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Overview of Market Making Functionalities

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INTRODUCTION

PURPOSE

Euronext offers to market participants a range of liquidity provider incentive programs tailored to each market (Paris, Amsterdam, Brussels and Lisbon) and aimed at improving on-screen liquidity.

Specific functionalities have been implemented within the UTP Matching Engine to support these programs:

■ Market Making Orders (Mass Quotes)

■ Market Maker Protections

These features are only available via the CCG Binary interface to designated Market Makers.

This document provides a functional overview of the Market Making functionalities to Members intending to develop an application using the Binary Interface to the Common Customer Gateway (CCG).

WHAT'S NEW?

The following lists only the most recent modification made to this revision/version. For the Document History table, see the Appendix.

VERSION NO.	DATE	CHANGE DESCRIPTION
2.3.0	11 Apr 2016	• Correction of delta position and volume position updates for delta neutral strategy trades

ASSOCIATED DOCUMENTS

Please visit https://www.euronext.com/en/it-documentation/

CONTACT INFORMATION

For any questions about this document please contact:

■ Customer Technical Support Group: ctsg@euronext.com - +33 (0) 1 8515 8588

■ Client Coverage Center: ccc@euronext.com - +33 (0) 1 8514 8586 - +44 (0) 20 76 608 586

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1. GENERAL CONSIDERATIONS

1.1 MARKET MAKING SESSIONS

In order to fulfil their obligations under the Liquidity Providers incentive schemes Market Makers need to use the **Mass Quote** functionality.

Mass Quotes are available via specific trading sessions so called MMO ITMs that are only provided to designated market makers. These sessions are setup to send Mass Quotes on a pre-defined (upon request by the member) list of contracts.

> **Note:** Market Makers are not allowed to have more than one Market Maker session (MMO ITM) per class, with the exception of certain roles in certain contracts. For further information, please contact your Euronext Relationship Manager or visit the Liquidity Provider Programmes page on the Euronext website.

Market Maker Protections are also only available via MMO ITMs to designated Market Makers.

1.2 INBOUND THROTTLING AND BATCH SIZE

UTP has a built-in protection mechanism that restricts the total number of messages that a trading session can submit per second. Currently, for all derivatives markets, the session limit is set to 100 msgs/s.

In addition, UTP has a built-in inbound order throttling configurable at the contract level. This throttle limits the number of order messages that a session can submit per second in a specific contract.

When the inbound throttling is enabled for a specific contract, the Matching Engine checks the number of messages sent per second by a session on that commodity, and rejects any n+1 messages submitted in the current second. **Note that the throttling applies to order submission and revision messages only and does not apply to order pulls, RFQs, ex-pit submission, stock order routing, or any non-order related messages.**

Mass Quotes can contain a maximum of 65 double-sided quotes within a single message. The effective size can vary between contracts and Market Maker obligations / roles (i.e. PLP, CMM, …).

The '*Input Order Throttling per Contract*' document summarises session limits and Mass Quote batch sizes applying on all markets. The table also includes the number of Market Maker sessions that Market Makers can request per class.

> **Note:** Market Makers are recommended to pre-define the set of contracts per Market Maker session in such a way that the overall capacity of their key remains inferior or equal to the 100 msgs/s session limit. Example: if the input order throttle in a given market is equal to 4 msgs/s per contract, Market Makers should not quote more than 25 contracts with the same ITM.

Market Makers can retrieve the values of throttling per contract via the FIXML standing data files and the Mass Quote Batch size via a specific message on the CCG (please refer to the '*UTP Derivatives Developer 'Guidelines* for further details).

1.3 MARKET MAKER PROTECTIONS

In addition to Mass Quotes, registered Market Makers can take advantage of some Market Maker Protections on contracts where these features have been activated.

The Market Maker Protection facility has been built to include:

■ Delta Protection

■ Volume Protection

■ Vega Protection

■ Market-Maker Protection for a period of time

> **Note:** At present, only the Delta Protection and the Volume Protection facilities are available to registered Market Makers.

The information concerning the activation of each Market Marker Protection is available per contract in the FIXML standing data files.

Market Maker protections can be set at Contract level only.

1.4 MARKET MAKING ON FUTURES CONTRACTS

Mass Quotes are available on some Euronext Futures contracts in order to provide designated Market Makers with an appropriate method to fulfil their obligations in incentive schemes on Futures contracts. For further information, please contact your Euronext Relationship manager or visit the Liquidity Provider Programmes page on the Euronext website.

2. MASS QUOTES

2.1 FUNCTIONAL OVERVIEW

Mass Quotes (CCG Binary message 'I') allow a Market Maker session to simultaneously submit batches of two-sided orders (bids and offers) into different series of the **same** contract in one single transaction.

