
2.80	3.30				

Legging Orders are orders on the option leg book that are derived or calculated from the Complex Order book market. The following table indicates **Legging Orders** (shown in yellow).

COMPLEX ORDER A+B		LEG A		LEG B	
BID	ASK	BID	ASK	BID	ASK
2.90	3.05	1.00	1.05	2.00	2.05
2.80	3.10	0.90	1.10	1.95	2.20
		0.70	1.20	1.80	2.40

Implied and Legging Orders are calculated continuously in real time as the Complex Order and Option Leg books are updating.

Continuous real time Implied/Legging calculation is only applicable on a two-legged Complex Order instrument with a ratio of 1:1.

Implied and Legging Orders are calculated using real orders only. Implied/Legging orders cannot be calculated using another Implied/Legging order. Implied Order calculation is only performed by using real orders that are at NBBO.

Legging Order calculation is performed when an incoming order is booked on the Complex Order book at the best limit. When a match occurs, the option leg book has always priority over the Complex Order book. It means that:

- At the same price, Implied Orders have always priority over regular order on the Complex Order book.
- At the same price, real orders have always priority over Legging Orders on the option leg book.

In the PIP mechanism, Implied/Legging Orders are processed as regular unrelated orders.

6.12   Solicitation and Facilitation Auctions

The Facilitation Auction allows Order Flow Providers ("OFPs") to enter two-sided transactions of 50 contracts or more when the OFP represents an order on one side as agent ("Agency Order") and is trading against the Agency Order as Principal, and/or has solicited an order on the opposite side of the Agency Order. The Facilitation Auction provides an Agency Order an opportunity for price improvement, with the Initiating Participant providing a guaranteed execution of the Agency Order through the submission of the contra side Facilitation Order. The Facilitation Auction also provides the Initiating Participant a participation guarantee of 40% of the Agency Order, but only after the Agency Order first trades against better priced orders and Public Customers on BOX.

The Solicitation Auction provides additional execution capabilities for large blocks (trades of 500 or more contracts). The Solicitation Auction is a process where an Initiating Participant enters a two-sided order - one side it has solicited and the opposite side an Agency Order. Each Agency Order entered into the Solicitation Auction shall be designated as all-or-none.

To enhance the possibility of executions, the Initiating Participant may specify a number of contracts he is willing to surrender ("Surrender Quantity") to the BOX Book. Use of the Surrender Quantity function allows block-size Solicitation Auction trades in certain instances in which there would otherwise be no execution.

The main shared features for these types of auction are:

- Solicitation and Facilitation Auctions initialization are available in both FIX and SAIL protocols.
- Account type of Initiating Participant cannot be Public Customer.
- Orders can be entered at any initial price and can be penny increments.

- The execution price can be outside the NBBO if the Solicitation/Facilitation Auction is flagged as being 'Contingent'. Otherwise, the execution price must be at or between the NBBO. In all cases, the execution price cannot trade outside the BOX Market, or ahead of a Public Customer booked order.
- The Initiating Participant cannot improve its initial price.
- The Initiating Participant can cancel its Solicitation/Facilitation Auction.
- Improvement Orders are not broadcast in the HSVF Market Data Feed.
- Improvement Orders can be cancelled or reduced in price or size prior to execution.
- Cannot be initiated upon receipt of a Directed Order (DO).

The differences are:

SOLICITATION	FACILITATION
Minimum size of 500 contracts.	Minimum size of 50 contracts.
The Initiating Participant can specify a number of contracts willing to be surrendered (Surrender Quantity) to the BOX Book.	No Surrender Quantity.
No guarantee that the Initiating Participant will participate in the execution of the Agency Order.	Initiating Participant is guaranteed execution against 40% of the Agency Order after better priced orders and after Public Customer orders at the same price.

For more details about the allocation for both auction types, refer BOX Rules 7270.

In SAIL, a Solicitation auction is entered using a **OA-Auction Entry** with the field **Special Price Term** set to '**B**' and a Facilitation with the field **Special Price Term** set to **C**. Fill Reports are returned in the **NT-Execution Notice** with the field **Trade Type** set to **B** (Solicitation) or **C** (Facilitation).

Message type **XI-Improvement Order Cancellatio**' is used to cancel a Solicitation and Facilitation auction types and Improvement Orders on these auction types. Acknowledgment are returned using the message type **KY-Auction or Improvement Cancellation Acknowledgment**.

6.13   Customer Cross Order

A Customer Cross Order is comprised of a non-Professional, Public Customer to buy and a non-Professional, Public Customer to sell at the same price and for the same quantity.

They are automatically executed upon entry provided the execution is between the best bid and offer on BOX and will not trade through the NBBO market.

They are automatically rejected if they cannot be executed.

They may only be entered in the regular trading increments applicable to the options classes.

Customer Cross Orders are not accepted on an option instrument while there is an auction in progress or while an order is being exposed for the same option instrument.

Customer Cross Orders are only accepted during Continuous Trading.

In SAIL, a Customer Cross Order is entered using the message type **OA-Auction Entry** with the field **Special Price Term** set to **X**. Fill Reports are returned in the **NT-Execution Notice** with the field **Special Trade Indicator** set to **D** .

6.14 Clearing Information

Participants are offered two alternatives to affect clearing assignment of their BOX trades to the clearing brokers of their choice.

6.14.1 Pre-Trade

At order entry, Participants can flag an order for CMTA transfer by setting the 'Clearing Operation Mode' field equal to 'C' or for a Give-up by setting the 'Clearing Operation Mode' field to 'G' and then specifying the OCC Member ID and account of the targeted broker-dealer in the 'Clearing Destination' field. The trade will then be transmitted to OCC with this clearing information.

Participants who must flag an order for both CMTA and Give-up may do so by setting the 'Clearing Operation Mode' field equal to 'I' and then use the field 'PostTradingInstruction' to specify the CMTA and Give-up OCC Member IDs.

