



NYSE Liffe

Guide to Electronic Trading

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Preface

This document provides a guide to trading on LIFFE CONNECT® for NYSE Liffe. The document describes the functionality available to traders but is not designed to be a user guide. For specific operating instructions, refer to the reference documentation of your Independent Software Vendor (ISV) or internal client application.

Some functionality listed in this document will not be available for all contracts on the NYSE Liffe market. Members should refer to the relevant Trading Procedures, Contract Specifications or Exchange Notice for details of Contract set up. Additionally, Client Applications may not provide the full functionality available. Check with your Independent Software Vendor (ISV) or internal Client Application administrator for functions supported by your Client Application.

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1. Introduction

1.1 Functional Overview

LIFFE CONNECT® is a leading global derivatives trading system, offering low latency, high flexibility and advanced functionality to its global customer base.

Trading on LIFFE CONNECT® takes place by submitting an order, via a trading application (front-end software), into the LIFFE CONNECT® central order book.

Having received the orders, the LIFFE CONNECT® Trading Host then matches them in the central order book (this is an electronic representation of the market place) where the criteria for determining trade priority is dependent on the contract being traded.

As a trader, you have the ability to revise your orders and orders may be withdrawn at any time, either individually or as a block.

After a trade has been executed on LIFFE CONNECT® trade details are sent to the post-trade processing and clearing systems.

2. Access via the LIFFE CONNECT® API

Participation in the LIFFE CONNECT® market is dependent upon market access and data requests made via the LIFFE CONNECT® API.

2.1 Log On/Log Off

2.1.1 ITM Log On

To access LIFFE CONNECT® it is necessary for a user to log on via an Individual Trader Mnemonic (ITM) and API call. This call establishes a session on the Trading Host for the Individual Trader Mnemonic in question. The Individual Trader Mnemonic is authenticated by the use of a cryptographic key and password. The logon call returns the ITM's privilege level. Some ITMs may have a 'View' privilege, where they can request information only.

Specifically, ITMs with a 'View' privilege can use any API call with the exception of:

- Those related to trading and order handling.
- The call to Retrieve Orders.

Logon attempts are refused while the Trading session is closed or while Market Operations deny logon to specific ITMs. An appropriate error status is returned for each case. In order to protect the Trading Host from multiple failed logons, the Gateway will stop forwarding ITM logon requests to the Trading Host after a configurable number of failed logins. The Gateway will continue to stop failed logons for a configurable period of time.

An appropriate error status is returned when the maximum logon attempts has been reached. This is counted on a per ITM session basis, so failed logons made by one ITM will not affect the ability of other ITMs to logon.

2.1.2 ITM Log Off

This call closes the ITMs session on the Trading Host and pulls all orders except those which have been either successfully handed over to a replacement trader or have been entered as GTCs.

2.1.3 User Log Off

Depending on the implementation of the client application it is possible for users to log off of their local application while keeping the ITM logged in to LIFFE CONNECT®. In this scenario the users day orders would not be affected.

2.2 Market Data Functions

2.2.1 Automated Market Reference

Automated Market References (AMR) are used to uniquely identify each possible outright and strategy market. The Client Applications use API calls to request outright and strategy standing data information, which will detail the AMR values and consequent market definitions.

The **Exchange Data** function is used to retrieve a list of all valid exchange codes. A separate exchange code may be used for each different type of contract, such as equity and index options, financial futures and options, commodity options, etc.

This should be the first function call that a user makes at the beginning of a new trading session when retrieving LIFFE CONNECT® standing data for their Client Application. The returned list of valid exchanges can then be used to construct requests for contract data, made using the Contract Data function.

The **Contract Data** function is used to retrieve a list of all valid tradable contracts for a given exchange code. This function is used immediately following the retrieval of exchange codes using the Exchange Data call.

The Exchange Code, Physical Commodity Code and Generic Contract Type returned for each contract can then be used to construct requests for expiry month and strategy data for a contract, made using the Contract Month Data and Strategy Data functions.

The **Contract Month Data** function is used to retrieve a list of all valid tradable expiry months for a given contract. This function is used following the retrieval of valid contract data using the Contract Data function.

The Exchange Code, Physical Commodity Code, Generic Contract Type and Expiry Date returned for each expiry month can then be used to construct requests for individual outright market data for an expiry month, made using the Market Data function.

The **Market Data** function is used to retrieve a list of all valid outright markets for a given expiry month. This function is used following the retrieval of valid expiry month data using the Contract Month Data function. This also includes the AMR value for the outright market.

2.3 Market Information Functions

2.3.1 Subscription

Client applications must allow a user to subscribe to a market, using a Subscribe to Market call, before any market information can be forwarded to them. Subscribers will then receive market mode changes for any individual market to which they have subscribed.

In addition, client applications can subscribe independently to any of the following optional streams of information within the above levels. The streams are:

- RFQ stream - To receive Request for Quote (RFQ) calls.
- Best Price stream - To receive Publish Market Information, Publish Implied Market

- Information and Publish Strategy Market Information calls.
- Market Depth stream - To receive a Market Depth update, followed by Order Book
- Update calls.
- Market Data stream - To receive Indicative Prices, Deltas, Volatilities and Interest Rate calls from the Market Data Interface.

A user can submit orders or RFQs to any market and receive trade confirmations on any orders without subscribing to the market in question.

2.3.2 Market Update

A Client Application, which subscribes to the Market Depth stream of information for a market, immediately receives the price, side of the market (buy or sell) and new residual volume of any change to explicitly quoted prices/volumes in the central order book. The change may be due to a new order submission, a withdrawal, an order revision or a trade. This enables Client Applications to continuously track market depth. The updates will be disseminated for all products from the time they enter Pre-Open until they close.

2.3.3 Market Depth

The Client Application, using the API, may request market depth information from the Trading Host. The call requests all explicit prices, and related aggregate volumes, available for buy and sell orders of a specified expiry month, series or explicit strategy market.

Client Applications can continuously track market depth by updating the initial market depth information with the Order Book and Market Update information provided on subscribing to a market. Therefore, depending on the design of a Client Application, a trader will be able to view market depth on any chosen market.

2.3.4 Retrieve Orders

By using a Retrieve Orders call, a Client Application can retrieve current details of either of the following from the Trading Host:

- The trader's GTC orders in the Central Order Book (including Persisted MOOs).
- The trader's non-GTC orders that were withdrawn from the Central Order Book at the point of a Client Application failure (on reconnection, during the same Trading Day).

A call parameter is set to determine which details are returned. A trader session need not be subscribed to a market to retrieve orders in that market.

2.3.5 Retrieve Trades

By using a Retrieve Fills call, an ITM is able to retrieve a record of all trades that have been filled that day under that ITM, including all ex-pit trades. This call is only intended for use when an ITM logs on – it should not be used by an ITM more than once in a single login session.

The call returns Trade ID, Trade Status, Trade Price, Trade Volume and Buy/Sell indicator for all filled trades. It will also return an Order ID for all orders that resulted in each filled trade,

and a record of any residual volume left in those orders. For strategy orders the overall strategy price as well as the outright leg prices will be returned. The Trader Card Reference field identifies the actual trader the fill belongs to, this may be useful when several traders submit business through the same ITM. The trade status identifies whether the order is active or has been deleted or cancelled or effectively revised due a deletion, by Market Control.

The response to the Retrieve Fills call will include a timestamp to indicate the time of the original fill and another to indicate the time of the fill response.

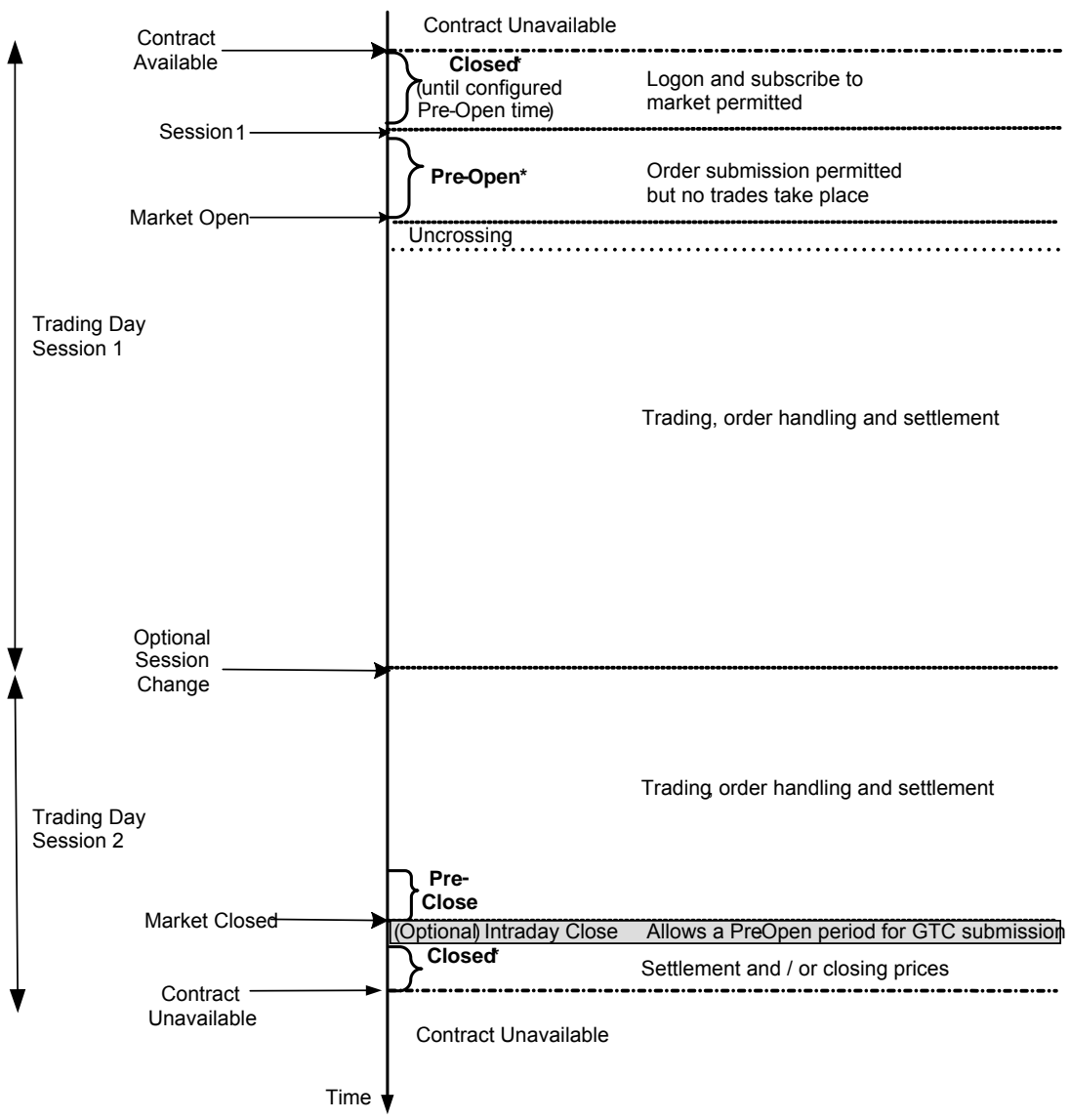
3. Trading

3.1 Periods of the Trading Day

The 'trading day' is separated into a number of distinct periods, known as market states and can be configured to automatically occur in the following order:

- Host Inaccessible
- Day Start
- Pre-Open
- Open
- Pre-Close
- Close
- Pre-Expire (set at month level)
- Expire (set at month level)
- Day End

The following diagram illustrates a possible configuration of the trading day:



Settlement and closing prices can be published at anytime between Pre-Open and Market Close.

3.1.1 Day Start

LIFFE CONNECT® becomes available prior to the start of trading for any contracts. At this time, a Client Application can initialise the API, log on and request and receive standing data for all contracts. The client will receive notification when contracts become available for trading.

The client can subscribe to any contracts that are available for trading. A trader must have trading or subscription rights in order to subscribe to a particular market.

When contracts become available, they are initially in the Closed state. No orders can be submitted in a Closed market. Good Till Cancelled (GTC) orders that have been retained by the Trading Host from the previous trading day are returned to the market and can be revised or pulled, with the exception of delta neutral orders and expired GTCs.

3.1.2 Pre-Open

At the start of Pre-Open, the Trading Host sends a market mode message to all the participants who have subscribed to a market indicating that Pre-Open has started.

During Pre-Open, the Client Application can use the functions provided by the API, including those used to submit, revise, pull orders and create strategies.

Traders may enter the following order types into the Central Order Book for both outright and strategies during this period:

- Market On Open (MOO) orders. These can only be submitted during Pre-Open.
- Limit orders (including Good Till Cancelled and Good in Session orders but excluding orders with IC, MV or CV permitted modifiers).