The availability of Mass Quotes is configurable by contract. Only sessions that are registered to submit Mass Quotes in a contract are allowed to do so. These sessions are not allowed to submit any other order type into that contract, except non-resting orders:

– Market orders,

– Immediate Or Cancel (IOC) orders,

– Fill Or Kill (FOK) orders.

Sessions that are not registered to submit Mass Quotes within a contract can submit other order types, subject to the appropriate trading rights.

Mass Quotes may be entered in any valid market, including strategy markets.

Mass Quotes may be entered during the Pre-Open, Open or Pre-Close trading period.

Mass Quotes effectively act as Limit orders and have all attributes of limit orders (although some of these attributes are stored at a batch level and others are stored at an order level).

They do not persist in the order book if the user logs out or is disconnected.

Mass Quotes are submitted in batches to allow bids and offers to be entered in different series within a contract simultaneously. The maximum number of double-sided quotes permitted in each batch is 65 pairs (i.e. 65 buy and sell pairs are allowed in a batch), the minimum is 1. This number may be different, depending on the market and the Market Maker role. If the batch contains more pairs than allowed, then the **entire** batch is rejected.

All quotes in a batch should be for the same contract. If this is not the case, all quotes for the same contract as the first quote in the batch are accepted and the remainder is rejected.

Each quote within the batch should specify the series it is to be entered into and the prices and volumes for both the bid and the offer side. The volumes for each side of the quote do not have to be equal and these values do not have to be equal across different quotes within the batch. Mass Quotes can be submitted as single-sided as well as double-sided quotes.

When a quote is submitted it replaces any existing quote by that session in that series in the following manner:

■ Bids replace existing bids and offers replace existing offers, regardless of price.

■ If either side of the new order has a volume of **zero (0)**, all volume in that side of the order is pulled.

■ When either side of the quote is not revised, any volume in that side of the order is not altered.

Each pair of buy and sell orders submitted as part of a Mass Quote is checked against price limits, If either one of a pair fails the price limits check then both orders are rejected. If this occurs, any existing quotes in the series remain in the order book.

The clearing information (including the *ClearingInstruction*, *AccountCode*, *CustOrderCapacity*, *SecondaryClOrderId* and *ClientInfo* fields) within the Mass Quote message is contained in the batch header. As such, this information is the same for every quote in the batch. However, series, volume and price information is stored at individual level, in the repeating legs of the message.

Once acknowledged by the Trading Host, each bid and offer that is part of a Mass Quote message is given its own individual *OrderId* returned in the *BuyOrderId* or *SellOrderId* field of the Mass Quote Acknowledgement message.

The Matching Engine prevents quotes being submitted with bid and offer sides at equal price (thus preventing the two sides of the quote trading with each other) or with the bid side at a higher price than the offer side (i.e. backwardation). Additionally, submission of the two sides of a quote occurs in such a manner that either backwardation or trading of one side of the quote with the other side does not occur.

> **IF** *both sides of the quote are revisions:*
> > **IF** *offer side order revised upwards:*
> > > *Enter offer side revision into order book, followed by bid side.*
> > **ELSE**
> > > *Enter bid side revision into order book, followed by offer side.*
> **ELSE**
> > *Enter bid side into order book, followed by offer side.*

A quote can only be revised by entering a new batch of quotes, i.e. submitting a new Mass Quote message. Using the standard Order Revision Request message will result in the revision attempt being rejected. The quotes stay unchanged. Clearing information for a quote order is not revised, even when subsequent quotes in the same series are submitted with an altered account and posting information.

Quotes may be pulled from the market using the standard CCG provided methods for pulling orders. The orders may only be pulled by the user who submitted them. *A Risk Manager will also be able to pull quotes from a supervised Market-Maker session using the provided CCG methods (for future use).*

2.2   COMMON CUSTOMER GATEWAY (CCG) BINARY MESSAGES

■ The **'MMConfigurationStatusRequest (U1)'** message can be used by a Market Maker session to retrieve the list of contracts for which the key has been enabled to submit Mass Quotes together with their allocated associated batch sizes per contract. Bids replace existing bids and offers replace existing offers, regardless of price.

■ The **'Mass Quote (I)'** message can be used by an authorised Market Maker session to send a batch of quotes to the Matching Engine. The result of this message is returned via the **'MassQuoteAckowledgement (b)'** message.

There are specific *ReturnCode* values that can be returned in the MassQuoteAcknowledgement message. Client applications should pay attention to these values.