The format is: 'C + *CMTA Firm ID* + G + *Give-up Firm ID*'. Example: 'C950G980'.

Aside from validating the field value of the 'Clearing Operation Mode', BOX will not perform any other validate of these fields. Consequently, improper identification of CMTA or Give-up target by a Participant will be treated by OCC according to their applicable policy.

6.14.2 Post-Trade

BOX provides application software —called Trade Management Software (TMS)— that is designed to handle post-trade CMTA assignments, perform Give-up and allocation of trades. Multiple trade allocations (and trade allocation changes or corrections) are also possible post-trade, as well as the specification of another OCC Clearing Member who will clear the trade. Some features of TMS are:

- Post-trade CMTA process
- Post-trade Give-up process
- Management of post-trade allocations
- Breakdown of strategy trades into separate legs
- Flexibility to generate personalized reports

TMS also provides access to historical information. This option permits users to view and print trades from previous trading day(s). TMS documentation is also available from BOX.

6.15   BOX Controls against the NBBO Market

Participants can control how their orders are validated against the NBBO market by using the IML Handling field. The valid values for this field are described.

6.15.1   '1': Normal Order

This is the normal setting for public customer orders. The incoming order to BOX is controlled against the NBBO and may be routed to an away Exchange to be traded at the NBBO price. If the order is executable at the NBBO and BOX is not at the NBBO, the order will be exposed on BOX at the NBBO price in an attempt to fill it. The ORDER ENTRY message (Message Type OE) or ORDER MODIFICATION message (Message Type OM) issues an order acknowledgement (Message Type KE or KM) with a status set to Exposed ('P'). If the order is not traded during n seconds, then the order is revaluated against the current BOX market. If the order cannot trade in BOX at the NBBO price, it will be routed to the away Exchange posting the NBBO. The Trading Engine then generates an Order Acknowledgement (Message Type KE) with a status set to Away ('L').

6.15.2   '2': No NBBO Controls

The incoming order to BOX is neither controlled against the NBBO nor routed to an away Exchange. The order will be sent directly into the BOX Order Book where it will book or trade. This is the normal setting for Market Maker Bulk Quotes.

6.15.3   '3': No Routing

The incoming order to BOX is controlled against the NBBO but not routed to an away Exchange. If the order is executable at the NNBO and BOX is not at the NBBO, the order will be exposed on BOX at the NBBO price in an attempt to fill it. If the order is not traded at the end of the n-second exposition phase, it will be rejected and sent back to the originator.

Note: Regardless of the IML Handling field on the Directed Order, if the EP accepts the Directed Order to start a PIP the order will be filtered against NBBO due to PIP rules.

6.15.4   '4': Inbound ISO order

The incoming order to BOX—known as an Intermarket Sweep Order (ISO)—is not controlled against the NBBO and not routed to an away Exchange. The order can trade in BOX through the NBBO market. The trade is reported to OPRA with a trade through identifier.

An ISO order is a limit IOC order priced to trade against a Protected Quote. The participant submitting the ISO must simultaneously send ISOs to sweep all better priced markets. BOX accepts ISOs to sweep BOX's displayed price and executes ISOs irrespective of the NBBO.

Section 7   SAIL Messaging

This section details the message sequencing for the SAIL Protocol. Refer to the *SAIL Specifications Guide* for details about message types and definitions.

7.1   Order Processing

Order is Rejected by Trading Engine

PARTICIPANT		BOX
OE	⟶	
	⟵	ER/TE

Order is Accepted but not Executed

PARTICIPANT		BOX
OE	⟶	
	Order Status = Booked ⟵	KE

Order is Accepted and Partially Executed

PARTICIPANT		BOX
OE	⟶	
	Order Status = Booked ⟵	KE[1]
	⟵	NT
1. The order acknowledgement indicates the quantity traded at order entry		

Order is Accepted and Fully Executed

PARTICIPANT		MX
OE	———————▶	
	Order Status = Traded ◀———	KE
	◀———	NT[1]
1. In all Execution scenarios, BOX will automatically set the 'ID Code for Counterpart Participant' field to the receiving firm's Participant ID if the participant traded against one of its own orders.		

Opening Order is Partially Executed at Opening

PARTICIPANT		MX
OE[1]	———————▶	
	Order Status = Booked ◀———	KE[1]
	Group State = Opening ◀———	NG
	◀———	NT[2]
	◀———	NZ[2]
1. During the Pre-Opening phase. 2. At the end of the Opening phase. (Note that this was an Opening Order only, therefore its balance is cancelled once Opening is completed (**NZ** Message)		

Order is not Executed at Opening

PARTICIPANT		BOX
OE	———————▶	
	◀———	KE
	Group State = Opening ◀———	NG

Immediate Order is not Executed at Opening

PARTICIPANT		BOX
OE	———————▶	
	◀———————	KE
	Group State = Opening ◀———————	NG
	◀———————	NZ

Immediate Order is Partially Executed in Trading Session

PARTICIPANT		BOX
OE	———————▶	
	Order Status = Executed ◀———————	KE
	◀———————	NT
	◀———————	NZ

Immediate Order is Not Executed in Trading Session

PARTICIPANT		BOX
OE	———————▶	
	Order Status = Eliminated ◀———————	KE

7.2   Quote Processing

Entering or Modifying Quotes

PARTICIPANT		BOX
BD[1]	——————▶	
	◀——————	KD
Qi[2]	——————▶	
	◀——————	LA[2]

1.	The clearing data present in the BD: Bulk Quote Data message are valid for all the Bulk Quotes sent by this trade until either another BD message is sent or the end of the session.
2.	The Message Type for bulk quote messages varies depending on the volume of quantity and price. Refer to the SAIL Specifications Guide for more information.