Order matching will not take place during Pre-Open, this only occurs in the Open state. In addition, some ex-pit trade types which have been configured to allow trading outside normal market hours are allowed in Pre-Open, although these trades do not appear in the Central Order Book.

As the Trading Host receives orders, changes to the best buy/sell prices and volumes, and to any other orders in the Central Order Book, are transmitted to subscribed traders when they occur. In addition, indicative opening prices and volumes are calculated for each outright market and are transmitted to subscribed traders at regular intervals. These intervals can be configured on the Trading Host for each individual market.

3.1.3 Open

This is the main trading state. The time of opening may be configured separately for each contract, but all months within a contract will open at the same time.

At the start of Open for each contract, there may be backwardation or choice markets in some markets, in other words bids higher than or equal to offers. When this occurs the Trading Host runs an uncrossing algorithm to calculate the price at which the maximum volume will be traded and automatically execute those trades at the price calculated. Any orders that are executed using this approach will be traded at a price equal to or better than that at which they were entered. Market On Open orders (MOO) are processed as part of the uncrossing process.

During the Open period, the Client Application may use any of the API functions, for example:

- Submission, revision and pulling of orders
- Receipt of settlement prices
- Ex-Pit orders
- Request for Quote
- Strategy creation and trading.

3.1.4 Pre-Close

Shortly before the close of trading in a product, the Trading Host sends a market mode message to all participants who have subscribed to a market indicating that Pre-Close has started. This message is issued two minutes before the end of the trading session for each product. This message is designed to warn members that the market is about to close.

During Pre-Close, the Client Application can use any of the functions provided by the API that are available during Open.

3.1.5 Close

At the beginning of Market Closed, all orders, with the exception of GTC orders, are automatically deleted from the Central Order Book. If extended ex-pit trading is not enabled, ex-pit trade intentions are also deleted.

During Closed, no further orders are accepted into the Central Order Book. Traders can revise or pull their GTC orders until the End of Day.

Closing prices are usually published during the end of day Closed period.

3.1.6 Day End

The Trading Host becomes inaccessible after all the markets are closed. At this time, all GTC orders are removed from the market and stored by the Trading Host until the next trading day. Connected APIs are notified that all contracts for the inaccessible Trading Host are no longer available.

At the end of the day, the LIFFE CONNECT® system will become Inaccessible and automatically log out all market participants.

3.1.7 Expiry

At Expiry, all trading in the expired month ceases and no further orders are accepted by the Trading Host. All orders, including GTC orders are automatically deleted and strategy markets which incorporate the expired month as a leg are suspended. All orders within these markets are deleted.

Expiry is similar to the Closed state but it is set on an individual month level as opposed to contract level.

3.1.8 Changes to the Trading Day

NYSE Liffe reserves the right to change the trading times within a specific trading day, for example on public holidays.

3.2 Market Attributes

The following market attributes are available for Market Operations to use during most of the market states:

- Price Limits

- Suspend

Each of the attributes can be applied at the same time as the other attributes and they can interact with the markets states that occur between Day Start and Market Close.

3.2.1 Price Limits

During any of the trading states, Market Operations can enable or disable price limits on a month or product basis. This prevents the Trading Host from carrying out any price limit checks on any order that is submitted into the market.

3.2.2 Suspend

At any point during the trading day Market Operations can use the suspend attribute at the following levels:

- Product Group
- Product
- Expiry month
- Market

The result of using the suspend attribute is that all the orders in the suspended market are pulled including GTCs. No trading activity is permitted until the suspend attribute is removed.

3.3 Trading Day Messages

3.3.1 Market Modes

Market mode changes may be notified for a product, an expiry month or an individual outright or strategy market. If a market mode change is transmitted for a product, this indicates that all individual outright and strategy markets in that product have changed. If a market mode change is transmitted for an expiry month, this indicates that all individual outright markets in that expiry month, and all strategy markets with at least one leg in that expiry month, have changed. The Trading Host will send out the strategy market modes separately. Wherever possible, the Trading Host will transmit market mode changes for products or expiry months (depending on the level of subscription), rather than individual markets, in order to reduce the volume of transmitted messages.

4. Orders

4.1 Order Management

4.1.1 Anonymous Order Book

Trading Anonymity is a key aspect of trading on LIFFE CONNECT®. ITMs will not be aware of whose orders they are viewing or trading against, either pre or post trade.

At all times, LIFFE CONNECT® ensures that the best possible price is achieved for any business placed in the market, in the fairest manner to all market participants.

4.1.2 Submission

Client Applications provided by ISVs or Member Developers submit orders to the LIFFE CONNECT® Trading Host via the API. The Trading Host maintains a central order book for the entire market and matches orders when appropriate.

4.1.3 Revision

The Revise Orders function allows a trader to amend volume, price and GTC expiry date for single and batch orders. If the volume of an order is increased or its price is changed, the order will lose its original time-stamp and be re-stamped with the current time. A reduction of volume or amendment to GTC expiry date will have no effect on the original timestamp. No other order parameters (including clearing data) can be revised after submission, so if an order needs to be changed it must be pulled and re-submitted.

The originating user or their replacement ITM can revise orders even if he/she is not subscribed to the market in question.

Ex-pit orders cannot be revised after they have been submitted.

4.1.4 Pull

Once an order has been stored in the Trading Host's central order book, it can be withdrawn (pulled) using a Pull Orders call. The Client Application may withdraw orders specified by the unique Order ID or as a block consisting of:

- Individual orders for a given list of Order IDs.
- All orders in a given futures or options product.
- All put or call orders for a given options product.
- All orders in a given expiry month for a given futures or options product.
- All orders in a specific futures or options outright or strategy market.

The block pulls described above also pull the strategy orders affected. The originating trader can pull orders even when not subscribed to the market in question.

Ex-pit trade orders cannot be pulled after they have been submitted. However, a message will be transmitted to the submitting trader if an ex-pit order is rejected by the Exchange.

4.1.5 Batch

Batch Order functionality enables traders to perform batch order operations within a single order message in the same product, as follows:

- batch submission – up to 16 orders;
- batch revision – up to 64 orders; and
- batch withdrawal – up to 64 orders.

When using batch order functionality, traders are not permitted to submit orders or revisions which would result in other orders in the batch matching, i.e. it is not permitted to use batch orders as a mechanism for cross transactions.

When processing batch order revisions, the Trading Host will revise lower bids and higher offers first in order to avoid the possibility of a revision trading against a resting order which is pending revision.

No account is taken of crossing resulting from the generation of implied orders within the batch. Such crossing is possible given that there is no restriction on the mix of orders for outright and strategy markets in the batch.

4.1.6 Nominate Replacement Trader

An Individual Trader Mnemonic (ITM) may nominate, using their Client Application, a replacement Individual Trader Mnemonic.

The replacement ITM must be a valid ITM within the same member firm as the nominating ITM.

4.1.7 Handover to Replacement ITM

Using their Client Application, an ITM may choose to handover all non-GTC orders to the nominated replacement. The nominating ITM will then be logged off. Any orders transferred in this manner will retain their original timestamp. GTC orders will remain in the system against the nominating trader's ITM.

Note: The Trading Host will not retain a record of the original ITM who submitted the order. The nominated ITM must be logged on to LIFFE CONNECT® in order to receive the orders. If an ITM attempts to log-off and transfer their orders when a nominated replacement is not logged on, the Trading Host will issue a warning before allowing log-off to continue. An ITM is able to nominate a replacement ITM at any point during the trading day from Day Start through to Day End, but order transfer can only occur during Pre-Open and Open.

In the event of a failure of the Client Application at the ITM level, or of the network link from the ITM Client Application to the Trading Host, the Trading Host will automatically transfer any existing non-GTC orders to the nominated replacement ITM, if one exists and is logged on.

4.2 Order Modifiers

The following permitted modifiers are available on LIFFE CONNECT®:

4.2.1 Minimum Volume (MV)

Minimum Volume orders are only executed if there is at least the minimum volume available, at the stated price or better. If not, the whole order is cancelled. Any residual volume from a partially executed minimum volume order is retained in the central order book.

4.2.2 Complete Volume (CV)

Complete Volume orders are only executed if there is sufficient volume available, at the stated price or better, for them to execute fully. Otherwise the entire order is cancelled.

4.2.3 Immediate & Cancel (IC)

Immediate and Cancel orders are executed against any existing orders at the stated price or better, up to the volume of the IC order. Any residual volume from the IC order is cancelled.

4.2.4 Order Modifier Usage

The following table details the permitted order modifiers that can be specified with price and volume for limit and market orders:

Order Type		Price	Volume	MV	CV	IC
Limit	Standard	✓	✓	✓	✓	✓
	MMO	✓	✓	X	X	X
	RFQ	✓	✓	✓	X	X
	GIS	✓	✓	✓	X	X
	GTC	✓	✓	✓	X	X
	Clip	✓	✓	X	X	X
Market	Standard	X	✓	✓	✓	X
	CMO	✓*	✓	X	X	X
Ex-Pit	Asset Allocation	✓	✓	X	X	X
	Block	✓	✓	X	X	X
	Prof	✓	✓	X	X	X
	Basis	✓	✓	X	X	X
	Against Actuals	✓	✓	X	X	X

Order Type		Price	Volume	MV	CV	IC
	Guaranteed Cross	✓	✓	X	X	X
Stop	Limit	✓	✓	✓	✓	✓
	Market	X	✓	✓	✓	✓
Market on open	Standard	X	✓	X	X	X
	Persisted	X	✓	X	X	X

*For a Limit component, price and volume; for a Market component just the volume can be submitted.

4.3 Limit Orders

4.3.1 Normal

Limit orders are executed at the price stated or better. Unless otherwise specified, any residual volume from an incomplete Limit order is retained in the central order book until it is withdrawn, traded or until the end of the trading day. The price and volume of a Limit order must be specified.

In the event of a Trading Host failure or market closure, all limit orders will be automatically pulled from the central order book with the exception of GTCs which are stored by the Trading Host. In the event of a failure of the Client Application at the ITM level, or of the network link from the ITM Client Application to the Trading Host, the Trading Host will automatically cancel any existing non-GTC orders unless a nominated replacement ITM exists and is logged on.

4.3.2 Good Till Cancelled (GTC)

GTC orders remain in the central order book until:

- they trade
- they are withdrawn by the submitting trader,
- the expiry month expires, or
- the order expires.

GTC orders can be given an expiry date and are valid until the end of trading on that date. If no date or a date beyond the expiry date is specified, the order will be valid until the month or market expires.

GTC orders are available in all trading periods but not when the Trading Host is inaccessible. GTC orders retain their original timestamp when they are returned by the Trading Host for the next trading day.

All GTC orders in options delta neutral strategies are pulled by the Trading Host at the end of the trading day and are not returned for the following trading day.

The original timestamp is used to ensure that the Trading Host returns orders in the correct time sequence. This is important when calculating the priority of order for the trading algorithms.

4.4 Market Orders

4.4.1 Normal

Market orders are executed at the best price available in the order book when the order is received until all available volume at that price has been traded. If not, the order executes at the next best price and so on, until all the order volume has been used. A market order will not trade outside the price limits. Any residual volume from an incomplete market order is cancelled. Market orders are rejected if the market is not open.

4.4.2 Market on Open (MOO)

MOO orders are only accepted during Pre-Open and are intended for execution at the opening market price. MOO orders will be executed by the Trading Host after the uncrossing of Limit orders in the market at open.

During uncrossing all MOO buy orders will be matched against MOO sell orders at the MOO opening market price (typically the uncrossing price). Following this, any residual MOO volume is automatically converted to Limit orders at the MOO opening price and may then be executed against suitable Limit orders that remain in the market following earlier stages of uncrossing. If residual volume still remains, it will be retained in the Central Order Book until it is withdrawn or traded, as is the case for a normal Limit order. If there is no calculated uncrossing price, all MOOs will be pulled.

It is possible to add a GTC modifier to a Market on Open order ("Persisted MOO") causing the MOO to be converted to a GTC Limit order. If an expiry date is also submitted with the order, the resultant GTC limit will persist until that date. If no expiry date is entered the GTC Limit will persist until the expiry date of the contract.

During Pre-Open the originator can view the volume submitted to the market but not the price of Market On Open orders. The Trading Host does not disseminate this information to the market.

4.4.3 Stop Orders

A Stop order is an order type which is submitted into the Trading Host but is not submitted into the Central Order Book until a specified price level, called the trigger price, has been reached. When this price is reached, indicated by an explicit outright trade at the trigger price, the order is time stamped and submitted into the Trading Host as a normal order, according to the order parameters set. A Stop order can be submitted as either a Limit or Market order; all order modifiers are valid.