RETURN CODE	DESCRIPTION
MMO_TRADER_NOT_AUTHORISED	If the user attempts to submit a Mass Quote in a contract that he is not registered for
MMO_CANNOT_REVISE	If the users attempts to revise quotes using the standard order revision request
MMO_TRADER_ERROR	If the user registered to submit Mass Quotes attempts to submit another order type
INVALID_ARGUMENT	if a non registered Market-Maker ITM attempts to submit a Mass Quote
MMO_REJECTED_LIMIT_BREACHED	If an ITM attempts to submit a Mass Quote after his MM Protection Limit has been breached and the Breach action has been set to MMP_PULL_MMOS or MMP_WARNING_MSG_AND_PULL_MMOS

Orders in a Mass Quote message are processed sequentially, i.e. if two pairs are for the same market, then the second pair supersedes the first one.

Mass Quotes can be submitted as single-sided or double-sided quotes. Therefore, the *SideRevised* field in the repeating part of the message structure should be set to '1', when only replacing the Buy side (respectively '2' when only replacing the Sell side). The extent field *SideRevised* when set to '1' or '2' will ensure that the Matching Engine does not read the Sell information or Buy information if present.

Each quote within a Mass Quote message needs to specify:

- Series,

- Bid Price and Bid Volume

- Ask Price and Ask Volume

A volume set to zero (0) means that all volume for that side of the order will be pulled (effectively a delete).

2.2.1 Additional methods for pulling quotes

Quotes can be pulled via the **'Mass Quote'** message by specifying a volume of zero (0).

In addition, they can be pulled from the market using one of the different methods provided by the **'OrderMassCancelRequest (q)'** message:

- By the AMR, i.e. the unique identifier of the instrument ('1')

- By contract ('A')

- By maturity date ('W')

- By Calls ('X')

- By Puts ('Y')

- For all orders ('7')

- For all orders of a market ('8')

Users willing to cancel a set of quotes by *OrderID* must use the **'OrderCancelList (UB)'** message.

Users willing to cancel one individual quote might also use the **'OrderCancelRequest (F)'** message.

> **Note:** Market Makers are recommended to use the most efficient method to pull their quotes depending on market circumstances.

2.2.2 Additional information about quoting obligations

QUOTING OUT OF THE MONEY

For some series out of the money or close to expiry, it might be the case than only the Ask side can be quoted (the bid price being equal to 0). Such quotes are considered valid as long as the ask price is less than or equal to the authorised spread and the quote submitted as a single-sided quote.

Developers should therefore pay attention that under those circumstances, the quote is submitted with *SideRevised* = 2 (Replace Sell Side) only.

FAST MARKET CONDITIONS

Fast market conditions are notified to the market via a real-time Market Data message, the XDP **'Market Status'** message with *MarketMode = '24' (Quote Width Exemption 2)*. Under such conditions, Market Makers can double their spread. However, they should pay attention that the size obligations under Fast market remain the same.

When the market returns to normal market conditions, a new real-time XDP **'Market Status'** message with *MarketMode = '23' (Quote Width Exemption 1)* is sent. Market Makers should adjust their spread accordingly.

PIVOTING

Some incentive schemes provide Liquidity Providers with the ability to quote using the "Pivot" method. This method is aimed at providing more flexibility to obligations for continuous quoting and RFQs (when Market Makers have RFQs obligations). By use of pivoting, it is possible to increase or decrease simultaneously and in the same proportion, the volume and the spread within a limit of 50%. For exact rules, please refer to the Liquidity Provider Programmes page on the Euronext website.

When using the "Pivot" method, Market Makers should be aware of the following:

- Under Fast market conditions, Market Makers can double their spread then apply the pivot method for more flexibility. However, the size should remain the same.

- Pivoting only applies if there is both a bid and ask volume and price. Therefore, Market Makers cannot apply the pivoting spread calculation for strikes out of the money where bid price equals to zero (0).

3.   DELTA PROTECTION

3.1   FUNCTIONAL OVERVIEW

The Delta Protection facility offers Market Makers a degree of protection against being traded on multiple quotes simultaneously.

The facility is only available to Market Makers who are explicitly registered to participate in this facility in the contracts on which they have Market Making obligations. Delta Protection is configured on a per session and per contract basis using the standing data (intraday changes are not possible).

Market Makers can only participate in this facility using Mass Quotes.

All contracts support contract-level Delta Protection. Their availability is configurable by contract.

Despite the fact that a Delta is related to options, Euronext also applies the so-called "Delta protection" to Futures.

The Delta Protection facility maintains a cumulative delta protection, on a contract basis, which is updated whenever a quote trades. When the delta position exceeds a set delta limit, action is taken to warn the trader and optionally, pull all that trader's remaining quotes in the same contract.