Entering or Modifying Quotes that Trade

PARTICIPANT		BOX
Qi	——————▶	
	◀——————	LA
	◀——————	NT

Note: One NT: Execution Notice message per trade

7.3   Request of Quote Processing

PARTICIPANT		BOX
RQ	——————▶	
	◀——————	KO

7.4 Cancellation of a Trader's Quotes by standard Market Maker Protection

PARTICIPANT		BOX
Qi	⟶	
	⟵	LA
	⟵	NT[1]
	⟵	NP
1. One NT message up to the maximum number of trades specified by the parameter set by the MOC.		

7.5 Cancellation of a Trader's Quotes by Advanced Market Maker Protection (1)

PARTICIPANT		BOX
RP	MM Protection = A ⟶	
	⟵	KO
Qi	⟶	
	⟵	LA
	⟵	NT[1]
RP	MM Protection = A ⟶	
	⟵	KO
Qi	⟶	
	⟵	LA
Note: Quoting is then Reactivated by Subscribing again to Advanced Market Maker Protection		
1. One NT message up to the maximum number of trades specified by the parameter set by the MOC.		

7.6 Cancellation of a Trader's Quotes by Advanced Market Maker Protection (2)

PARTICIPANT		BOX
RP	MM Protection = A ⟶	
	⟵	KO
Qi	⟶	
	⟵	LA
	⟵	NT[1]
	⟵	NP
Qi	⟶	
	⟵	ER/TE
Note: Subsequent Quotes are Rejected because Quoting is Disabled. 1. One NT message up to the maximum number of trades specified by the parameter set by the MOC.		

7.7 Modification Processing

Modification is Rejected

PARTICIPANT		BOX
OM	⟶	
	⟵	ER/TE

Modification is Accepted

PARTICIPANT		BOX
OM	⟶	
	⟵	KM

Modification is Accepted, Order Trades against 3 Counterparts

PARTICIPANT		BOX
OM	———————▶	
	◀———————	KM
	◀———————	NT
	◀———————	NT
	◀———————	NT

7.8   Cancellation Processing

Cancellation is Accepted

PARTICIPANT		BOX
XE	———————▶	
	Order Status = Cancelled ◀———————	KZ

Global Cancellation of all Orders for a Member for a Particular Group of Instruments (Initiated by the BOX MOC)

PARTICIPANT		BOX
	◀———————	NZ[1]
	◀———————	NP[2]

Note: This command cancels all orders and quotes belonging to a given member for a particular group of instruments.

1. One NZ: Order Cancellation Notice message for each cancelled order.
2. A single NP: Cancellation of All Quotes Notices message for all the cancelled quotes for the instruments belonging to the group.

Eliminate all Orders for an Instrument (Initiated by the BOX MOC)

PARTICIPANT		BOX
	←	NZ[1]
	←	NP[2]
1. One NZ: Order Cancellation Notice message for each cancelled order. 2. One NP: Cancellation of All Quotes Notices message to all members to indicate that all quotes on this instrument have been cancelled.		

Eliminate all Orders for an Instrument (Initiated by Market Control)

PARTICIPANT		BOX
	←	NZ[1]
	←	NP[2]
1. One NZ: Order Cancellation Notice message for each cancelled order. 2. One NP: Cancellation of All Quotes Notices message to all members to indicate that all quotes for all instruments on that group have been cancelled.		

Cancel all Quotes of a Market Maker or a Group (Initiated by Market Control)

PARTICIPANT		BOX
	←	NP[1]
1. A single NP: Cancellation of All Quotes Notices message for all the cancelled quotes.		

Cancel all Quotes of a Group for a Market Maker (Global Cancellation)

PARTICIPANT		BOX
GC	→	
	←	KG

Cancellation of a Trader's Quotes by a Global Cancellation when Advanced Market Maker Protection is Enabled

PARTICIPANT		BOX
GC	──────────▶	
	◀──────────	KG
RP	MM Protection = A ──────────▶	
	◀──────────	KO
Qi	──────────▶	
	◀──────────	LA
Note: Quoting is then Reactivated by Re-subscribing to Advanced Market Maker Protection.		

Cancel Trade on the Last Price (Performed by Market Control)

PARTICIPANT		BOX
GC	◀──────────	NT
	◀──────────	NX

7.9   Messages Generated by BOX MOC

Authorize / Forbid / Reserve Order Entry for an Instrument

PARTICIPANT		BOX
	◀──────────	NI

Interrupt / Forbid an Instrument Group

PARTICIPANT		BOX
	←	NG

7.10   Opening Phase Processing

A Group of Instruments is Opening

PARTICIPANT		BOX
	Group Status = Opening ←	NG
	←	NT
	←	NZ
	←	NI
	Group Status = Trading Session ←	NG

Note: All orders were entered during the Pre-opening phase.

- An NI: Instrument State Change message is sent for each instrument reserved during the opening.
- An NZ: Order Cancellation Notice message is sent for each Immediate order not executed at the opening.
- An NT: Execution Notice message is sent for every order that has traded during the opening.

A Group of Instruments is Opening and a Market on Open Order is on the book while there is no order on the opposite side

PARTICIPANT		BOX
	←	NG
	←	NI

Note: An unfilled 'On Opening' order has been entered in the Pre-Opening phase; the group opens and the instrument is reserved.

7.11   Auction Processing for PIP

Auction Entry Order Accepted

PARTICIPANT		BOX
OA	⟶	
	⟵	KI^1
	⟵	KI^2
1. For the Dealer side confirmation. 2. For the MBF side confirmation.		

Auction Entry Order Rejected

PARTICIPANT		BOX
OA	⟶	
	⟵	ER / TE

Dealer's Improvement Order Entry Accepted

PARTICIPANT		BOX
OI	⟶	
	⟵	KI
Note: To improve his price, the Dealer that has started the action must send an improvement order.		