A Stop can only be submitted into an outright market, during normal order submission market states, specifically Pre-Open and Market Open.

A Stop order cannot be submitted as part of a CMO or as a Market On Open order.

4.4.3.1 Stop order submission

In order to minimise the possibility of crossed Stop orders during open, the Stop order trigger price will be validated against the market reference price, which will be set to the Indicative Market Price (IMP) for Futures and the AQS option value for options. A bid Stop order will be rejected if the trigger price is below the current reference price, an offer Stop order will be rejected if the trigger price is above the current reference price.

A Stop order will not be validated against price limits, both Daily and Dynamic upon order submission. However this order will be validated against price limits upon order activation.

4.4.3.2 Stop order activation

All Stop orders will be activated when an outright trade occurs at the trigger price or better within the outright market which the Stop is resting. Ex-pit trades and strategy leg prices will NOT activate a Stop order.

Upon Stop activation the Stop order is validated against price limits and submitted into the Central Order Book, at which point it is timestamped.

Upon activation the Stop order will be submitted into the Central Order Book in a priority queue ahead of all incoming orders. The Stop order will be converted according to the price type specified as well as any order modifiers.

4.4.3.3 Stop Order Trading

A Stop order can be triggered either upon market opening or during market open. In both cases it is possible to trigger multiple Stop orders at multiple prices on both the bid and offer side of the market.

Stop order trading during market open

Stop orders are not activated until all processing associated with the incoming trade is completed. This means, should an incoming market or limit order trade through depth, multiple Stop orders could be activated.

Should multiple Stop orders be activated during market open they will be submitted into the Central Order Book in the following order:

- Submit Bid Stop orders, according to best Stop Trigger Price, according to timestamp.
- Submit Offer Stop orders, according to best Stop Trigger Price, according to timestamp.

Example: Multiple Stops on Bid and Offer, at multiple price levels

Assume the following explicit (limit) orders are in the market:

Trader	Bid	Offer	Trader
		2832 (10)	Trader 9
		2830 (10)	Trader 8
		2827 (10)	Trader 7
Trader 1	(10) 2825		
Trader 2	(10) 2822		

Trader	Bid	Offer	Trader
Trader 3	(10) 2820		
Trader 4	(10) 2817		
Trader 5	(30) 2810		

The following un-activated Stop orders are resting behind the Central Order Book:

Trader	Un-activated Stop bid orders	Un-activated Stop offer orders	Trader
Trader 14	2832 (10) LMT		
Trader 15	2830 (10) MKT		
Trader 10	2824 (10) MKT	2824 (10) MKT	Trader 12
Trader 11	2822 (10) MKT	2822 (10) MKT	Trader 13

An incoming market order (offer) for 15 lots is submitted into the market which trades against the following orders:

- 10 lots against Trader 1 at 2825
- 5 lots against Trader 2 at 2822

These trades trigger the following Stop orders:

- Trader 11's Stop market bid for 10 lots (2822), which is submitted into the Central Order Book and trades against Trader 7's 2827 Offer
- Trader 10's Stop market bid for 10 lots (2824), which is submitted into the Central Order Book and trades against Trader 8's 2830 Offer, which in turn activates Trader 15's Stop order
- Trader 12's Stop market offer for 10 (2824), which is submitted into the Central Order Book and trades against Trader 2's 2822 Bid for 5 lots and Trader 3's 2820 Bid for another 5 lots
- Trader 13's Stop market offer for 10 lots (2822), which is submitted into the Central Order Book and trades against Trader 3's 2820 Bid for 10 lots and Trader 4's 2817 for a another 5 lots.
- Trader 15's Stop Market bid, activated by Trader 10's Stop order trading, is submitted into the Central Order Book and trades against Trader 9's 2832 Bid.
- Trader 14's Stop Limit bid is then also activated, by this last trade and is submitted into the central order but there is not sufficient volume is it rests in the Central Order Book.

Stop Order Cascading

Once activated a Stop order is submitted into the Central Order Book and can trade in the market, which in turn could activate a second (or multiple) Stop(s) should the Stop order trade through depth. This concept is known as Stop order cascading and can occur in a static market cascading trading down and up through the market price ranges.

Example

Assume the following explicit (limit) orders are in the market:

Trader	Bid	Offer	Trader
		10912 (10)	Trader 8
		10911 (20)	Trader 7
		10910 (10)	Trader 6
Trader 1	(10) 10909		
Trader 2	(5) 10908		
Trader 3	(10) 10907		
Trader 4	(10) 10906		
Trader 5	(10) 10905		

The following Stop orders are outside the Central Order Book:

Trader	Un-activated Stop bid orders	Un-activated Stop offer orders	Trader
		10909 (10) MKT	
		10908 (10) MKT	
		10907 (10) MKT	
		10906 (10) MKT	

An incoming 10909 offer for 10 lots trades against the 10909 bid of Trader 1, which is completely traded. The trade at 10909 activates the 10909 (Market) Stop order.

The Stop order is converted into a market offer and submitted to the Central Order Book. The incoming (converted) market order trades against Trader 2's 10908 bid and Trader 3's 10907 bid hence activating the 10908 and 10907 Stop orders.

The converted 10908 Stop market order submitted to the Central Order Book will then trade against the remaining 5 lots of Trader 3's 10907 bid before trading with the 5 lots of Trader 4's 10906 order and activating the 10906 Stop order.

To prevent the above scenario trading down to the contract minimum price, Price Limits will freeze upon Stop order activation and will remain frozen until all Stop orders activated as a result of the initial Stop order activation have completed processing. Any Stop orders, specifically Market orders, which attempt to trade at a price with an order which is outside of the frozen price limits, will be rejected and the traders will be informed that the orders were "Outside Price Limits"

4.4.4 Market Making Orders

Market Making Orders allow an ITM to simultaneously submit bids and offers into a single options series, futures month or strategy market. Within each contract, only ITMs that are

registered to submit MMOs will be allowed to do so. ITMs registered to submit MMOs also have the ability to enter any other order types in the Central Order Book.

MMOs are submitted in batches to allow bids and offers to be entered into different series within a contract simultaneously. The maximum number of MMOs permitted in each batch is up to 65 orders. All MMOs in a batch should be for the same contract. If this is not the case, the first MMO in the batch will be accepted and any MMOs in the batch which are not in the same contract as the first MMO will be rejected. The CTI Identifier, Origin Code and Account Number for all MMOs within the batch is contained in the batch header. As such, this information will be the same for every MMO in the batch.

Volumes for each side of MMO do not have to be equal and these values do not have to be equal across different MMOs within the batch.

MMO orders may be entered during Pre-Open, Open or Pre-Close. They do not persist in the Central Order Book if the ITM logs out or is disconnected. MMOs effectively act as Limit orders and have all the attributes of limit orders (although some of these attributes are stored on a batch level and others are stored on an order level, as described above).

When an MMO is submitted it will replace any existing MMO order by that ITM in that series in the following manner:

- Bids will replace existing bids and offers will replace existing offers, regardless of price.
- If either side of the new order has a volume of zero, all volume in that side of the order will be pulled.
- If either side of the new order has a null volume, any volume in that side of the order will not be altered.

When an incoming MMO replaces an existing order, the timestamp will remain unchanged unless the order volume is increased, or the order price amended.

Account or posting information for an MMO order is not revised, even if subsequent MMOs in the same series are submitted with altered account and posting information. LIFFE CONNECT® will prevent MMOs being submitted with bid and offer sides at equal price (thus preventing the two sides of the MMO trading with each other) or with the bid side at a higher price than the offer side (i.e. backwardation).

MMOs are validated against price limits and if either side of the MMO fails this validation the entire MMO is rejected. If this occurs, any existing MMO in the series remains in the Central Order Book.

MMOs cannot be the subject of a Handover to a Replacement Trader.

4.4.5 Contingent Multiple Order (CMO)

A Contingent Multiple Order is an order that contains two or more 'component' orders. Trading of any component is contingent on being able to fully trade all components within the CMO.

CMOs provide clients with the ability to trade in separate markets across two separate products, therefore allowing traders to submit inter-product spreads to LIFFE CONNECT®. They cannot be submitted during Pre-Open, as all order components must exist in open markets. CMOs are bound by the following:

- Maximum of 8 component orders.

- All component orders must be for outright orders, i.e. no strategies.
- Only one futures component permitted if any component order is for an option.
- It is not possible to submit a CMO for products traded on separate Trading Hosts.

Each component of a CMO can be of Limit or Market type. Any modifiers that are added are ignored e.g. Complete Volume, Immediate & Cancel, because of the Fill or Kill nature of the order. The CMO can be submitted as a mixture of buy and sell orders. The permitted product pairs are pre-defined by the Exchange.

The trades are executed in the same order as the components within the submitted CMO. All output messages accumulated during trading of the CMO are transmitted once trading of all the components is complete.

A single Order ID is allocated to all of the components within a CMO.

4.5 Order Entry Parameters

4.5.1 Account Number

The LIFFE CONNECT® User Specified field is a 14 character alphanumeric field that will be used for the Account number. Account Numbers are limited to 10 characters.

The User Specified field is mandatory.

4.5.2 Account Code

The LIFFE CONNECT® account code field is a one character alphanumeric field that is used to identify Give Up and Market Maker orders.

The following account codes are available for the NYSE Liffe market:

- () - blank
- A – Group Give Up
- G –Single Give Up
- M - Market Maker.

Orders can only be given up to one member firm per order. If there are multiple give-ups for an order, these will need to be processed by the back office post-trade. If an order is revised, a trader will be unable to amend the account code. Should the trader need to change an account code they would be required to pull the order and resubmit a new order with the amended code.

4.5.3 Single Give Up, Member Firm and Trader ITM Allocation

If a 'G' is entered in the LIFFE CONNECT® Account code field the respective member firms mnemonic must be entered in the Member Allocation field.

The member and trader details will be validated on submission to ensure that:

- Member firm mnemonics are valid
- Trader mnemonics are valid
- The combination of member firm and trader mnemonics are valid.

4.5.4 **Customer Type Indicator (CTI)**

The LIFFE CONNECT® Customer Trade Indicator field is available through the API to represent the type of customer on whose behalf the trade is taking place. It is a single numeric character. All member firms are reminded that CFTC and Exchange regulations require the accurate submission of Customer Type Indicator (CTI) codes for each transaction. The CTI codes to be utilized for transactions are detailed below:

- **CTI 1** – Applies to transactions initiated and executed by an individual member for his own account, for an account he controls, or for an account in which he has an ownership or financial interest. However, transactions initiated and executed by a member for the proprietary account of a member firm (as defined below) must be designated as CTI 2 transactions.
- **CTI 2** – Transactions executed for the proprietary accounts of a firm.
- **CTI 3** – Transactions entered by member or non-member terminal operator for the account of another individual member or an account controlled by such other individual member.
- **CTI 4** – Applies to all orders/transactions not included in CTI categories 1, 2, or 3. These typically are orders entered by or on behalf of non-member entities.

It is the duty of each member, user or terminal operator entering orders to input for each order the correct CTI code and account designation. The account designation must be an account number, account name or other identifying notation, which is tied to the specific account owner for whom the order is placed.

The LIFFE platform does not provide edit checks for valid CTI/Origin combinations. Any trades with invalid combinations will be passed by clearing as a trade in error. Clearing member firms can correct these trades by submitting the required changes.

4.5.5 **Origin Code**

The LIFFE CONNECT® Posting Code field is used for submitting the Origin Code. The Origin Code field is a single numeric character and will be mandatory and validated by LIFFE CONNECT®. If a trader enters an invalid origin code then LIFFE CONNECT® will reject the order.

4.5.6 **Price**

The Price field shows the price at which an order was submitted or traded. LIFFE CONNECT® calculates prices in ticks which should be converted by the Member application to display using the correct price format. Positive and negative price values are supported on LIFFE CONNECT®.

4.5.7 Volume

The volume of the order is entered in lots and must be a positive value.

4.5.8 Buy/Sell Indicator

This parameter indicates whether the order is to buy or sell. For a strategy order this is shown on each leg of the transaction.

4.5.9 User ID

The LIFFE CONNECT® Trader Card Reference field is a 16 character alphanumeric field that is used for the User ID. The Trader Card Reference field will be mandatory. The Trading Host will check whether the field contains a value or not.

4.5.10 Customer Reference

The Customer Reference is a 14 character alphanumeric field available when submitting orders to identify customer or client, if required.

4.5.11 Expiry Date

This indicates the date a GTC order is cancelled.