Delta Protection applies during Pre-Open, Open and Pre-Close trading periods, but no pulling takes place prior to Open.

Delta Position information is not maintained between login sessions. If the Market Maker logs off or is logged out for any reason including user lockout, all his existing Delta Protection details are discarded.

3.2   ACTIVATING DELTA PROTECTION

At the beginning of each Market Maker's trading session, the Delta Protection is set to be inactive, the Delta Limit and Delta Position are both set to zero (0).

Once logged on, the Market Maker can activate his Delta Protection for each contract. On activation, the delta limit and delta position are zero (0), **irrespective of whether the Market Maker has executed any trades in that class during the day.**

At the time of the activation, the Market Maker can set a delta limit and a limit breach action per class for each level of Delta Protection. This determines which action is taken once the delta limit is breached by the delta position.

Delta limits are submitted as absolute positive values. However, if the delta limit is set to e.g. 200 the delta limit will be breached if the delta position is greater than 200 or less than -200.

The following limit breach actions are available:

- **'Ignore'**, meaning that no checking takes place and any limit set is ignored

- **'Warning'**, meaning that a warning will be issued but quotes will not be pulled. Note that the Matching Engine does not explicitly act on a "Warn" Limit Breach Action. The trading Market Maker's application is expected to produce appropriate warnings.

■ **'Pull'**, meaning that all Market Makers ITM's quotes in that contract of that contract will be pulled without specific notification.

■ **'Warning and Pull',** meaning that a warning will be issued to the user and all quotes in that contract of that contract will be pulled.

3.3   DELTA POSITION UPDATES AND AMENDMENTS

3.3.1   Delta Position updates

After each trade, the Matching Engine recalculates the cumulative delta position of the trading session (the MMO ITM).

- In case of an options trade, it is based on the option delta calculated by the Exchange, as follows:

$$NewDeltaPosition = CurrentDeltaPosition +/- (OptionDelta * NbLots * LotSize)$$

The +/- sign is >0 for Buy Call or Sell Put and <0 for Sell Call or Buy Put.

Note that if no option delta can be calculated, then a value of 0.5 will be used.

- In case of an futures trade, it is based on the following formula:

$$NewDeltaPosition = CurrentDeltaPosition +/- (NbLots * LotSize)$$

The +/- sign is >0 for Buy Future and <0 for Sell Future.

Whilst the Delta Protection facility is active, every time a quote trades the Market Maker will be sent a message including the following information:

– The session cumulative delta position for that contract;

– The session delta limit for that contract and,

– Whether the Market Maker's quotes in that contract have now been pulled as a result of a limit breach.

For a delta-neutral strategy trade, the delta is assumed to be zero, however <u>a delta position update is made for all the legs involved</u>.

Important remark

After an incoming order has been processed and any trades matched, the new delta position is compared in magnitude (i.e. ignoring any sign) to the user configured delta limit. Since the position is not recalculated and checked (and therefore the requested breach action is not performed) until after the entire trade has occurred, the user may exceed their delta limit. This may be particularly significant in scenarios where a single incoming order results in multiple trades against the same Market Maker's quotes in multiple series.

If a contract-level limit was breached and the contract limit breach action is set to "Pull", the system will pull all Market Maker's quotes in that class.

When a Market Maker has breached his delta limit in a contract, has the relevant limit breach action set to "Pull", and all the quotes have been pulled, further Mass Quotes submitted in that class from that session will be rejected. For the avoidance of doubt this includes Mass Quotes that are queued to be processed by the Matching Engine as well as quotes that are part of a batch, where part of the batch has been processed.

Mass Quotes submitted from that session will not be accepted to that class until the Market Maker:

– Amends its delta position or limit such that it is no longer in breach; or

– Changes the relevant Limit Breach Action to "Warning" or "Ignore"; or

– De-activates the delta protection facility.

Where Mass Quotes are rejected because the Limit Breach Action is set to "Pull", a suitable rejection message will be returned.

The Matching Engine will not reset a Market Maker's ITM cumulative delta position for that class to zero once a delta limit for a class has been breached.

3.3.2   Update of Delta Position during the uncrossing algorithm

Trades executed during the uncrossing algorithm update the delta position of the Market Maker's ITM, but do not directly cause a breach action to occur. The first trade occurring after the uncrossing algorithm updates further the delta limit and may potentially cause the configured breach action to be applied at this time.

For example, a Market Maker configures their delta limit to 100. Trades executed during the uncrossing cause the Market Maker's cumulative delta position to be updated to 110. No breach action occurs at this point. A subsequent trade of delta -1 causes their position to be updated to 109. At this point the breach action occurs.