Improvement Order Entry with End of Auction (no Match or Partial Match at the End of the Auction)

PARTICIPANT		BOX
OI	———▶	
	◀———	KI
	◀———	End of Auction
	◀———	NZ[1]
1. At the end of the auction for the unfilled quantity of the 'Improvement order'.		

Improvement Order Entry Rejected

PARTICIPANT		BOX
OI	———▶	
	◀———	ER / TE

Participant's Improvement Order Entry Accepted

PARTICIPANT		BOX
OI	———▶	
	◀———	KI

Matching Auction Order Against Itself

PARTICIPANT		BOX
	Order Type = InitO ◀———	NT
	Order Type = InitO ◀———	NT

Note: Both NT messages are sent to the originator of the Auction Order. This scenario occurs when the auction ends and there is still quantity left on both sides of the Auction Order. Both trades will be reported as a crossed execution (ID code for Counterpart Participant will be set to the Initiator's Participant ID).

Auction Entry Order (Client Side) Fully Executed Against an Improvement Order

PARTICIPANT		BOX
	Order Type = InitO ←	NT[1]
	Order Type = Auction Client ←	NT[2]
	←	NZ[3]
1. Sent to the originator of the Auction Entry Order (Client trade) 2. Sent to the originator of the improvement order. 3. Sent to the originator of the Auction Entry Order for the cancellation of the dealer side.		

Auction Entry Order Executed Against an Improvement Order and Against Itself

PARTICIPANT		BOX
	Order Type = InitO ←	NT[1]
	Order Type = InitO ←	NT[1]
	Order Type = InitO ←	NT[1]
	Order Type = Auction Client ←	NT[2]
	←	NZ[3]
1. Sent to the originator of the Auction Entry Order. Will be reported as a crossed execution (ID code for Counterpart Participant will be set to the Initiator's Participant ID). 2. Sent to the originator of the improvement order. 3. Sent to the originator of the Auction Entry Order for the cancellation of the dealer side.**This message may be sent before the trade notification to the dealer.**		

Auction Entry Order Executed Against a Regular Order and Against Itself

PARTICIPANT		BOX
	Order Type = InitO ←	NT[1]
	Order Type = InitO ←	NT[1]
	Order Type = InitO ←	NT[1]
	Order Type = Limit ←	NT[1]
	←	NZ[2]
1. Sent to the originator of the Auction Order. Will be reported as a crossed execution (ID code for Counterpart Participant will be set to the Initiator's Participant ID). 2. Sent to the originator of the Auction Order for the cancellation of the dealer side. T**his message may be sent before the trade notification to the dealer.**		

Entering Regular Order which Stops the Auction (1)

PARTICIPANT		BOX
OE	→	
	←	KE
	←	End of Auction
	Order Type = InitO ←	NT
	Order Type = InitO ←	NT
Note: Both NT messages are sent to the originator of the Auction Order. An Incoming Order is put in the Book; Auction Order is executed.		

Entering Regular Order which Stops the Auction (2)

PARTICIPANT		BOX
OE	———————▶	
	◀———————	KE
	◀———————	End of Auction
	Order Type = InitO ◀———	NT[1]
	Order Type = Limit or Top Order ◀———	NT[2]
	◀———————	NZ

Note: An Incoming Order is Fully Executed Against the Auction Order.
      1. Sent to the originator of the Auction Order.
      2. Sent to the originator of the Regular Order.		

Entering an Auction Entry Order Refused Because there are not Enough Market Makers on the Broker Side

PARTICIPANT		BOX
OA	———————▶	
	◀———————	ER

Re-initialization of Memory Server (After a Server Failure)

PARTICIPANT		BOX
	◀———————	NZ
Note: One message OI for each instrument for which there was an Auction at the time of the memory server failure.		

7.12   Auction Processing for Solicitation and Facilitation

Solicitation or Facilitation Auction Accepted and Traded

PARTICIPANT		BOX
OA	Special Price Term = B (Solicitation) or C (Facilitation) ⟶	
	⟵	KI[1]
	⟵	KI[2]
	Trade Type = B or C	NT[1]
	Trade Type = B or C	NT[2]
1. For the Dealer side. 2. For the MBF side.		

Solicitation or Facilitation Auction Accepted and Cancelled

PARTICIPANT		BOX
OA	Special Price Term = B (Solicitation) or C (Facilitation) ⟶	
	⟵	KI[1]
	⟵	KI[2]
XI	⟶	
	⟵	KY[1]
	⟵	KY[2]
1. For the Dealer side. 2. For the MBF side.		

7.13 Floor Trade Entry

PARTICIPANT		BOX
OA	Special Price Term = R (Floor Trade) →	
	←	KI[1]
	←	KI[2]
	←	NT[1]
	←	NT[2]
1. For the MBF side. 2. For the Dealer.		

7.14 Indication Of Interest Entry

PARTICIPANT		BOX
OE	Special Price Term = A (IndicationOfInterest) →	
	←	KE (Status Received)

7.15 Customer Cross Order

Customer Cross Order Accepted and Traded

PARTICIPANT		BOX
OA	Special Price Term = X ⟶	
	⟵	KI[1]
	⟵	KI[2]
	Trade Type = D ⟵	NT[1]
	Trade Type = D ⟵	NT[2]
1. For the Buy side. 2. For the Sell side.		

7.16 Processing of Order Exposition and Routing

Entering an Order that gets Exposed and then gets Filled in BOX

PARTICIPANT		BOX
OE[1]	IML Handling = Normal Order ⟶	
	Order Status = Exposed ⟵	KE
	⟵	NT
1. The price of the order may potentially cause a trade through.		

Entering an Order that gets Exposed and then gets routed to an Away Exchange - the order gets traded

PARTICIPANT		BOX
OE[1]	IML Handling = Normal Order ———▶	
	Order Status = Exposed ◀———	KE
	Order Status = Routed ◀———	KE[2]
	◀———	NT[3]

Note: The order is Totally Traded.