4.5.12 Open/Close

The Open/Closed Indicator field can be used to indicate whether the order is opening or closing a position. The field will default to 'O' for open when anything other than the 'C' (closed) indicator has been submitted.

When submitting a strategy order, the open/close field is set at order level not at individual leg level.

4.5.13 Price Type

This field indicates whether the order is a Limit or Market order.

4.5.14 Time Type

This field indicates whether the order is Immediate and Cancel, Good Till Cancelled, Complete Volume, Market On Open, standard (or a valid combination of these).

4.6 Delta Protection

Delta Protection functionality offers traders a degree of protection from being traded on multiple orders. Delta Protection functionality computes a cumulative delta position in a contract or an expiry which is then updated whenever an order, which encompasses delta protection, trades. When the delta position exceeds the trader set delta limit, an action is

taken to warn the trader or, optionally, have all of the traders orders pulled in the same contract or expiry. Delta Protection is available at both the contract and expiry-level.

Delta Protection is available during Pre-Open, Open, Pre-Close and Pre-Expire but delta position information will not be maintained between login sessions.

The trader sets the delta limit and the action to take once the limit has been breached (Ignore, Warn, Pull, Warn and Pull), these may be revised anytime delta functionality is active.

Delta positions are initiated to zero but can be updated by submitting an adjustment. Contract level delta positions are computed as the sum of the expiry level positions. Separate delta limits can be set for each expiry.

An ITM must be registered with the Exchange to allow Delta Protection to be used.

Example

The following orders are currently being worked by the Market Maker AAA in Contract A, which has a Lot Size of 1. AAA has applied the following Delta Protection parameters:

Parameter	Value
Product	Contract A
Delta Protection Active	True
Delta Limit	115
Delta Protection Period	0
Limit Breach Action	Warn and pull orders

Delta	Call		Strike	Put		Delta
	Bid	Offer		Bid	Offer	
80%	50 (100)	54 (100)	9500	3 (100)	5 (100)	20%
30%	24 (100)	26 (100)	9525	27 (100)	30 (100)	70%
10%	5 (100)	7 (100)	9550	60 (100)	63 (100)	90%

If trader BBB submits the following orders:

- Order 1 Sell 100 lots at market in the 9500 Call Strike
- Order 2 Sell 100 lots at market in the 9525 Call Strike
- Order 3 Sell 100 lots at market in the 9550 Call Strike
- Order 4 Sell 100 lots at market in the 9500 Put Strike
- Order 5 Sell 100 lots at market in the 9525 Put Strike
- Order 6 Sell 100 lots at market in the 9550 Put Strike

The following trading will take place:

Order	Strike	Trade (AAA's view)	Delta Position (AAA)
1	9500 Call	Buy 100 lots at 50	+80 (+80)
2	9525 Call	Buy 100 lots at 24	+30 (+110)
3	9550 Call	Buy 100 lots at 5	+10 (+120)

Since AAA's delta position has been exceeded after the first three trades, AAA's remaining orders in the puts are pulled and the remaining orders from BBB will not be completed.

If the orders from BBB had been submitted in the following order then a different sequence of trades would have occurred.

If trader BBB submits the orders in the following priority:

- Order 1 Sell 100 lots at market in the 9500 Call Strike
- Order 2 Sell 100 lots at market in the 9550 Put Strike
- Order 3 Sell 100 lots at market in the 9525 Call Strike
- Order 4 Sell 100 lots at market in the 9525 Put Strike
- Order 5 Sell 100 lots at market in the 9500 Put Strike
- Order 6 Sell 100 lots at market in the 9550 Call Strike

The following trades would take place:

Order	Strike	Trade (AAA's view)	Delta Position (AAA)
1	9500 Call	Buy 100 lots @ 50	+80 (80)
2	9550 Put	Buy 100 lots @ 60	-90 (-10)
3	9525 Call	Buy 100 lots @ 24	+30 (+20)
4	9525 Put	Buy 100 lots @ 27	-70 (-50)
5	9500 Put	Buy 100 lots @ 3	-20 (-70)
6	9550 Call	Buy 100 lots @ 5	+10 (-60)

Since the orders have been submitted in a different order, the overall delta limit has not been breached and therefore all orders from AAA and BBB will match.

4.7 Order Type Per Market Mode

The following table details the order types that can be submitted during the periods of the trading day.

Order Type		Pre-Open	Open Session 1	Restricted	Open Session 2	Pre-Close	Closed
Limit	Standard	✓	✓	X ¹	✓	✓	X

Order Type		Pre-Open	Open Session 1	Restricted	Open Session 2	Pre-Close	Closed
	MMO	✓	✓	X ¹	✓	✓	X
	RFQX	✓	✓	X ¹	✓	✓	X
	GIS	✓	✓	X ¹	✓	✓	X
	GTC	✓	✓	X ¹	✓	✓	✓ ²
	Clip	X	✓	X	✓	✓	X
Market	Standard	X	✓	X ¹	✓	✓	X
	CMO	X	✓	X	✓	✓	X
Ex-Pit	Asset Allocation ⁴	X ³	✓	X ⁵	✓	✓	X
	Block ⁴	X ³	✓	X ⁵	✓	✓	X
	Prof ⁴	X ³	✓	X ⁵	✓	✓	X
	Basis	X ³	✓	X	✓	✓	X
	Against Actuals	X ³	✓	X	✓	✓	X
	Guaranteed Cross	X ³	✓	X	✓	✓	X
Stop	Limit	✓	✓	X	✓	✓	X
	Market	✓	✓	X	✓	✓	X
Market on Open	Standard	✓	X	X	X	X	X
	Persisted	✓	X	X	X	X	X

¹ Volume can only be revised downwards.

² Submitted by the Trading Host only.

³ Revised or pulled only.

⁴ Configurable according to Trading Procedures.

4.8 Ex-Pit Orders

4.8.1 Introduction

For designated products, traders can submit orders for wholesale or ex-pit business that has been pre-negotiated outside the market, using the Submit Ex-Pit Trade function.

There are three types of Ex-Pit orders:

- Block (large volume trades)
- Basis (financial futures versus cash market)
- Against Actuals (commodity futures versus cash market)

Orders for wholesale, or ex-pit, business are valid when the market is open.

The markets in which wholesale, or ex-pit, business is valid are set by the Exchange. Trade volumes may be subject to minimum levels, which depend on the type of business and the traded product. The markets and volumes are defined in the product specification and specified in the product parameters on the Trading Host.

Ex-pit trades can be submitted in a strategy market, as long as that strategy market exists and is not suspended.

The prices of trades in ex-pit orders will be verified by Market Operations after submission, to ensure that they are in line with exchange-traded business, but are not subject to automatic price controls.

Submitted ex-pit trades will not enter the central order book or be made available to the market for trading. Once submitted, ex-pit trades cannot be pulled, revised or handed over to another trader (ITM).

All Ex-pit trades are examined by Market Operations and, if acceptable, are approved for execution. Once executed, ex-pit trades' volumes are added to the published total traded volume for their respective markets. The trade price with the exception of Against Actuals is disseminated to the market.

Under normal circumstances, approval of ex-pit trades takes place within a time period specified by the relevant regulatory body for the type of business.

If a trader has submitted orders for ex-pit trades that have been accepted but not yet approved, and the trader logs out, or their Client Application fails, the ex-pit orders are not affected and will remain registered with the Trading Host, awaiting approval. The trader does not need to be logged in for approval of ex-pit business to take place.

A flag is used to identify the type of ex-pit trade when the price is reported to the market (with the exception of Against Actuals where the price is not reported).

4.8.2 Method of Submission

Ex-Pit trades can be submitted as outright orders, or strategy orders.

Ex-Pit trades are submitted via the Client Application, but are not matched in the Trading Host with other order types.

A trader submitting an Ex-Pit order must specify:

- The market (product/month etc).
- Price
- Volume
- Type of Ex Pit Trade.

Other information can be entered as follows:

- Customer Reference
- User ID (Trader Card Reference field)

- Account Number (User Specified field)
- Account Code
- Customer Trade Identifier (CTI)
- Open/Closed indicator
- Origin Code (Posting Code field)

When entering the Ex-Pit order a trader submits both the buy and sell sides of the order for validation by Market Operations.

4.8.3 Ex-Pit Strategy Orders

Strategy Orders may also be submitted as Ex-Pit trades and are subject to validation by Market Operations in the same way. In addition to the optional and mandatory fields entered for an outright trade, the trader must also specify the individual leg prices to be allocated for the strategy trade.

4.8.4 Validation

Validation of Ex-Pit trades is performed by Market Operations. The following are examples of rejection reasons:

- Contract not enabled
- Contract Month not enabled
- Last trading day expired.
- Less than minimum volume.

4.8.5 Block

Block trades are defined as high volume trades in any outright or strategy market. Orders must contain both the buy and sell side orders and include the trade price and volume. For strategy block trades, in addition to the total strategy price and volume, the order must include all individual leg prices and volumes.

4.8.6 Basis

Basis trades are defined as strategies for long-term bond markets that incorporate a futures leg and an underlying bond (or cash) leg. Orders must contain the trade volume and the price of both the futures leg and the cash leg, and must include the necessary reference fields to identify the order within the cash market.

4.8.7 Against Actuals

Against Actuals are defined as strategies for commodities markets that incorporate a futures leg and an underlying commodity leg. Orders must contain both the buy and sell side orders and include the trade price and volume.

4.9 Option Cabinet Trading

The term cabinet is used to describe the price of an options premium for an order that is submitted into deep out-of-the-money options with a value of less than the minimum price movement for that month.

Cabinet orders and the subsequent trades are valid in all outright markets and LIFFE CONNECT® will only allow traders to submit Cabinet limit bids. The Trading Host will not allow cabinet limit offers since the lowest offer that can be made is the smallest price movement permitted for that product. In order to trade with the cabinet limit bid, a trader must enter a market order offer. If cabinet orders are implemented using this method, the only strategy market that they can be submitted into is a one legged volatility market such as an outright call or put versus the underlying. Delta neutral orders submitted as a GTC with a cabinet bid will not be returned by the Trading Host for the following day.

4.10 Request for Quote (RFQ)

An RFQ notifies market participants subscribed to a product that a price is required for the market. The RFQ can specify the volume for which a price is required, alternatively if no volume is given, the Trading Host will allocate a volume of 10 lots.

RFQs may be submitted by a trader via their Client Application, or automatically generated by the Trading Host.

4.10.1 Trader Generated

The trader, using a Client Application, may submit a Request for Quote (RFQ) for any futures/options expiry month, series or strategy without having to subscribe to the market.

4.10.2 Host Generated

When a submitted Limit order does not trade completely and its residual volume rests in the order book, then the Trading Host may generate an automatic RFQ. An RFQ will only be generated if the residual volume equals or exceeds this limit. There is no restriction on the number of RFQs the Trading Host will generate. For all NYSE Liffe products the residual volume for the host to generate an automatic RFQ is set to 51.

4.10.3 Time to Block RFQ's

For any given market, submission of RFQs is not permitted for a short time after submission of an earlier RFQ, for an equivalent or greater volume, in the same market. If an RFQ is submitted in this period, unless it has a greater volume an error status will be returned.

5. Strategies

LIFFE CONNECT® allows the creation of recognized strategies that are separate from the order books of the outright markets. Traders can submit orders and trade in these strategy markets. The following sections detail the creation process, list the strategies available and explain how strategies are priced.

5.1.1 Strategy Creation

LIFFE CONNECT® allows the creation of recognised strategies that are separate from the Central Order Books of the outright markets. Traders can submit orders and trade in these strategy markets. The following sections detail the creation process, list the strategies available and explain how strategies are priced.

Strategies between outright futures months or options strikes need to be created before they can be quoted in or traded. Once a strategy has been created it is assigned an AMR and keeps this until any of its underlying legs expires and then the strategy no longer exists.

A strategy will be visible to end users on the day of its creation, but will not be visible on the next day unless a GTC order is still present at the end of the previous day.

This means that although the strategy will exist in the Trading Host and will have an AMR, it will have to be recreated again before any quotes/trading is possible.

5.1.1.1 GTC Strategies

Traders do not have to recreate the strategies for their GTC orders as they are automatically recreated by the Trading Host when the GTC orders are returned to the market.

GTC orders in delta neutral strategies are not retained by the Trading Host and have to be recreated on a daily basis.

5.1.1.2 Creation by Traders

A trader must create a LIFFE CONNECT® recognised strategy in the long (Buy) position. For example, the futures Calendar Spread must be created in terms of buying the near month to sell the far month. If a trader attempts to specify the legs in a different order it will be rejected by the Trading Host.

A trader with a sell order would create the strategy from the buyers perspective and enter an offer.