3.4   EXAMPLES

The following paragraph presents different illustrations on the way Delta Protection is calculated, updated, and how the Limit Breach Action may take place. Further examples can be found in the *'UTP Derivatives Developer Guidelines'* document.

3.4.1 Example 1: Outright trading

The Market Maker XXX has the following orders currently being worked on product A:

	CALL				*Strike*	PUT				Delta
Delta	**Bid**		**Ask**			**Bid**		**Ask**		**Delta**
	Size	**Price**	**Price**	**Size**		**Size**	**Price**	**Price**	**Size**	
0.80	10	5.00	5.40	10	*130*	10	0.30	0.50	10	**0.20**
0.30	10	2.40	2.60	10	*140*	10	2.70	3.00	10	**0.70**
0.10	10	0.50	0.70	10	*150*	10	6.00	6.30	10	**0.90**

He has defined his Delta Protection as follows:

- Delta Limit = 1 150

- Limit Breach Action = "Warn and Pull orders"

We suppose in this example that option series on Product A have a Lot Size of 100.

A few minutes after, a trader YYY submits the following orders:

- Order 1: Sell 10 lots at market in the 130 Call Strike

- Order 2: Sell 10 lots at market in the 140 Call Strike

- Order 3: Sell 10 lots at market in the 150 Call Strike

- Order 4: Sell 10 lots at market in the 130 Put Strike

- Order 5: Sell 10 lots at market in the 140 Put Strike

- Order 6: Sell 10 lots at market in the 150 Put Strike

The sequence of trades and the delta position updates of the Market Maker XXX will therefore be as follows:

Order	Product	Trade		Delta Position			Limit Breach
		Size	**Price**	**Current**	**Delta Trade**	**New**	
1	130 Call	10	5.00	0	+ 0.80 * 10 * 100	+800	**No**
2	140 Call	10	2.40	+800	+ 0.30 * 10 * 100	+1 100	**No**
3	150 Call	10	0.50	+1 100	+ 0.10 * 10 * 100	+1 200	**Yes**

Once YYY's Order 3 has been executed, the delta position breaches the delta limit (1150) set by Market Maker XXX. As a consequence, a "Warning" message is sent to XXX then all his remaining quotes in the Call series and in the Put series are pulled. The remaining orders from trader YYY will not be executed.

We suppose now that trader BBB submits the same orders, but in a different order

- Order 1: Sell 10 lots at market in the 130 Call Strike

- Order 2: Sell 10 lots at market in the 150 Put Strike

- Order 3: Sell 10 lots at market in the 140 Call Strike

- Order 4: Sell 10 lots at market in the 140 Put Strike

- Order 5: Sell 10 lots at market in the 130 Put Strike

- Order 6: Sell 10 lots at market in the 150 Call Strike

Then, as shown below, a different sequence of trades would have occurred. As shown below, all orders would have been executed, since the cumulative delta position of XXX would never have been breached.

Order	Product	Trade		Delta Position			Limit Breach
		Size	Price	Current	Delta Trade	New	
1	130 Call	10	5.00	0	+ 0.80 * 10 * 100	+800	No
2	150 Put	10	6.00	+800	- 0.90 * 10 * 100	-100	No
3	140 Call	10	2.40	-100	+ 0.30 * 10 * 100	+200	No
4	140 Put	10	2.70	+200	- 0.70 * 10 * 100	-500	No
5	130 Put	10	0.30	-500	- 0.20 * 10 * 100	-700	No
6	150 Call	10	0.50	-700	+ 0.10 * 10 * 100	-600	No

3.4.2 Example 2: Strategy trading

The previous example illustrated the way the Delta Protection works in basics: when a trade has been done, the Trading Host recalculates the delta position and checks if the limit as set by the Market Maker has been breached as a result of the trade. This is true as long as the trade is between two explicit outright orders. With strategy trading the situation is a bit different.

An incoming strategy order will be processed in whole before any delta position is updated and validated with the set limit. Therefore the execution of an incoming strategy order could result in transactions in more than one series for a providing ITM.

A Market Maker session YYY has submitted Mass Quotes in three different series at BBO. Let's assume that there are no explicit strategy orders for the given products. As a consequence, the implied prices for the

spreads are derived from YYY's ITM outright prices. Order books in the outright and in the strategy contracts look therefore as follows:

		Bid			Ask			
Product	ITM	Size	Price	Implied	Implied	Price	Size	ITM
A	YYY	10	8.75			9.00	10	YYY
B	YYY	10	6.35			6.60	10	YYY
C	YYY	10	4.15			4.40	10	YYY
AB		10		2.15	2.65		10	
AC		10		4.35	4.85		10	
BC		10		1.95	2.45		10	

A now submits an incoming spread order to buy A and to sell C with a limit of 5.00. Because there is no explicit order on that strategy, the incoming order can be executed at 4.85. Series A will be traded at 9.00 and series B at 4.15.