1. The price of the order may potentially cause a trade through because BOX is not at NBBO.
2. The 'Order ID' field takes a value that is different from the one sent in the previous KE Message.
3. Sent to the originator of the order for the trade done at the away Exchange.

Entering an Order that gets Exposed and then gets routed to an Away Exchange - the order gets cancelled

PARTICIPANT		BOX
OE[1]	IML Handling = Normal Order ———▶	
	Order Status = Exposed ◀———	KE
	Order Status = Routed ◀———	KE[2]
	Order Status = Cancelled ◀———	KE[3]

Note: The order is not Traded (Cancelled or Timed-out).

1. The price of the order may potentially cause a trade through because BOX is not at NBBO.
2. The 'Order ID' field takes a value that is different from the one sent in the previous KE Message.
3. The order is cancelled or not traded before the time-out period.

Entering an Order that gets Exposed and then gets routed to an Away Exchange - the order is partially traded

PARTICIPANT		BOX
OE[1]	IML Handling = Normal Order →	
	Order Status = Exposed ←	KE
	Order Status = Routed ←	KE[2]
	←	NT[3]
	Order Status = Booked or Exposed ←	KE[4]

Note: The Order is Partially Traded and Re-booked in BOX.

1. The price of the order may potentially cause a trade through because BOX is not at NBBO.
2. The 'Order ID' field takes a value that is different from the one sent in the previous KE Message.
3. Sent to the originator of the order for the trade done at the away Exchange.
4. The remaining quantity is re-booked in BOX with a new 'Order ID'. This order may be exposed a second time.

Entering an Order that gets Exposed and then Booked in BOX

PARTICIPANT		BOX
OE[1]	IML Handling = Normal Order →	
	Order Status = Exposed ←	KE
	Order Status = Booked ←	KE[2]

Note: This situation occurs when the order is no longer causing a trade through at the end of the exposition phase because the NBBO has changed.

1. The price of the order may potentially cause a trade through because BOX is not at NBBO.
2. The order is assigned a new 'Order ID'

Entering an Order that gets Exposed and then gets Cancelled (no IML Routing)

PARTICIPANT		BOX
OE[1]	IML Handling = No IML Routing →	
	Order Status = Exposed ←	KE
	Order Status = Eliminated ←	KE
1. The price of the order may potentially cause a trade through because BOX is not at NBBO.		

Entering an Order that gets Exposed and then gets routed to an Away Exchange - the order is modified

PARTICIPANT		BOX
OE[1]	IML Handling = Normal Order →	
	Order Status = Exposed ←	KE
	Order Status = Routed ←	KE[2]
OM	→	
	Order Status = Cancelled ←	KE[3]
	Order Status = Booked or Exposed ←	KM[4]
Note: The Order is Modified by the BOX Participant. 1. The price of the order may potentially cause a trade through because BOX is not at NBBO. 2. The 'Order ID' field takes a value that is different from the one sent in the previous KE Message. 3. Contains the 'User Sequence ID' of the original order, not the one specified in the order modification message. 4. The new order is re-booked in BOX with a new 'Order ID' and may be exposed a second time.		

7.17   Directed/Routed Order Processing

Participant Registering as an Executive Participant

SUBMITTING PARTICIPANT				EXECUTING PARTICIPANT
			←	RE
		KO	→	

Sending a Routed Order or Directed Order (not GDO) that gets Accepted and Transformed into a PIP Auction Order

SUBMITTING PARTICIPANT				EXECUTING PARTICIPANT
OE	SPT = Directed Order →			
	Order Status = Directed ←	KE		
		ND	→	
			←	OD
	←	KE		
		KI	→	
	←	NT	→	

Sending a GDO that gets Accepted and Transformed into a PIP Auction Order

SUBMITTING PARTICIPANT				EXECUTING PARTICIPANT
OE	SPT = Directed Order →			
	Order Status = Directed ←	KE		
		ND	→	
		NU[1]	→	
			←	OD
		NU[2]	→	
	←	KE		
		KI	→	
	←	NT	→	

1. The DO is executable against the NBBO and the EP has a quote at NBBO on the opposite side of the DO. EP's quote is shelved (no shelving for Complex Order Instrument)
2. EP's quote is un-shelved.

Sending a Routed Order or Directed Order (not GDO) that gets Accepted and Transformed into a PIP Auction Order that gets Improved

SUBMITTING PARTICIPANT			EXECUTING PARTICIPANT		
OE	SPT = Directed Order ⟶				
	Order Status = Directed ⟵	KE			
		ND	⟶		
			⟵		OD
	⟵	KE			
		KI	⟶		
			⟵		OI
		KI	⟶		
	⟵	NT	⟶		

Sending a Routed Order or Directed Order that gets Refused by the EP (not a GDO)

SUBMITTING PARTICIPANT			EXECUTING PARTICIPANT		
OE	SPT = Directed Order ⟶				
	Order Status = Directed ⟵	KE			
		ND	⟶		
			⟵		KQ
	Order Status = Exposed ⟵	KE[1]			
1. In response to the Directed Order.					

Sending a GDO that gets Refused by the EP

SUBMITTING PARTICIPANT				EXECUTING PARTICIPANT
OE	SPT = Directed Order →			
	Order Status = Directed ←	KE		
		ND	→	
		NU[1]	→	
			←	KQ
	Order Status = Exposed ←	KE[2]		
	←	NT[3]		
		NU[4]	→	

1. The DO is executable against the NBBO and the EP has a quote at NBBO on the opposite side of the DO. EP's quote is shelved.
2. In response to the Directed Order.
3. The DO trades against booked order and/or against EP's quote.
4. Any remaining quantity from the EP's quote is un-shelved and put back in the BOX book.