5.1.2 Types of Strategies

5.1.2.1 Futures Strategies

Strategy Type	LIFFE CONNECT® Strategy Code	Strategy Definition	Pricing
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Strategy Type	LIFFE CONNECT® Strategy Code	Strategy Definition	Pricing
Calendar Spread	E	Buy the near month to sell the far month	Subtract the price of the back month from that of the front month
Butterfly	B	<p>Buy the near month, sell the next month twice and buy the last month.</p> <p>The months must always be quoted with the nearest to expiry first and the longest dated expiry month last.</p> <p>The gaps between the months do not have to be consecutive.</p>	The combined price of the two months being sold is subtracted from the combined price of the two months being bought.
Condor	W	<p>Buy the near month, sell the next two months and buy the last month.</p> <p>The months must always be quoted with the nearest to expiry first and the longest dated expiry month last.</p> <p>The gaps between the months do not have to be consecutive.</p>	The combined price of the two months being sold is subtracted from the combined price of the two months being bought.
Strip	M	<p>Strips are always created in terms of buying all the months quoted within the strategy.</p> <p>The simultaneous purchase of four or more quarterly delivery months within a single contract.</p> <p>Any quarterly delivery month can act as the first month of the Strip, as long as there are at least three following months available. Serial months in a contract are ignored and cannot form part of a Strip Strategy.</p> <p>When a strip is created the volume is expressed on a per month basis and therefore there could be multiple strategies created for the same months if the volume is expressed are different.</p>	<p>The strip is priced against the net change from YDSP's that the trader is prepared to trade at. If the trader wants to buy at the YDSP in all months then they would enter a zero bid.</p> <p>Where a new expiry month is listed, a zero net change in price is to be assumed for this month. If an order of zero bid was entered, the leg prices that are given would represent the YDSP's for the expiry months that were listed yesterday, plus the current market reference price (e.g. the IMP) for the month without a YDSP.</p> <p>If the new month did not have a reference price then the strip could not be created.</p>

Strategy Type	LIFFE CONNECT® Strategy Code	Strategy Definition	Pricing
Pack	O	<p>Packs consist of four consecutive quarterly months. Normally, the front month of a Pack will be the current front quarterly month or a whole number of years after the current front quarterly month. It is also possible to configure LIFFE CONNECT® to allow Packs to start on other months.</p> <p>For example, if the nearest quarterly month currently listed were MAR 08, then valid Packs would be:</p> <p>MAR08, JUN08, SEP08, DEC08 MAR09, JUN09, SEP09, DEC09 MAR10, JUN10, SEP10, DEC10 MAR11, JUN11, SEP11, DEC11 MAR12, JUN12, SEP12, DEC12</p> <p>If LIFFE CONNECT® is configured to allow packs starting on the 2nd quarterly, it would also be possible to create Packs starting one quarterly month later, so:</p> <p>JUN08, SEP08, DEC08, MAR09 JUN09, SEP09, DEC09, MAR10</p> <p><i>etc.</i></p> <p>The number of lots in each leg must be the same. Packs starting within the first year are sometimes referred to as White Packs; within the second year Red Packs; then Green, Blue and Red packs for years 3,4 and 5. These names are not used within LIFFE CONNECT®.</p>	Priced the same as Strips above

Strategy Type	LIFFE CONNECT® Strategy Code	Strategy Definition	Pricing
Bundle	Y	<p>Bundles are standardized strips with the same legs as 2, 3, 4 or 5 consecutive Packs, always starting in the first year, joined together.</p> <p>For example, if the nearest quarterly month currently listed were MAR 08, then a valid 2-year Bundle would be:</p> <p>MAR08, JUN08, SEP08, DEC08, MAR09, JUN09, SEP09, DEC09</p> <p>If Packs are configured to be allowed to start on a second quarterly, then it would also be possible to create a 2-year Bundle of:</p> <p>JUN08, SEP08, DEC08, MAR09, JUN09, SEP09, DEC09, MAR10</p> <p>The number of lots in each leg must be the same. LIFFE CONNECT® currently recognises four Bundles:</p> <p>2 – Year Bundle/3 – Year Bundle/4 – Year Bundle/5 – Year Bundle</p>	Priced the same as Strips above

5.1.2.2 Options Strategies

The following table lists the recognised Options strategies that may be traded on LIFFE CONNECT®. The components of an option strategy (whether a buy or sell order) must always be created from the buy perspective, as defined below:

Strategy Type	LIFFE CONNECT® Strategy Code	Strategy Definition
Jelly Roll	A	Sell call, buy put at same strike in near month, buy call, sell put at same strike in far month (strike price in far month need not equal strike price in near month).
Call Butterfly	B	Buy call, sell two calls at higher strikes, buy call at a higher strike The strikes do not have to be consecutive and the gaps between them do not have to be equal
Put Butterfly	B	Buy put, sell two puts at higher strikes, buy put at a higher strike The strikes do not have to be consecutive and the gaps between them do not have to be equal
Call Cabinet	C	Buy call at one strike
Put Cabinet	C	Buy put at one strike

Strategy Type	LIFFE CONNECT® Strategy Code	Strategy Definition
Call Spread	D	Buy call, sell call (same month) at higher strike
Put Spread	D	Buy put, sell put (same month) at lower strike
Call Calendar Spread	E	Sell near month call, buy far month call (Same strikes across the two months)
Put Calendar Spread	E	Sell near month put, buy far month put (Same strikes across the two months)
Call Diagonal Calendar Spread	F	Sell near month call, buy far month call at a different strike
Put Diagonal Calendar Spread	F	Sell near month put, buy far month put at a different strike
Guts	G	Buy call, buy put at higher strike
2x1 Ratio Call Spread	H	Sell call, buy two calls at higher strike
2x1 Ratio Put Spread	H	Sell put, buy two puts at lower strike
Iron Butterfly	I	Buy the straddle, sell the Strangle. This must be entered in the following sequence, which equates to the same: Sell put, buy put and call at higher strike, sell a call at an even higher strike (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
Combo	J	Sell call, buy put at lower strike
Strangle	K	Buy put, buy call at higher strike
Call Ladder	L	Buy call, sell call at higher strike, sell call at even higher strike (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
Put Ladder	L	Sell put, sell put at higher strike, buy put at even higher strike (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
Options Strips	M	Comprised of a minimum of 2 and a maximum of 8 outright strikes being either all call or all puts, and a mixture of calls and puts
Straddle Calendar Spread	N	Sell Straddle in near month, buy Straddle in far month at same strike Sell near month put, sell near month call, buy far put, buy far call
Diagonal Straddle Calendar Spread	P	Sell Straddle in near month, buy Straddle in far month at different strike: Sell near month put, sell near month call at the same strike, buy far month put, buy far month call at a the same strike
Straddle	S	Buy put, buy call at same strike

Strategy Type	LIFFE CONNECT® Strategy Code	Strategy Definition
Call Condor	W	Buy call, sell call at two equally higher strikes, buy put at a higher strike. (The strikes do not have to be consecutive and, although for a true Condor the gaps between strikes should be equally spaced, this is not enforced by LIFFE CONNECT®)
Put Condor	W	Buy put, sell put at two equally higher strikes, buy put at a higher strike. (The strikes do not have to be consecutive and, although for a true Condor the strikes should be equally spaced, this is not enforced by LIFFE CONNECT®)
Box	X	Buy call and sell put at lower strike, buy put and sell call at higher strike. The strike prices of the lower strikes should be the same, the strike price of the higher strikes should be the same.
Synthetic conversion and reversal	r	This is a standard conversion/reversal strategy but without the Underlying leg. Reversal: Buy a call, sell a put at the same strike To trade a Conversion the order must be entered in the same sequence as above, but submitted to the market as a sell/offer order
Buy-Write	u	Buy a call (put) will result in the sale (purchase) of the same number of underlying shares as the total number of shares that the options position represents.
Iron Condor	w	Buy the call spread and also buy the put spread with lower strikes Sell put, buy put at higher strike, buy call at even higher strike, sell call at even higher strike (all series for the same expiry month).
3-way: Call spread versus a Put	x	Buy a Call spread versus selling a put: Buy a call, sell a call at a higher strike, sell a put at any strike
3-way: Put spread versus a Call	y	Buy a Put spread versus selling a call: Buy a put, sell a put at a lower strike, sell a call at any strike.
3-way: Straddle versus a Call	z	Buy a Straddle versus selling a call: Buy a put and call at the same strike, as well as selling a call at any strike.
3-way: Straddle versus a Put	z	Buy a Straddle versus selling a put: Buy the straddle (i.e. Buy a put and call at the same strike), as well as selling a put at any strike.

5.2 Pricing of Strategies

5.2.1 Net Premium

The majority of strategies priced on the LIFFE CONNECT® system are calculated by “netting” the buy legs against those of the sell leg. For Futures products the strategy is expressed in terms of the front (nearest to expiry) month first. For example for a calendar spread, buying Jun/Sep means buying Jun to sell Sep. Selling Jun/Sep means selling Jun to buy Sep.

5.3 Trading Strategies

When a strategy trade occurs, the counterparty to each trade receives full notification of the traded price of said strategy including the leg price allocations. The Trading Host also sends the following updates to the market as a whole to provide full visibility of trading activity at any time:

- Price Updates
- Volume Updates.

5.3.1 Price Updates

As in the outright market, when a strategy trades, updates are not only sent to the counterparties of the trade but also the market receives price updates via a Strategy Market Update message.

The Strategy Market Update message distributed to the market therefore includes not only the traded strategy price update but also the traded price for each leg. The strategy type from which it was generated can also be derived from the AMR of the message. For Delta Neutral trading, if the underlying product is listed on the Trading Host, the underlying leg will also be updated.

Note: For strategies which contain ratio legs, more than one price may be traded for a particular leg.

Reporting of strategy leg prices are restricted to one price which will always be the worst price to ensure calculation of the strategy traded price from the leg prices will not generate a better price than actually executed.

5.3.2 Volume Updates

When a strategy trade occurs the counterparties are naturally notified of the volume executed, at each price, for both the strategy as a whole and each leg. As with the Price Updates the market is also informed of the traded volume details through both the Market Update and Strategy Market Update message:

- Last Traded Volume for strategy market
- Total Traded Volume, for current day, for strategy market
- Last Traded Volume for each leg (outright market) of the strategy
- Total Traded Volume for current day, for each leg (outright market) of the strategy.

5.4 Strategy Leg Pricing

5.4.1 Overview

While LIFFE CONNECT® matches strategies at a single price; the resulting positions are always maintained in the corresponding outright series. This ensures that traders can use either the outright or strategy markets to open and close their positions. Therefore once a

strategy trade has been identified, each leg must be allocated a price which is consistent both with the strategy traded and with the current price in the outright market. LIFFE CONNECT® uses the following algorithm to determine the price of each outright leg as follows:

- Assign reference price based on Bid / Ask and last trade information in the outright market
- Adjust leg prices to meet strategy price

5.5 Implied Strategies

LIFFE CONNECT® offers an implied strategy trading facility for selected strategies. There are two different ways of processing strategy orders at the Client Application level:

- Implying 'In' orders, which build contingent strategy orders from existing outright orders;
- Implying 'Out' orders, which build contingent outright orders from existing strategy and outright orders.

The prices of orders submitted in the relevant outright legs will be used by the Trading Host to generate implied-in prices. Where these implied-in prices represent the best price for a strategy, they may be traded subject to the trading priority.

An implied-out price will be generated in an outright leg from the interaction of an order in an explicit strategy market and an order in one of the relevant outright legs. Where the Trading Host generated implied-out price represents a better price than that available in the outright leg, that order may be traded subject to the trading priority provided the other leg of the explicit strategy can still be traded at the same time.

Where the "implied out" price is better than the price of other orders in the relevant outright leg, the "implied out" price and volume will be disseminated to Quote Vendors via the Market Data Interface (MDI). Where the "implied out" price is equal to the price of other orders in the relevant expiry month, the total volume of all orders at that price will be disseminated. This will mirror the dissemination of "implied out" prices and volumes on LIFFE CONNECT®.

Although the Trading Host will generate both implied-in and implied-out prices, only implied-out prices and only those which represent the current best market price will be distributed via the LIFFE CONNECT® API. Display of implied prices will be dependent upon the type of Independent Software Vendor (ISV) or Member firm developed client trading application used. No chaining occurs i.e. implieds are not derived from other implieds. Implied prices are used in the uncrossing algorithm but are not used in Indicative Opening Price (IOP) calculation during Pre-Open.