After the execution of the strategy order ITM YYY will receive the trade confirmation for both series and his delta position will be updated. Therefore the situation could be that the trade for series A results in a breach of the delta limit but no action is taken.

When trading strategies without implied out prices involved, a Market Maker using Delta Protection can trade multiple outright transactions before his delta position is updated and validated with the set limit but no more than the number of legs in the executed strategy order.

This can hardly be a problem. The constituent legs of strategies for which implied prices are calculated have opposite delta values. Therefore per contract it is not possible to trade more than 100 deltas.

Trading a strategy without implied prices results also in trading more series in one time and maybe deltas in the same direction, but this can only occur if the trader has given an explicit price for the strategy. This can therefore never be considered as a risk.

3.4.3   Example 3: Trading when implied out is involved

The example below will show that when implied out prices are involved, a Market Maker might be in a situation where he could trade more than the number of legs in a strategy.

An implied outright price is created based on different strategy orders. Different strategies with one common leg could result in the same implied outright price. If this implied price is traded by an incoming order the different underlying strategies need to be traded before any delta position can be updated and validated. Suppose the order book looks as follows:

Product	Strike	ITM	Size	Price	Implied	Implied	Price	Size	ITM
				Bid			**Ask**		
A	100	YYY	**10**	**46.60**					
B	105	YYY	**10**	**41.60**					
C	110	YYY	**10**	**36.60**					
D	115	YYY	**10**	**31.60**					
E	120	YYY	**10**	**26.60**					
Z	145	XXX	**50**		**1.60**				
AZ							45.00	10	XXX
BZ							40.00	10	XXX
CZ							35.00	10	XXX
DZ							30.00	10	XXX
EZ							25.00	10	XXX

ITM YYY is active as a Market Maker and maintains in the market a range of products. In the example above only the relevant prices are given.

ITM XXX enters different spreads all with a common leg Z. Taking spread AZ for example, ITM XXX wants to sell the spread at 45.00, meaning he wants to sell leg A and buy leg B. Because there is an outright bid of 46.60 in leg A an implied bid of 1.60 (46.60 – 45.00) will be generated for leg Z. Also the other created spreads will generate a 1.60 implied bid for leg Z resulting in a total size of 50 at the limit of 1.60 as shown in the example.

A third party sells the book in product Z at 1.60. This order needs to be processed in its entirety before any delta position can be updated. Therefore the different underlying strategies need to be filled. As a result in series A, B, C, D and E 10 contracts are sold.

Delta protection can only be updated after these trades are processed. A trader making markets for a maximum of 10 lots expects not to trade more than 1000 deltas before his delta protection is validated. But according to this example a trader could trade more deltas before updating and checking the position.

4. VOLUME PROTECTION

4.1 FUNCTIONAL OVERVIEW

The Volume Protection facility offers Market Makers with another level of protection. It is intended to protect Market Makers in scenarios where multiple trades result in small net changes of delta (and vega) position.

As Delta Protection, the facility is only available to Market Makers who are explicitly registered to participate in this facility in the contracts on which they have Market Making obligations. Volume Protection is configured on a per session and per contract basis (intraday changes are not possible).

Market Makers can only participate in this facility using Mass Quotes.

The Volume Protection can be configured exactly the same way as the Delta Protection, i.e.:

– All contracts support contract-level Volume Protection.

– This is configurable by contract.

For the avoidance of doubt, volume protection does not interact in any way between classes even when those classes are related (e.g. on the same underlying).

As a consequence, when Volume Protection is configured for an Option contract, trades in the related Futures contract (when applicable) will not have any impact on the Market Maker's volume position.

The Volume Protection facility maintains a cumulative underlying equivalent traded volume, i.e. the simple cumulative total number of option contracts (either calls or puts) or the cumulative total number of futures , on a per contract basis. It is updated whenever a quote trades. When the volume position exceeds a set volume limit, action is taken to warn the trader and optionally, pull all that trader's remaining quotes in the same contract.

Volume Protection applies during Pre-Open, Open and Pre-Close trading periods, but no pulling takes place prior to Open.

Volume Position information is not maintained between login sessions. If the Market Maker logs off or is logged out for any reason including user lockout, all his existing Volume Protection details are discarded.

4.2 ACTIVATING VOLUME PROTECTION

Volume Protection uses a similar approach as Delta Protection.