Canceling a Directed/Routed Order (not GDO)

SUBMITTING PARTICIPANT			EXECUTING PARTICIPANT	
OE	SPT = Directed Order ⟶			
	Order Status = Directed	KE		
		ND	⟶	
XE	⟶			
	Order Status = Cancelled	KZ		
		NC	⟶	

Note: A Directed/Routed order may be cancelled before the EP has responded and before the time-out period.

Modifying a Directed Order (not GDO)

SUBMITTING PARTICIPANT			EXECUTING PARTICIPANT	
OE	SPT = Directed Order ⟶			
	Order Status = Directed ⟵	KE		
		ND	⟶	
OM	SPT = Directed Order ⟶			
	Order Status = Directed ⟵	KM		
		NC	⟶	
		ND	⟶	

Note: A Directed/Routed order may be modified before the EP has responded and before the time-out period.

Modifying a GDO

SUBMITTING PARTICIPANT			EXECUTING PARTICIPANT	
OE	SPT = Directed Order			
	Order Status = Directed ←	KE		
		ND	→	
		NU[1]	→	
OM	→			
	Order Status = Booked ←	KM		
		NU[2]	→	
		NC	→	

Note: A GDO may be modified before the EP has responded and before the time-out period.

1. EP's quote is shelved.
2. EP's quote is un-shelved.

Sending a Directed/Routed Order to an Unregistered Executing Participant

SUBMITTING PARTICIPANT				EXECUTING PARTICIPANT	
OE	SPT = Directed Order →				
	Order Status = Booked ←	KE[1]			
Note: The Directed/Routed Order is transformed into a regular order.					
1. In response to the Regular Order. The value of the 'Executing Participant' field is deleted.					

Sending a Directed/Routed Order that gets Accepted but the DO Acceptation is Rejected by BOX (not a GDO)

SUBMITTING PARTICIPANT				EXECUTING PARTICIPANT	
OE	SPT = Directed Order →				
	Order Status = Directed ←	KE			
		ND	→		
			←	OD	
		ER/TE	→		
	Order Status = Booked ←	KE[1]			
1. The DO is transformed into a regular order and booked in BOX.					

Auction Order Submitted too Late (not a GDO)

SUBMITTING PARTICIPANT				EXECUTING PARTICIPANT	
OE	SPT = Directed Order →				
	Order Status = Directed ←	KE			
		ND	→		
		ER[1]	→		
	Order Status = Booked ←	KE[2]			
			←		OD
		ER[1]	→		
1. Error: Submission timed-out 2. In response to the Regular Order.					

Directed Order Submission Timed-out - the EP is a Market Maker

SUBMITTING PARTICIPANT					EXECUTING PARTICIPANT
OE	SPT = Directed Order →				
	Order Status = Directed ←	KE[1]			
		ND	→		
		ER[2]	→		
	Order Status = Booked ←	KE[3]			

1. In response to the Directed Order.
2. Error: Submission timed-out.
3. The Directed Order is transformed into a regular order. The Marker Maker stays connected as an EP.

7.18　Complex Order Instrument Creation

Complex Order Instrument Creation Accepted

PARTICIPANT		BOX
ON	→	
	Creation Status = C ←	KN

Note: The Complex Order Instrument either already exists or does not exists prior to send the creation request.

Complex Order Instrument Creation Accepted with modifications

PARTICIPANT		BOX
ON	⟶	
	Creation Status = M ⟵	KN
Note: A similar Complex Order Instrument already exists (ex.: Complex Order "A+2B" exists and participant is requesting "5A+10B" to be created).		

Complex Order Instrument Creation Rejected

PARTICIPANT		BOX
ON	⟶	
	⟵	ER
Note: One of the leg does not exist or one of more field values provided are invalid.		

7.19 Complex Order Processing

Complex Order that gets partially Traded and the remaining unfilled quantity is Booked (with Exposure)

PARTICIPANT		BOX
OE	IML Handling = 3 ⟶	
	Status = P (Exposed) ⟵	KE
	1 for the Complex Order ⟵	NT
	2 to 4, one for each individual leg of the Complex Order ⟵	NL
	Status = " "(Booked) ⟵	KE

Complex Order that gets fully Traded (with Exposure)

PARTICIPANT	BOX
OE IML Handling = 3 ———▶	
Status = " "(Booked) ◀———	KE
1 for the Complex Order ◀———	NT
2 to 4, one for each individual leg of the Complex Order ◀———	NL

Complex Order that gets Booked (no Exposure)

PARTICIPANT		BOX
OE IML Handling = 6 ——▶		
	Status = " "(Booked) ◀———	KE

FAK (IOC) Complex Order that gets Exposed and then Cancelled

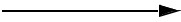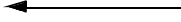| PARTICIPANT	BOX
OE IML Handling = 3 Duration Type = E (IOC) ———▶	
Status = P (Exposed) ◀———	KE
Status = E (Eliminated) ◀———	KE

7.20 Complex Order Trade Processing

Manual Complex Order Trade Cancel by BOX MOC

PARTICIPANT		BOX
	2 to 4, one for each individual leg of the Complex Order	NX
	1 for the Complex Order	NY

7.21 Preferenced Order Processing

Preferenced Order Entered with a Market Maker

PARTICIPANT		BOX
OE	SPT = Preferenced Order or Empty, EP = MM $\longrightarrow$	
	$\longleftarrow$	KE

Preferenced order Entered without a Market Maker

PARTICIPANT		BOX
OE	SPT=Preferenced Order, EP is Empty $\longrightarrow$	
	Status = Syntax Error $\longleftarrow$	ER

7.22 Lock-Out Indication Notification

Lock-Out due to Exceeded Limit or Initiated by MOC

PARTICIPANT		BOX
	$\longleftarrow$ Trader, Trader Lock-Out	MU

Trader Lock-Out Initiated by Participant

PARTICIPANT		BOX
GZ	———————▶	
	◀———————	KG
	◀—————— Trader, Trader Lock-Out	MU

7.23   Quality Market Maker Notice

QUALITY MARKET MAKER	PARTICIPANT		BOX
		——————▶	
	◀——————		NQ

Appendix A Clearing

This section aims to inform BOX Options Participants of the procedures to be followed so that information related to trades is transmitted properly to The Options Clearing Corporation (OCC). This appendix should be used in conjunction with the TMS-BX-06E SOLA® TMS User Guide. It is to be noted that the purpose of this appendix is not to define the Clearing procedures at OCC. Participants should communicate with their OCC Representative for all questions pertaining to the Clearing procedures at OCC.