6. Order Matching

6.1 Introduction

LIFFE CONNECT® has a number of trading algorithms to support the functional behavior of the Trading Host. The algorithms available are as follows:

- Calculation of prices implied from outright and strategy markets
- The calculations of the indicative opening price during Pre-Open
- Uncrossing of futures and options products at market open
- The determination of trade price for each leg of a traded strategy
- The determination of trade volume for the underlying leg of volatility strategies
- Allocation of traded volume between multiple orders
- Allocation of traded volume between multiple orders, including Market Maker privileges.

6.2 Indicative Opening Price

The Indicative Opening price (IOP) periodically informs traders of the predicted opening trade price (and volume) during Pre-Open. Indicative opening details are published via the API using a Market Update message with a flag set indicating that the prices and volumes are indicative.

The indicative opening price and volume is calculated using the Uncrossing Algorithm applied to explicit orders within the relevant market.

Note: No implied generation or MOO orders are used and no trading occurs. The calculation is performed at configured intervals during Pre-Open rather than on receipt of every order.

IOPs are only calculated for outright futures and options series. Strategy markets or implied prices are not included in the calculation. The dissemination of the IOP only occurs when the recalculated value changes from that previously issued.

6.3 Uncrossing

Although certain types of orders can be entered in Pre-Open, no trading can occur during this period. This can result in bids being higher than offers or offers lower than bids, a state known as backwardation. It can also result in bids and offers at equal prices, a state known as a Choice market. Backwardated and Choice markets are collectively known as Crossed markets.

Immediately prior to Market Open, LIFFE CONNECT® will apply the uncrossing algorithm to calculate the price at which all Crossed Markets will open. All limit orders which are executed under this approach will be traded at a price equal to or better than that which they were

entered. Additionally, where appropriate, Market on Open orders will either be matched, converted to limit orders, or deleted.

6.3.1 The Uncrossing Algorithm

The Uncrossing Algorithm performs a series of passes within an individual market, matching the best bids and best offers present in the price time sequence. When all crossed volume has been matched, an Uncrossing Trade Price can be determined for the market. This price is found by applying one of the following calculations. The calculation used is determined by the presence of residual limit volume within that market following uncrossing.

The four possible cases are:

There is no remaining bid or offer limit volume in the market

- Uncrossing Trade price = the average of the bid and offer price from the last match.

There is remaining limit offer volume but no limit bid volume in the market

- Uncrossing Trade Price = offer price from last match.

There is remaining limit bid volume but no limit offer volume in the market

- Uncrossing Trade Price = bid price from last match.

There is remaining limit offer and limit bid volume.

- To determine the Uncrossing Trade Price in this case:
 - i. Determine what the Best Offer Price is. Determine what the Bid Price is from the last match. Take the lowest of these. This is known as the 'High Price'.
 - ii. Determine what the Best Bid Price is. Determine what the Offer Price is from the last match. Take the highest of these. This is known as the 'Low Price'.
 - iii. The Uncrossing Trade Price is the average of the 'High Price' and 'Low Price'. If this value is halfway between two tick values the price allocated to all uncrossed business will be rounded towards zero (rounded down if the value is positive, rounded up if the value is negative).

If no matches occur within a market there will be no Uncrossed Trade Price for that market.

6.3.2 The Uncrossing Algorithm for implied markets

In scenarios where an implied in order uncrosses with an explicit order, any price improvement that occurs is allocated to the explicit order.

In scenarios where two implied out orders uncross with each other, any price improvement is allocated to the implied out bid and its parent strategy order receives the improvement.

6.4 Trade Algorithms

A number of different algorithms are available to allocate tradable volume in incoming orders where there are multiple orders in the order book which could complete the trade. In all these

policies, orders providing a better price are traded first; only the allocation of volume to orders at the same price varies.

The trade algorithms available for LIFFE CONNECT® are as follows:

- Price Explicit Time
- Order Level Pro-Rata
- Order Level Pro-Rata Priority
- Order Level Pro-Rata Priority Order and Volume Cap
- Order Level Pro-Rata Priority Order and Minimum Volume
- Order Level Pro-Rata Priority Order, Volume Cap and Minimum Volume
- Preference Price Explicit Time
- Preference Order Level Pro-Rata
- Preference Order Level Pro-Rata Priority

6.4.1 Price Explicit Time

The Price Explicit Time trading policy is based on the basic Price Time trading policy with Explicit Orders having priority over Implied Orders at the same price level.

The order of traded volume allocation at a single price level is therefore:

- Explicit order with oldest timestamp first. Followed by
- Any remaining explicit orders in timestamp sequence (FIFO) next. Followed by
- Implied order with oldest timestamp next. Followed by
- Any remaining implied orders in timestamp sequence (FIFO).

Example 1 - Price Explicit Time

The following orders are submitted into the market in time order:

- Trader 1 submits a 10 lot bid of 11031 into June
- Trader 2 submits a 10 lot bid of 11031 into June
- Trader 1 submits a 10 lot bid into the 11031 March/June spread of 0
- An implied out price of 11031, for 10 lots is generated into the March bid with timestamp equal to youngest leg in this case the strategy order.
- Trader 3 submits 10 lot bid of 11031 into March

The central order book would be as follows:

Note: **Implied prices are depicted in bold italics**

March

Trader	Bid	Offer	Trader
	<i>(10) 11031</i>		
Trader 3	(10) 11031		

June

Trader	Bid	Offer	Trader
Trader 1	(10) 11031		
Trader 2	(10) 11031		

March/June Strategy

Trader	Bid	Offer	Trader
Trader 1	(10) 0		

An incoming order at a price of 11031 into the March Offer, for 10 lots will trade against the explicit order of Trader 3 rather than the implied order generated by the June bid and March/June bid submitted by Trader 1.

Example 2 - Price Explicit Time with an Implied in Butterfly

Orders are submitted in the following sequence:

- Trader 1 submit an offer of 2520 for 10 lots in May
- Trader 2 submits a bid of 2506 for 20 lots in July
- Trader 3 submits a bid of 2480 for 10 lots in the March which generates an implied in bid of -54 for 5 lots in the March, May July butterfly.
- Trader 4 submits a bid of 2476 for 10 lots into March
- Trader 5 submits an offer of 2522 for 10 lots into the May which generates an implied in bid of -58 for 5 lots into the March, May, July butterfly.
- Trader 6 submits an offer of 2522 for 20 lots into May
- Trader 7 submits a bid of 2506 for 10 lots into May
- Trader 8 submits a bid of -58 for 20 lots into the March, May, July Butterfly

Note: Implied prices are depicted in bold italics

March

Trader	Bid	Offer	Trader
Trader 3	(10) 2480		
Trader 4	(10) 2476		

May

Trader	Bid	Offer	Trader
Trader 7	(10) 2506	2520 (10)	Trader 1
		2522 (10)	Trader 5
		2522 (20)	Trader 6

July

Trader	Bid	Offer	Trader
Trader 2	(20) 2506		

March/May/July Butterfly

Trader	Bid	Offer	Trader
	(5) -54		
	(5) -58		
Trader 8	(20) -58		

An incoming market offer for 30 lots in the butterfly would trade in the following sequence:

- Implied in price of -54 would trade first. Trader 3 would get 5 lots in March at 2480, Trader 1 would get 10 lots at 2520 in May and Trader 2 would get 5 lots at 2506 in July.
- Trader 8 would trade the 20 lots explicit at -58 in full
- The implied in price of -58 bid for 5 lots would trade. Trader 3 would get 5 lots at 2480 in March, Trader 2 would get 5 lots at 2506 in the July and Trader 5 would get 10 lots at 2522 in May.

6.4.2 Pro Rata

In this algorithm, priority is given to orders at the best price (highest for a bid, lowest for an offer). If there are several orders at this best price, equal priority is given to every order at this price and incoming business is divided among these orders in proportion to their volume.

The Pro Rata sequence of events is:

- Extract all potential matching orders from the order book into a list.

- Sort the list by volume, largest volume first. If equal volumes, oldest timestamp first. This is the matching list.
- Find the 'Matching volume', which is the total volume of all the orders in the matching list.
- Find the 'tradable volume', which is the smallest of the matching volume and the volume left to trade on the incoming order.
- Allocate volume to each order in the matching list in turn, starting at the beginning of the list. If all the tradable volume gets used up, orders near the end of the list may not get allocation.
- The amount of volume to allocate to each order is given by the formula: (Order volume/Matching volume) * Tradable volume
- The result is rounded down (for example, 21.99999999 becomes 21) unless the result is less than 1, when it becomes 1.
- If tradable volume remains when the last order in the list had been allocated to, return to step 3.

Note: The matching list is not re-sorted, even though the volumes of the resting orders have changed due to trades. The order which originally had the largest volume is still at the beginning of the list.

1. If there is still volume left to trade on the incoming order, repeat the entire algorithm at the next price level.

Example 1: Price Pro Rata

Assume that the following three orders are in the market at the same price. An incoming order will be assigned in the following way:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
15	25	20	60	45	45	11	19	15

The three orders shown have a total of 60 lots of volume in the market.

When an incoming order of 45 lots enters the market, the matching orders are first sorted by size: the matching list is Order 2, then Order 3, then Order 1. Each order is first assigned a calculated share of the incoming volume in proportion to that order's resting volume:

- Order 2 = $(25/60) \times 45 = 18.75$
- Order 3 = $(20/60) \times 45 = 15$
- Order 1 = $(15/60) \times 45 = 11.25$

All these shares are then rounded down to the nearest integer to give:

- Order 2 = 18
- Order 3 = 15

- Order 1 = 11

This leaves a single lot unassigned. This will be given to the order with the largest volume in the market, and so at the front of the matching list, in this case Order 2. This gives a final volume allocation of:

- Order 2 = 19
- Order 3 = 15
- Order 1 = 11

Example 2: Price Pro Rata with multiple lots on second pass

Assume that the following four orders are in the market at the same price:

Order 1	Order 2	Order 3	Order 4	Total
2	3	70	5	80

An incoming order for 50 lots will be assigned in the following way:

The matching orders are first sorted by size: the matching list is Order 3, then Order 4, Order 2, Order 1. Each order is first assigned a calculated share of the incoming volume in proportion to that order's resting volume:

- Order 3 = $(70/80) \times 50 = 43.75$ rounded to 43
- Order 4 = $(5/80) \times 50 = 3.125$ rounded to 3
- Order 2 = $(3/80) \times 50 = 1.875$ rounded to 1
- Order 1 = $(2/80) \times 50 = 1.25$ rounded to 1

48 lots have been allocated, the residual volumes of the orders are:

Order 1	Order 2	Order 3	Order 4
1	2	27	2

Note that Order 4 and Order 2 now have the same volume, but since the matching list is not re-sorted, Order 4 will still be in front of Order 2.

The remaining two lots are allocated as follows:

- Order 3 = $(27/32) \times 2 = 1.6875$ rounded to 1
- Order 4 = $(2/32) \times 2 = 0.125$ rounded up to 1

Order 2 and Order 1 get no further allocation as the incoming volume has been fully allocated.

The final allocation is therefore:

400 P	200	150	750	500	500	400	58	42
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Trader 1 will get all his volume and the remaining business will be divided Pro Rata among the other traders. Trader 1's order size is below the volume cap.

Example 2: Priority Price Pro Rata and Volume Cap – Above Volume Cap

Assume the volume cap is again set at 500 and Order 1 gained priority by creating a new price. If the following volumes are in the Central Order Book and 1200 lots of incoming business enter the market, it will be assigned in the following manner:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
600 P	555	640	1795	1200	1200	554	300	346

Order 1 receives 500 lots (up to the Volume Cap) and remaining business is divided Pro Rata among all traders.

Priority Price Pro Rata and Minimum Volume

This algorithm is the same as Pro Rata Priority, but at the best price a priority flag is only given to the order that was the first to enter the market at the best price if that order is above a certain volume. This volume can be configured to vary between expiry months of a contract.

Example 1: Priority Price Pro Rata and Minimum Volume – Above Minimum Volume

Assume that the minimum volume is set at 50 lots and the following orders enter the market:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
400 P	100	-	500	300	300	300	0	-

Order 1 again gains the priority flag, since its volume is over 50 lots, and the order trades.

Example 2: Priority Price Pro Rata and Minimum Volume – Below Minimum Volume

Assume that the minimum volume is again set at 50 lots. Trader 1 enters Order 1 for 40 lots at a new price, but since his order is below 50 lots does not get a priority flag. Trader 2 then enters Order 2 for 60 lots at this price.

An incoming order of 10 lots enters the market:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
40	60	-	100	10	10	4	6	-

This business is divided Pro Rata with no priority assigned.

Priority Price Pro Rata, Volume Cap and Minimum Volume

This combines the features of the previous two algorithms. A priority flag is only given to the order that was first to enter the market at the best price if that order is above a certain volume. When this priority flag is assigned it will only gain all incoming volume up to a certain volume cap. Both these volumes can be configured to vary across expiry months of a contract.