At the beginning of each Market Maker's trading session, the Volume Protection is set to be inactive, the Volume Limit and Volume Position are both set to zero (0).

Once logged on, a Market Maker can activate Volume Protection for each contract. On activation, the volume limit and volume position are zero (0), **irrespective of whether the Market Maker has executed any trades in that class during the day.**

At the time of the activation, the Market Maker can set a volume limit and a limit breach action per class for each level of Volume Protection. This determines which action is taken once the volume limit is breached by the volume position.

Volume limits are submitted as absolute positive values.

The following limit breach actions are available:

■ **'Ignore'**, meaning that no checking takes place and any limit set is ignored

■ **'Warning'**, meaning that a warning will be issued but quotes will not be pulled. Note that the Matching Engine does not explicitly act on a "Warn" Limit Breach Action. The Market Maker's application is expected to produce appropriate warnings.

■ **'Pull'**, meaning that all Market Makers ITM's quotes in that contract of that contract will be pulled without specific notification.

■ **'Warning and Pull',** meaning that a warning will be issued to the user and all quotes in that contract will be pulled.

4.3 VOLUME POSITION UPDATES AND AMENDMENTS

4.3.1 Volume Position updates

After each trade, the Matching Engine recalculates the cumulative volume position of the trading ITM as follows:

$$NewVolumePosition = CurrentVolumePosition + (NbLots * LotSize)$$

The + is then always >0:
- for both buying and selling a Call or a Put if the contract is an option
- for both buying and selling a Future if the contract is a Future

Whilst the Volume Protection facility is active, every time a quote trades the Market Maker will receive a message including the following information:

– The session cumulative volume position for that contract;

– The session volume limit for that contract; and

– Whether the Market Maker's quotes in that contract have now been pulled as a result of a limit breach.

For a delta-neutral strategy trade, a volume position update is made for all the legs involved.

> **Important remark**
>
> Since the position is not recalculated and checked (and therefore the requested breach action is not performed) until after the entire trade has occurred, the user may exceed their volume limit.

■ If a contract-level limit was breached and the contract limit breach action is set to "Pull", the system will pull all Market Maker's quotes in that class.

When a Market Maker has breached his volume limit in a contract, has the relevant limit breach action set to "Pull", and all the quotes have been pulled, further Mass Quotes submitted in that class from that session will be rejected. For the avoidance of doubt this includes Mass Quotes that are queued to be processed by the Matching Engine as well as quotes that are part of a batch, where part of the batch has been processed.

Mass Quotes submitted from that session will not be accepted to that class until the Market Maker:

   – Amends its volume position or limit such that it is no longer in breach; or

   – Changes the relevant Limit Breach Action to "Warning" or "Ignore"; or

   – De-activates the volume protection facility.

Where Mass Quotes are rejected because the Limit Breach Action is set to "Pull", a suitable rejection message will be returned.

The Matching Engine will not reset a Market Maker's ITM cumulative volume position for that class to zero once a volume limit for a class has been breached.

4.3.2   Update of Volume Position during the uncrossing algorithm

The approach will be similar as Delta Protection i.e. trades executed during the uncrossing algorithm update the volume position of the Market Maker's ITM, but do not directly cause a breach action to occur. The first trade occurring after the uncrossing algorithm updates further the limit and may potentially cause the configured breach action to be applied at this time.

4.4   INTERACTION BETWEEN THE VOLUME AND DELTA PROTECTIONS

The contracts where Delta Protection and Volume Protection have been enabled, Market Makers can use the two protection types simultaneously.

When multiple protection types are configured, a breach of one type will not interfere with the availability of the other one.

Once the two protections have been configured by the Market Maker, after each trade, the Matching Engine recalculates the cumulative volume position as well as the cumulative delta position. The Market Maker will receive two separate messages including:

   – The session cumulative volume position or delta position

   – the session volume limit or delta limit

   – Whether the Market Maker's quotes have been pulled as a result of one of the limit breaches.

If only one of the two limits has been breached, and if the limit breach action was set to "Pull", further Mass Quotes submitted in that class from that session will be rejected. This includes Mass Quotes that are queued to be processed by the Matching Engine as well as quotes that are part of a batch, where part of the batch has been processed.

Mass Quotes submitted from that session will not be accepted until the Market Maker:

   – Amends its appropriate MMP position or limit such that it is no longer in breach; or

   – Changes the relevant Limit Breach Action to "Warning" or "Ignore"; or

— De-activates the appropriate MMP protection facility.