A.1 BOX and OCC

All options traded on BOX are cleared by the OCC. As such, BOX traded options are fungible with those traded on other US equity options Exchanges. All trade information is transmitted to OCC by BOX at the end of each business day and is made available to Options Participants on OCC Interfaces at T+1.

A.2 Clearing Identification and CDCC

In order for option trades to be processed properly under the appropriate Clearing Member at OCC, BOX Options Participants must provide BOX with their OCC Clearing Member name and number.

BOX will configure this information as being the default OCC Clearing Member Number.

At the order entry level, if BOX Options Participants omit to specify the Clearing Member information, BOX will assign the default OCC Clearing Member Number configured for the BOX Options Participant.

A.3 Market Makers Clearing

Market Makers are those Options Participants who have applied to be a Market Maker on BOX and have been allocated market making appointments by BOX (i.e., assigned the rights and responsibilities of making markets on options classes).

OCC will process and post the Market Maker options trades only if the Market Maker sub-account acronym is defined in the OCC Clearing system.

A.4 Trader ID

The Trader ID is a unique identifier created by BOX to identify each BOX Options Participant connected to BOX. The Trader ID is created from the Options Participant's Firm ID defined in BOX. The Trader ID is 8 digits. The first 4 digits are reserved to identify the participant; the 4 last digits identify the trade.

Example:

> Brokerage International Inc.
> MX Participant ID: 9999
> Trader ID: 9999SA1_

The Trader ID is attached to all messages sent to BOX by Options Participants.

One Trader ID is defined for each BOX Market Making participant. Each BOX Options Participant can have more than one Market Maker who uses the same Trader ID. The Market Maker sub-account acronym will differentiate one Market Maker from another.

A.5 Pre-Trade Clearing

At the order entry level (Pre-trade), Market Makers can specify, in the Client account number field, a reference to their clearing information. This information will be transmitted to CDCC by MX.

Market Maker Sub-Account Acronym

At the order entry level (pre-trade), Market Makers can specify, in the Client account number field, a reference to their clearing information. This information will be transmitted to OCC by BOX.

Example:

> Brokerage International Inc.
> BOX Participant ID: 999
> Market Maker sub-account acronym: XX2

OCC Market Maker Eligibility Paperwork

In order for trades to be processed properly under the Market Maker account at OCC, it is a prerequisite that Market Maker sub-account acronyms be defined with OCC. To do so, the OCC Market Maker eligibility paperwork must be completed and transmitted to OCC. If this is not completed, the Market Maker trades will be posted in the Customer account of the Options Participant OCC Clearing Member Firm and the positions will not be netted.

At the order entry level (pre-trade), the Market Maker sub-account acronym must be entered in the Client Account Number field.

BOX Recommendation: It is highly recommended that Market Makers have their sub-account acronyms automatically configured in their application in order to prevent any trade posting errors.

A.6 Customer and Proprietary Clearing

Customer and Proprietary Clearing are described in the following sections.

Pre-Trade Clearing

At the order entry level (pre-trade), traders may specify, in the appropriate order entry field, the clearing information for Customer and Proprietary trading, such as CMTA, Giveup, and account number. This information will be transmitted to OCC by BOX at the end of the trading day.

BOX Options Participants using the protocol need to enter their clearing account number identification in the Client Account Number field at the order entry level (pre-trade). This reference is mapped to the right clearing information and is controlled through the TMS application.

If no information is provided at the order entry level, the default OCC Clearing Account Number configured for the Trader ID specified in the order is used.

Post-Trade Clearing

All clearing information on Customer or Proprietary trades can be modified through the Trade Management Software (TMS) on same day trading (T0) or through the OCC system on T+1. BOX Options Participants must refer to the TMS User Guide for instructions on how to modify trade information on TMS.

Trade Allocation

Trade Allocations and GiveUps can be executed through the TMS application. Participants must refer to the TMS User Guide for instructions on how to allocate trades using TMS.

Clearing Member Trade Assignment (CMTA) and Give-up. The CMTA and Give-up Agreements are electronic agreements that are completed via the OCC Clearing system. Participants are offered two alternatives to effect clearing assignment of their BOX trades to their OCC Clearing Members of choice.

- At order entry, BOX Options Participants who are using the protocol can flag an order for CMTA and/or Give-up transfer by specifying the OCC Clearing Member ID and account of the targeted broker-dealer in the 'Clearing Destination field' (value 'C' for CMTA, 'G' for Give-up and 'I' for both). The trade will then be transmitted to OCC with this clearing information.
- CMTA and/or Give-up can be executed through the TMS application. Options Participants must refer to the TMS User Guide for instructions on how to allocate trades on TMS.

All CMTAs and Give-ups will be validated at OCC. Invalid CMTAs and Give-ups will be treated by OCC in accordance with their applicable policy. BOX does not verify the validity of the CMTA and Give-up indication.

Appendix B Connection Types

Each BOX Participant is assigned a Participant ID. Two types of entities are found under each Participant ID:

- **Connections**: Connections are entry points to the SOLA Front-end. There are several Connection types each of them allowing different types of messages. A participant can have several connections depending on his needs.
- **Traders**: Traders represent logical persons or groups of persons owning orders entered in the BOX Trading Book. Traders do not need to log on (they may do so optionally) and may use any Connection of the Participant to which they belong. Trading privileges (such as market making) are assigned at the Trader ID level.