When this volume cap is reached, all remaining volume is divided Price Pro Rata among this order and the other orders at the best price.

Assume the volume cap is again set at 500 and the minimum volume requirement is 50.

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
570 P	80	90	740	623	623	536	41	46

Rules regarding Priority Price Pro Rata

The following examples illustrate additional rules that apply to Priority Price Pro Rata:

- Implied prices do not gain priority.
- Resting orders never gain priority as a result of other orders trading out.
- Priority is gained by improving the price currently in the market regardless of any previously traded prices.
- Priority is lost if order volume is revised up, however where the revised order is the only order at best price it will retain its order priority. It will lose priority only if there is more than one order at best price.
- Priority is lost if order volume is revised down to less than the minimum volume.
- Priority is lost if a price is revised so that it is no longer the best price.
- Priority may be gained if a price is revised so that it becomes the best price.

Example 1: Order at depth does not gain priority after Best Price is traded through

Assume the following Bids and Offers are entered in the sequence shown:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
1	P 500	96.45			
2	500	96.45			

The 500 Bid at 96.45 is the first to enter the market and creates a new best price. It is assigned the priority flag. A further Bid of 500 lots enters at the same price, but the first order retains the priority flag.

Three more Bids now enter the market:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
3	P 50	96.50			
4	55	96.50			
5	45	96.50			
1	500	96.45			
2	500	96.45			

The 50 Bid at 96.50 gains the priority flag as it creates a new best price. Further orders for 55 and 45 lots are then entered at the same price, but do not take priority.

An Offer now enters the market:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
3	P 50	96.50	96.50	100	1
4	55	96.50			
5	45	96.50			
1	500	96.45			
2	500	96.45			

Bid 3 takes 50 lots of the incoming 100 lots as a priority. The remaining 50 lots are divided Pro Rata between Bid 4 and Bid 5, giving 28 lots and 22 lots respectively.

The following Bids remain in the market when a new Offer enters:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
4	27	96.50	96.50	50	2
5	23	96.50			
1	500	96.45			
2	500	96.45			

Offer 2 trades all the remaining volume in Bids 4 and 5.

A third Offer enters the market:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
			96.45	50	3
1	500	96.45			

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
2	500	96.45			

Bids 1 and 2 each receive 25 lots of Offer 3 to leave the final Central Order Book as:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
1	475	96.45			
2	475	96.45			

Note: Bid 1 does not gain priority in the last trade of the sequence, despite previously having a priority flag assigned. Resting orders in depth are not assigned priority after the best price has been traded through.

Example 2: New best price gains priority despite previously traded better prices

Continue the sequence from the previous example. Assume that another Offer enters to clear the entire Central Order Book:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
			96.45	950	4
1	475	96.45			
2	475	96.45			

The Central Order Book will be empty.

Assume two Bids are entered, both of 200 at 96.35. The first order to be entered, gains priority. A new Offer then enters for 250 at 96.35:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
6	P 200	96.35	96.35	250	5
7	200	96.35			

Bid 6 has priority and trades 200 lots. Bid 7 trades the remaining 50 lots, leaving:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
7	150	96.35			

In this example Bid 6 gained a priority flag because it created a new best price in the current market. It does not make any difference that a better price had previously been traded.

Example 3: Implied Prices do not gain priority

Assume that the following bids and offers exist in an outright market and create the following Implied In for the strategy market:

Outright Market

	Bid	Offer
Jun	(50) 96.05	(50) 96.10
Sep	(10) 96.04	(50) 96.12

Strategy Market

	Bid	Offer
Jun/Sep	(50) -0.07 Implied	0.06 (10) Implied

This implied strategy Bid will be in the Central Order Book (although it will not be disseminated through the API).

Assume that 50 explicit calendar spreads Bid at -0.07 are also entered into the Central Order Book and that then a matching Offer of 10 at -0.07 is entered. The Central Order Book will then be:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
1	Implied 50	-0.07	-0.07	10 Explicit	1
2	Explicit 50	-0.07			

This will trade out to leave:

Order (Bid) Submitted	Bid Volume	Bid Price	Offer Price	Offer Volume	Order (Offer) Submitted
1	Implied 45	-0.07			
2	Explicit 45	-0.07			

Note: The Implied In does not gain a priority flag, despite being the first order at the best price. Instead all business is divided Pro Rata. Implied Ins do not gain priority.

The Effect of Order Revisions on Priority

Example 1: Order volume is revised down but maintains minimum volume

Assume that the following orders exist in an outright market at the same price, for which Trader 1 has priority:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
500 P	60	45	605					

Trader 1 revises the order volume down to 400 lots, which will maintain priority so that an incoming order of 500 lots will be traded as follows:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
				500	500	400	58	42

Example 2: Order volume is revised up and priority is lost

Assume that the following orders exist within an outright market at the same price, for which Trader 1 has priority:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
100 P	125	95	320					

Trader 1 revises the volume of Order 1 up to 150 lots and priority is consequently lost, so that an incoming order of 65 lots is traded as follows:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
				65	65	27	22	16

Example 3: Priority is lost

Assume the following bids exist in an outright market.

Order 1: 96.070 (500) - priority is gained

Order 2: 96.070 (100)

Order 3: 96.080 (300) - priority is gained

Order 3 is then pulled. As Order 3 acquired priority, after it is pulled no order has priority. Trader 1 does not regain priority:

Order 1	Order 2	Order 3	Total	Incoming Order	Total Trade	Order 1 Fill	Order 2 Fill	Order 3 Fill
500	100	0	600	400	400	334	66	0

6.4.4 Preferencing

Preference Trading will operate by assigning Preference Status to qualifying orders as they enter the Central Order Book. When matching business subsequently trades against the Central Order Book, those orders with Preference Status may, depending on the exact content of the Central Order Book at the time, become eligible to receive Preference Volume.

Preference Volume will be allocated to the chosen orders before the normal distribution of volume, but after allocation to the Pro Rata Priority order if this is the chosen trade policy.

The following versions of Preference Trade policy are available:

- Preference Price Explicit Time
- Preference Price Pro Rata
- Preference Priority Price Pro Rata

All outright and strategy markets within a particular contract will use the trade policy configured for that contract with the exception of delta neutral strategies which will continue to trade as price explicit time. The preference model can also be configured at a month or strategy level if the multiple trading algorithms functionality is configured.

Configuration

The preferencing allocation can be configured in the following way:

Multiple categories of Market Maker can be defined by setting up different categories, e.g. MM1, MM2, MM3, MM4. There is no limit on the number of categories which can be configured, although the total preference allocated across all Market Makers must not be greater than 100%.

- Members of the defined market maker categories will be identified by their trader mnemonic and there may be zero, one, or more traders of each category. A trader may be a member of more than one category, although only one category per contract.

Assume there are four preference categories, MM1, MM2, MM3 and MM4:

Category	Trader Mnemonic
MM1	A1A
MM2	A2A
MM3	A3A, A1A
MM4	A4A

Each contract will specify the precedence and percentage allocation for each category that is configured for preferencing. The preference percentage will be a percentage value between 0 and 100 inclusive. For each contract, the combined total preference percentage assigned to all market makers for that contract should not exceed 100.

The configuration can be summarised as:

Configuration	Description
Preference Categories	This details the number of Market Making categories available
Preference Market Makers	This identifies which ITMs have preference and the category to which they are allocated
Preference Parameters	This decides in which order the categories are treated for preference and the percentage allocated to each category
Preference Trade Parameters	This will identify if there is any volume cap or minimum volume requirements along with the rounding rules

Allocation of Volume

Normal allocation is used to describe the method of allocating volume to orders in the configured explicit price time trade policy, when there is no Pro Rata priority or preference status orders.

Preference volume will be allocated to those orders with preference status (orders belonging to registered ITMs), subject to the restrictions detailed below, before normal allocation. After the allocation of preference volume, those orders with preference status will be treated as normal (non-preference status) orders by the normal allocation. An order may receive volume within a single trade both as a result of having preference status, and due to normal allocation.

The priority Pro Rata trade policy may also maintain a priority order. Volume will be allocated to the pro rata priority order before allocation to the preference status orders.

An order which possesses preference status may also become the pro rata priority order. In this case, an order may receive three clips of volume within a single trade (pro rata priority allocation, preference volume allocation, and normal allocation).

Preference volume will only be allocated in trades which occur during the market open period. In particular, preference volume will not be allocated when the market is uncrossed at the changeover from the pre-open to the open trading period.

- The amount of preference volume to allocate to a particular order will be calculated as follows. The 'tradable volume' is the volume of the incoming order which is to be matched at a single price level. At best price, this will be the volume of the incoming order less any volume allocated to the pro rata priority order (if it exists).
- The amount of preference volume to allocate to each market maker category is calculated as one hundredth of the preference percentage assigned to that market maker category multiplied by the tradable volume. This is known as the category volume.
- If the category volume is larger than the volume cap it will be reduced to be the same as the volume cap.
- If the category volume is greater than 1, but not a whole number, the fractional part will be discarded (the volume will be rounded down to the nearest whole number).
- If the category volume is between 0 and 1 it will be rounded either to one lot or to zero lots depending on the configuration.

All orders in the Central Order Book which are at the relevant trading price, and have preference status, will be grouped by ITM. The groups will be sorted by the precedence of the owning market maker's category. Groups with equal precedence will be sorted by the timestamp of the oldest order in the group. Within each group, orders will be sorted by timestamp, oldest first.

The category volume will be assigned to each market maker group in sequence. The correct category volume to use will be determined from the category of which the market maker is a member. Where small category volumes have been rounded up to one lot there may not be enough tradable volume to allocate to every group.

The category volume assigned to the group will be distributed to the orders in the group in time order, oldest first. If the category volume is less than the total volume of the orders in the group, then the newer orders in the group will not necessarily receive preference volume despite having preference status. If the category volume exceeds the volume of the group, all orders in the group will be filled, and the excess volume will be carried forward to the normal allocation.

Incoming orders may trade in depth. Preference volume will be allocated as described at each price level at which the incoming order trades. The tradable volume at each price level will be the residual volume remaining on the incoming order.

Examples

In the examples, the user identifiers PMA and PMB are Primary Market Makers (PMMs) in the (unspecified) contract; CMA and CMB are Competitive Market Makers (CMMs); TRA and TRB are ordinary traders. The following configuration is assumed:

- Preference percentage for Primary Market Makers = 30
- Preference percentage for Competitive Market Makers = 10
- Primary Market Makers have precedence over Competitive Market Makers
- Minimum volume needed to acquire preference status = 1
- The preference volume cap is 50 lots, per category, per ITM
- Calculated volumes between 0 and 1 are rounded up to 1 lot
- The Pro Rata priority volume cap is 50 lots

Each example shows a Central Order Book with the orders numbered in price-time sequence. The Pro Rata priority order (where relevant) is indicated by an asterisk. The volume allocated to each order, together with the reason for doing so, is then shown for various trades. The number in parentheses following the volume allocated is the total volume allocated to that order so far in the trade.

As the minimum volume requirement is zero, all orders owned by PMA, PMB, CMA, and CMB will have preference status.

Example 1: Preference at best price

Order Number	Owner	Price	Volume
--------------	-------	-------	--------

1	TRA	10540	100
2	CMA	10540	100
3	TRB	10540	100
4	PMA	10540	100
5	PMB	10540	100
6	CMA	10540	100

Trade 195 lots using Preference Price Time.

The category volumes are calculated as 30% of 195 = 58.5 for PMMs, and 10% of 195 = 19.5 for CMMs. The category volume for PMMs is then reduced to the volume cap of 50. The category volume for CMMs is already below the volume cap, but must be rounded down to 19.

Therefore the allocation of the traded volume would be:

Order Number	Allocation	Reason
4	50 (50)	Preference allocation. The category volume for PMMs to the highest precedence market maker's only order.
5	50 (50)	Preference allocation. The category volume for PMMs to the next highest precedence market maker's only order.
2	19 (19)	Preference allocation. The category volume for CMMs to the next highest precedence market maker's oldest order. Note that order number 6, also owned by CMA, is not allocated any volume due to preference status percentage allocation taken up by order 2.
1	76 (76)	Normal allocation. The remaining volume to the order with time priority.

Trade 119 lots using Preference Order Pro Rata.

The category volumes are calculated as 30% of 119 = 35.7 for PMMs, and 10% of 119 = 11.9 for CMMs. Both category volumes are below the volume cap, but both must be rounded down. The category volumes used are 35 for PMMs and 11 for CMMs.