5. CCG BINARY MESSAGES FOR MARKET MAKER PROTECTIONS

The FIXML standing data files include a set of fields to indicate whether Delta, Vega and Volume Protections are available for a contract (i.e. a Physical Commodity), and the level at which each Protection applies (Contract level). The permitted values for the *Nested Attributes '110' (Delta Protection), '111' (Vega Protection)* and *'112' (Volume Protection)* are the following ones:

VALUE	DESCRIPTION
'C'	The protection is available at the Contract level

If the *Nested Attribute* does not appear in the FIXML files, it means that the protection is not available for the contract.

The following messages have been introduced to handle Market Maker Protections (MMP) (for more detailed information, please refer to the *'CCG Binary Client Interface Specifications'* and to the *'UTP Derivatives Developer Guidelines'*):

■ The **'SetMMProtection (U2)'** message can be used to configure, activate or de-activate a Market-Maker Protection for a specified contract (the specific protection must be indicated in the *ProtectionType* field). The Matching Engine will reply to this request via a **'SetMMProtectionAck (U6)'** message.

■ The **'AdjustMMPosition (U3)'** can be used to adjust the current value of the contract level Market-Maker position up or down for the contract specified in the message header (the specific protection must be indicated in the *ProtectionType* field). The Matching Engine will reply to this request via an **'AdjustMMPositionAck (U7)'** message.

■ The **'GetMMProtectionStatus (U4)'** message can be used to request the Market-Maker Protection data for the contract specified in the message header (the specific protection must be indicated in the *ProtectionType* field). It is possible to request contract level details as applicable. The Matching Engine will reply to this request via a **'GetMMProtectionStatusAck (U8)'** message.

The following *ReturnCode* could be returned via any of the Market Maker Protection messages.

RETURN CODE	DESCRIPTION
CONTRACT_NOT_REGISTERED	The relevant contract is not currently registered for use in the Maker Protection facility
ITM_NOT_REGISTERED	The ITM supplied is not currently registered to use the Market-Maker Protection facility in the specified contract
FACILITY_NOT_ACTIVE	An operation has been requested on a contract where the Market Maker Protection facility is not Active
MMP_LIMIT_INVALID	An operation had been requested where the Market-Maker Protection Limit has been specified that is out of range

In the **'SetMMProtection'** message, the following values can be used for the *ProductLimitBreachAction* field when setting the Breach Action:

PRODUCT LIMIT BREACH ACTION	DESCRIPTION
0x15001	Do not check for limit breach conditions
0x15002	A warning is required when the MM Protection Limit is breached
0*15004	Mass Quotes in the relevant contract should be pulled when MM Protection Limit is breached
0x15006	On MM Protection Limit breach, a warning is required followed by the pulling of the Mass Quotes in the relevant contract

An **'AdjustMMPositionAck'** message is sent by the Matching Engine whenever there is a change to the cumulative position. This change can be due to two main reasons, which are returned to the user in the *MMPUpdateReason* enum field:

– 0*160001 – The MMP position has been updated following a trade against a quote

– 0*160002 – The update message has been generated following a user update to his MMP limit or configuration parameter (using the **'SetMMProtection'** message)

When a Market Maker Protection is only available at the Contract level, the *RequestLevel* enum type must be used to specify / retrieve this level, at which the position applies. The field is available both in the **'AdjustMMPosition'** and **`GetMMProtection`** messages with one of the following values:

REQUEST LEVEL	DESCRIPTION
0x170001	The associated request pertains to Contract level updates

APPENDIX A: REVIEW LOG, DOCUMENT HISTORY, SIGN-OFF

REVIEW LOG

DOCUMENT NAME	Overview of market making functionalities
PROJECT NAME	UTP Detailed Functional Specifications
LOCATION	
REVISION VERSION	2.3.0

DOCUMENT HISTORY

REVISION NO	DATE	AUTHOR	CHANGE DESCRIPTION

2.2	16 Feb 2016	VPO, BA Team – Euronext IT	• Updates since changes in delta and volume protections:
			  o Delta protection now also applies to futures
			  o Volume protection calculation has changed for both futures and options
			• Updates since review by CTSG:
			  o Input order throttling does not only apply to contracts on which Mass Quotes have been implemented
			  o ~~Immediate And Cancel (IAC)~~ => Immediate Or Cancel (IOC)
			  o New values in response of an 'OrderMassCancelRequest (q)' message
			  o MarketMode = '25' is now used
			  o Protections at expiry-level are not implemented.

2.3.0	11 Apr 2016	TCH, BA Team – Euronext IT	• Correction of delta position and volume position updates for delta neutral strategy trades

REQUIRED APPROVER SIGNOFF

DOCUMENT APPROVER NAME	PASS/ FAIL P / F	APPROVAL DATE	COMMENTS Must be entered if a stakeholder does not approve of the document.