One or more trader IDs will be assigned to each participant according to BOX policy. Each participant will be issued a single Participant ID. Participants will have multiple connections, assigned according to the policy outlined in the following sections.

B.1   Connection Implementation

Connection types on BOX are implemented by the use of specific User IDs related to each type. Specifically, the format of the individual User ID is:

####99TT

Where:

- #### is replaced by the Participant ID assigned to the Participant
- 99 is replaced by an incremental number identifier starting at 01
- TT is the two letter acronym identifying the connection type (OR, IO, BQ, BE, PQ, EP or OL)

Connections are characterized by the different SAIL messages each will accept. Table 2: relates all message types available to participants to one or more connection type.

The first message that must be sent for a connection is a TECHNICAL CONNECTION message (Message Type TC) where the Client must set the appropriate User ID.

The different connection types available on BOX are:

- OR: Regular order management, PIP Auction Orders and Improvement of the Auction Order price
- IO: Improvement order on behalf of a customer with an order at NBBO; PIP Auction Orders and Improvement of the Auction Order price.
- BQ: Bulk Quoting
- BE: Bulk Quoting and Executing Participant activity
- PQ: Global Cancellation
- EP: Executing Participant activity excluding Auction Order entry, which is done through the Broker/Agency Regular Order connection.

Any Client placing a message not supported by a given connection will receive an ERROR (Message Type ER) message with the appropriate error code.

Table 2:   Message Types Vs Connection Type

SAIL MESSAGE	OR	IO	BQ	BE	PQ	EP
Order Entry (OE)	✓					
Order Modification (OM)	✓					
Order Cancellation (XE)	✓					
Request For Quote (RQ)	✓		✓	✓		
Bulk Quotes (Qi, BD, RP)			✓	✓		
Global Cancellation (GC)			✓	✓	✓	
Auction Order Entry (OA)	✓	✓		✓		
DO Acceptation Entry (OD)				✓		✓
Improvement Order Entry (OI, XI)	✓	✓		✓		✓
Market Maker Protection Subscription (RP)			✓	✓		
EP Connection Setup (RE, RF)				✓		✓
Directed/Routed Order Rejection And Quote Resubmit (KQ)				✓		✓

B.2   Connection Availability

All Participants

Each participant will be issued one connection of the OR type.

Agency Trading

In addition to the OR connection described in Connection Implementation above, Participants engaging in Agency trading will be issued an IO connection for use with the PIP Auction Order Entry (OA) and Improvement Order Entry (OI) messages.

Note: The use of the Improvement Order Entry message (OI) for Agency trading is limited to defined circumstances and must be sent down this connection if used. Participants intending to use only the Auction Entry message for PIPs (OA) may choose to send these down the OR connection rather than implementing the IO connection.

Market Makers

In addition to the OR connection described in Connection Implementation above, each market making participant will also be issued one connection of the BQ and PIP type. Market Makers who will be acting as Executing Participants will be assigned a BE connection instead of the BQ connection.

Market Makers may also request a PQ connection designed specifically for sending GLOBAL CANCELLATION (Message Type GC) messages. This connection provides Market Makers with a way to pull their quotes out of the market instantly. However, to avoid synchronization issues, it is highly recommended that the PQ connection be used in conjunction with the Advanced Market Maker Protection.

Executing Participants

Non-Market Maker Participants who take on the responsibilities of an Executing Participant (EP) for Directed Orders (see Section Directed Orders in Support of PIP) will be issued a separate EP connection for their EP activity, including DO Acceptation (OD).

Appendix C Acronyms & Definitions

Acronyms

TERM	DEFINITION
CMTA	Clearing Member Trade Assignment
FIX	Financial Information Exchange
IML	Inter Market Linkage
IOI	Indication of Interest
MBF	Must Be Filled
OCC	Options Clearing Corporation
OLA	Options Linkage Authority
QOO	Qualify Open-Outcry
TMS	Trade Management Software
TOP	Theoretical Opening Price

Definitions

TERM	DEFINITION
Participant	Firm that has one or several traders who can trade in BOX through one or several connection
Client	A computer system able to interact with the BOX electronic trading platform and to support the specific range of functionality required by the firm's trading activities
Connection	A Connection is a physical link between the Client and BOX A Participant may have multiple connection (see Appendix B for details)
Floor Broker	A Broker on the Trading Floor that interacts in a QOO Can take part of the InitO quantity
Floor Market Maker	A Market Maker on the Trading Floor that interacts in a QOO Can take part of the InitO quantity

TERM	DEFINITION
Group	Or Instrument Group: Refers to all instruments with the same underlying
IOI Distribution Message	Message for the Floor Broker to communicate to the exchange the distribution of this IOI-Order in a specific QOO Order
IOI Order	Type of order entered by a Floor Broker to indicate interest to participate in QOO
QOO Distribution Message	Message for the QOO Initiator to communicate to the exchange the distribution of the QOO Order among all other Floor Brokers
QOO Initiator	A Floor Broker that has created the QOO (the InitO)
QOO MBF	Must-be-filled Participant in the QOO
QOO Order	A Floor Trade Entered in the exchange
SAIL	SOLA Access Information Language ASCII based protocol describes functions to be performed by BOX as well as market events and notifications
MOC	Market Operation Center which is the entity responsible for monitoring and regulating the BOX market
Trader	Owner of Orders and Quotes that are sent to the BOX Trading System Several Traders can use the same connection to send messages to the Exchange. Trader Identifier must be present in all Business messages sent to BOX
Unrelated Participant	An unrelated participant on the Trading Engine Book that took a part of the QOO Initiator's quantity Generally a Public Customer, but other AccountTypes can be part of the trade if they offer a better price or if they have priority over a Public Customer on the Book

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