Therefore the allocated volume is:

Order Number	Allocation	Reason
4	35 (35)	Preference allocation. The category volume for PMMs to the highest precedence market maker's only order.
5	35 (35)	Preference allocation. The category volume for PMMs to the next highest precedence market maker's only order.
2	11 (11)	Preference allocation. The category volume for CMMs to the next highest precedence market maker's oldest order.
1	7 (7)	Normal allocation. The volume remaining to trade is 38, and there are 519 lots left in the Central Order Book. All

		orders had the same original volume, so allocation will occur in time order. This allocation is $(38/519)*100$ rounded down.
2	6 (17)	Normal allocation. $(38/519)*89$ rounded down.
3	7 (7)	Normal allocation. $(38/519)*100$ rounded down.
4	4 (39)	Normal allocation. $(38/519)*65$ rounded down.
5	4 (39)	Normal allocation. $(38/519)*65$ rounded down.
6	7 (7)	Normal allocation. $(38/519)*100$ rounded down.
1	1 (8)	Normal allocation (2nd loop). The volume remaining to trade is 3, and there are 484 lots left in the Central Order Book. This allocation is $(3/484)*93$ rounded up to 1 lot.
2	1 (18)	Normal allocation (2nd loop). $(3/484)*83$ rounded up to 1 lot.
3	1 (8)	Normal allocation (2nd loop). $(3/484)*93$ rounded up to 1 lot.

Example 2: Preferring trades through depth

Order Number	Owner	Price	Volume
1	TRA	10550	20
2	TRB	10545	25
3	CMA	10545	15
4*	TRA	10540	80
5	CMA	10540	10
6	CMA	10540	50
7	PMA	10540	50

The Pro Rata priority order is indicated by an asterisk.

Trade 200 lots at 10540 so moves into depth using Preference Price Time.

Order Number	Allocation	Reason
1	20 (20)	Normal allocation. The only order at best price.
3	15 (15)	Preference allocation. 10% of 180 (the volume remaining to trade) will initially be allocated to the only market maker at this price, but it is not possible to trade more than the order volume.
2	25 (25)	Normal allocation. The time priority (and only remaining) order at this price.
7	42 (42)	Preference allocation. 30% of 140 (the volume remaining to trade) to the highest precedence market maker at this price.

5	10 (10)	Preference allocation. 10% of 140 will be allocated to CMA. This order will use up 10 of the 14 lots.
6	4 (4)	Preference allocation. The remaining 4 of the 14 lots will be allocated to CMA's next highest priority order.
4	80 (80)	Normal allocation. The time priority order at this price.
6	4 (8)	Normal allocation. The remaining 4 lots to the next order in time priority at this price.

Trade 200 lots using Preference Order Pro Rata.

Order Number	Allocation	Reason
1	20 (20)	Normal allocation. The only order at best price.
3	15 (15)	Preference allocation. 10% of 180 (the volume remaining to trade) will initially be allocated to the only market maker at this price, but it is not possible to trade more than the order volume.
2	25 (25)	Normal allocation. The only remaining order at this price.
7	42 (42)	Preference allocation. 30% of 140 (the volume remaining to trade) to the highest precedence market maker at this price.
5	10 (10)	Preference allocation. 10% of 140 will be allocated to CMA. This order will use up 10 of the 14 lots.
6	4 (4)	Preference allocation. The remaining 4 of the 14 lots will be allocated to CMA's next highest priority order.
4	50 (50)	Normal allocation. The volume remaining to trade is 84, and there are 134 lots left in the Central Order Book at this price level. Orders will be allocated to in order of volume at start of trade. This allocation is $(84/134)*80$ rounded down.
6	28 (32)	Normal allocation. $(84/134)*46$ rounded down.
7	5 (47)	Normal allocation. $(84/134)*8$ rounded down.
4	1 (51)	Normal allocation. The remaining 1 lot to the first pro rata order.

Trade 200 lots using Preference Order Pro Rata with Priority.

Order Number	Allocation	Reason
1	20 (20)	Normal allocation. The only order at best price.
3	15 (15)	Preference allocation. 10% of 180 (the volume remaining to trade) will initially be allocated to the only market maker at this price, but it is not possible to trade more than the order volume.
2	25 (25)	Normal allocation. The only remaining order at this price.
4	50 (50)	Pro rata priority allocation. Volume up to the cap is

Order Number	Allocation	Reason
		allocated.
7	27 (27)	Preference allocation. 30% of 90 (the volume remaining to trade) to the highest precedence market maker at this price.
5	9 (9)	Preference allocation. 10% of 90 will be allocated to CMA.
4	15 (65)	Normal allocation. The volume remaining to trade is 54, and there are 104 lots left in the Central Order Book at this price level. Orders will be allocated to in order of volume at start of trade. This allocation is $(54/104)*30$ rounded down.
6	25 (25)	Normal allocation. $(54/104)*50$ rounded down.
7	11 (38)	Normal allocation. $(54/104)*23$ rounded down.
5	1 (10)	Normal allocation. $(54/104)*1$ rounded up to 1 lot.
4	1 (66)	Normal allocation (2nd loop). The volume remaining to trade is 2, and there are 52 lots left in the Central Order Book. This allocation is $(2/52)*15$ rounded up to 1 lot.
6	1 (26)	Normal allocation (2nd loop). $(2/52)*25$ rounded up to 1 lot.

Example 3: Preference multiple trades at best

Order Number	Owner	Price	Volume
1*	CMA	10540	10
2	CMB	10540	15
3	PMA	10540	20
4	PMB	10540	25
5	CMA	10540	30
6	PMA	10540	35
7	CMB	10540	40
8	PMB	10540	45

Trade 1 lot using Preference Price Time.

Order Number	Allocation	Reason
3	1 (1)	Preference allocation. 30% of 1 (rounded up to 1 lot) to the highest precedence market maker.

Trade 1 lot using Preference Order Pro Rata.

Order Number	Allocation	Reason
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3	1 (1)	Preference allocation. 30% of 1 (rounded up to 1 lot) to the highest precedence market maker. The market maker precedence rules do not depend on the basic trade policy.
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Trade 1 lot using Preference Order Pro Rata with Priority.

Order Number	Allocation	Reason
1	1 (1)	Pro rata priority allocation.

Trade 100 lots using Preference Price Time.

Order Number	Allocation	Reason
3	20 (20)	Preference allocation. 30% of 100 is allocated to PMA. This order can only be allocated 20 of those lots.
6	10 (10)	Preference allocation. The remaining 10 lots allocated to PMA.
4	25 (25)	Preference allocation. 30% of 100 is allocated to PMB.
8	5 (5)	Preference allocation. The remaining 5 lots allocated to PMB.
1	10 (10)	Preference allocation. 10% of 100 is allocated to CMA.
2	10 (10)	Preference allocation. 10% of 100 is allocated to CMB.
2	5 (15)	Normal allocation. The oldest order with remaining volume.
5	15 (15)	Normal allocation. The next oldest order with remaining volume.

Trade 100 lots using Preference Order Pro Rata.

Order Number	Allocation	Reason
3	20 (20)	Preference allocation. 30% of 100 is allocated to PMA. This order can only be allocated 20 of those lots.
6	10 (10)	Preference allocation. The remaining 10 lots allocated to PMA.
4	25 (25)	Preference allocation. 30% of 100 is allocated to PMB.
8	5 (5)	Preference allocation. The remaining 5 lots allocated to PMB.
1	10 (10)	Preference allocation. 10% of 100 is allocated to CMA.
2	10 (10)	Preference allocation. 10% of 100 is allocated to CMB.
8	5 (10)	Normal allocation. The volume remaining to trade is 20, and there are 140 lots left in the Central Order Book. Orders will be allocated to in order of volume at start of trade. This

Order Number	Allocation	Reason
		allocation is $(20/140)*40$ rounded down.
7	5 (5)	Normal allocation. $(20/140)*40$ rounded down.
6	3 (13)	Normal allocation. $(20/140)*25$ rounded down.
5	4 (4)	Normal allocation. $(20/140)*30$ rounded down.
2	1 (11)	Normal allocation. $(20/140)*5$ rounded up to 1 lot.
8	1 (11)	Normal allocation (2nd loop). The volume remaining to trade is 2, and there are 122 lots left in the Central Order Book. This allocation is $(2/122)*35$ rounded up to 1 lot.
7	1 (6)	Normal allocation (2nd loop). $(2/122)*35$ rounded up to 1 lot.

Trade 100 lots using Preference Order Pro Rata with Priority.

Order Number	Allocation	Reason
1	10 (10)	Pro rata priority allocation.
3	20 (20)	Preference allocation. 30% of 90 is allocated to PMA. This order can only be allocated 20 of those lots.
6	7 (7)	Preference allocation. The remaining 7 lots allocated to PMA.
4	25 (25)	Preference allocation. 30% of 90 is allocated to PMB.
8	2 (2)	Preference allocation. The remaining 2 lots allocated to PMB.
5	9 (9)	Preference allocation. 10% of 90 is allocated to CMA.
2	9 (9)	Preference allocation. 10% of 90 is allocated to CMB.
8	5 (7)	Normal allocation. The volume remaining to trade is 18, and there are 138 lots left in the Central Order Book. Orders will be allocated to in order of volume at start of trade. This allocation is $(18/138)*43$ rounded down.
7	5 (5)	Normal allocation. $(18/138)*40$ rounded down.
6	3 (10)	Normal allocation. $(18/138)*28$ rounded down.
5	2 (11)	Normal allocation. $(18/138)*21$ rounded down.
2	1 (10)	Normal allocation. $(18/138)*6$ rounded up to 1 lot.
8	1 (8)	Normal allocation (2nd loop). The volume remaining to trade is 2, and there are 122 lots left in the Central Order Book. This allocation is $(2/122)*38$ rounded up to 1 lot.
7	1 (6)	Normal allocation (2nd loop). $(2/122)*35$ rounded up to 1 lot.

Example 4: Preferecing for Multiple Groups

The configuration of preferencing will allow multiple categories of market maker beyond PMM's and CMM's. The example detailed below is based upon the following configuration:

- Preference percentage for MM1 is 10% (AAA)
- Preference percentage for MM2 is 8% (BBA)
- Preference percentage for MM3 is 6% (CCA)
- Preference percentage for MM4 is 4% (DDA, DDB, DDC)
- The order of precedence is MM1, MM2, MM3, MM4

The resting Central Order Book is as follows:

Order Number	Trader	Price	Volume
1	AAA (priority)	108 13/32	100
2	ZZZ	108 13/32	100
3	FFD	108 13/32	100
4	DDC	108 13/32	100
5	CCA	108 13/32	100
6	DDA	108 13/32	100
7	DDB	108 13/32	100
8	BBA	108 13/32	100

There is an incoming order for 210 lots and with the trade policy set to preference priority pro rata.

Order Number	Allocation	Reason
1	50 (50)	Although AAA has preference and is in the first market maker category, the order with priority is allocated volume up to the maximum cap in the first instance The remaining volume of the incoming order after priority allocation is 160, and this is the basis for preference allocations
1	16 (66)	AAA receives 10% of the incoming order volume after priority (that is, 160)
8	12	BBA receives 8% of 160, which is rounded down from 12.8 lots to 12
5	9	CCA receives 6% of 160, which is rounded down from 9.6 lots to 9
4	6	DDC has timestamp priority over DDA and receives 4% of 160, which is rounded down from 6.4 lots to 6
6	6	DDA has timestamp priority over DDB and receives 4% of

Order Number	Allocation	Reason
		160 which is rounded down from 6.4 lots to 6
7	6	DDB receives 4% of 160 which is rounded down from 6.4 lots to 6

All preference volume has now been allocated and the residual volume of 105 lots will be allocated as pro rata across all remain orders:

Trader	Original Volume	Traded Volume	Residual Volume	Pro Rata Volume (rounded down)	Single Lot Allocation	Total Traded Volume
AAA	100	66	34	$34/695*105=5$	1	72
ZZZ	100	0	100	$100/695*105=15$	1	16
FFD	100	0	100	$100/695*105=15$	0	15
DDC	100	6	94	$96/695*105=14$	0	20
CCA	100	9	91	$93/695*105=13$	0	22
DDA	100	6	94	$95/695*105=14$	0	20
DDB	100	6	94	$96/695*105=14$	0	20
BBA	100	12	88	$89/695*105=13$	0	25
Total	800	105	695	103	2	210

The residual incoming order volume is 105 lots and there are 695 lots resting in the Central Order Book for this to match with.

103 lots are allocated on the first pass and the remaining 2 lots will be allocated on a single lot basis to the largest original order first followed by the second largest original order. Since the orders were all for the same volume, the single lots will be allocated on the basis of time-stamped order.