Document title

EURONEXT DERIVATIVES MARKETS - OPTIQ® KINEMATICS SPECIFICATIONS

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1.0.1

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81

PREFACE

PURPOSE

The purpose of this document is to detail Kinematics for Optiq Order Entry Gateway and Market Data Gateway messages.

TARGET AUDIENCE

This document should be read by Euronext and Members using Optiq.

REVISION HISTORY

Version	Change Description
1.0.1	Finalized Version for Opening of Optiq Derivatives Test Platform (EUA) and member conformance - Addition of the LIS Package Structure message in sections 8.3 and 8.4 - Correction on section 4.1.3 : no 'Uncrossing' flag is sent in case the IMP was still outside of collars, but a new reservation notification and the associated Indicative Matching Price

ASSOCIATED DOCUMENTS

The following list of the associated documents, which either should be read in conjunction with this document or which provide other relevant information for the user:

- Euronext Markets – OEG Client Specifications – SBE Interface
- Euronext Markets – OEG Client Specifications – FIX 5.0 Interface
- Euronext Markets – Optiq & TCS Error List
- Euronext Markets – Optiq MDG Client Specifications
- Euronext Markets – Optiq File Specifications

Clients are advised to also refer to the Euronext Rules and Regulations documents for more details.

For the latest version of documentation please visit http://www.euronext.com/optiq

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CONTENTS

1. OVERVIEW

1.1 INTRODUCTION

This document provides an overview of the exchange of messages between the Optiq Order Entry Gateway (OEG), the clients' systems and the Market Data Gateway (MDG) for the Euronext Derivatives markets. It includes:

- Typical trading scenarios and the corresponding public and private messages for these scenarios, and the different cases they may cover;
- The names and IDs of the messages sent;
- The events that trigger the transmission of messages.

This overview is meant to provide a description of the main structures and concepts used within this document, to facilitate the review of the individual topics and cases covered within.

The messages that are sent between trading members and Optiq are referred to as private messages whereas the messages that are sent by the external broadcasting systems are referred to as public messages.

Private messages are exchanged exclusively between the clients' system and the Optiq matching engine via order entry gateways, for example to request information from the system or to issue a command (e.g., enter an order). Private messages are also sent back by Optiq via order entry gateways (OEGs) to the client's system to provide the information requested, or confirm that a command has been successfully executed (or not), as well as to notify of trades, etc.

Public messages are sent by Optiq via MDG to provide to all subscribing clients with anonymized Market Data, such as orders entered, best limits, executed trades, market events, etc.

The diagrams in this document express representative examples of message sequences and other scenarios can be figured out from the ones described inside that document. The details of the message contents may vary depending on the example.

The diagrams also endeavour to represent as close to reality as possible the sequence in which events and steps occur, and messages are sent. This introduction provides indication when such cases are not feasible to represent faithfully due to complexity of graphical representation.

For a complete description of the messages and their fields, please refer to the associated document:

- Optiq Order Entry Gateway Messages Specifications SBE;
- Optiq Order Entry Gateway Messages Specifications FIX;
- Optiq Market Data Gateway Messages Specifications.

1.1.1 Work in Progress

Some functionalities to be provided in Optiq for Derivatives markets are slated to be available at a later date. As such, the current version of the document may not contain the associated kinematics.

The high level list of topics not covered is listed below:

- Total Return Futures (TRF) & Market on Close (MOC)
- Interaction via private messages with Event Driven Implied Model (EDIM) and Spontaneous Implied Matching (SIM)
- Request for Cross facility (RFC)
- RiskGuard interface

1.2 MESSAGE CODES AND NAMES

1.2.1 Private Messages

Possible Direction:
Inbound - Client ▶OEG (From Client To OEG)
Outbound - Client ◀OEG (To Client From OEG)

Order Entry Gateway message identifiers, which include message codes and names, are provided throughout the message kinematics section as shown below:

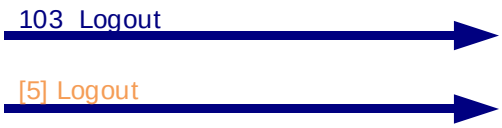
- For Inbound messages (example for **NewOrder** message):

01 represents the SBE Bin Code.
[D] represents the FIX Code.

- For Outbound messages (example for **Ack** message):

03 represents the SBE Bin Code.
[8] represents the FIX Code.

- When there is a difference of kinematics between SBE Bin and FIX protocols, the flows are distinguished as shown below (example of **Logout** message):



The SBE Bin message Code is represented alongside the FIX kinematic.

- The exhaustive list of SBE Bin and FIX message codes and names is provided in the table below:

SBE Bin Message Code	SBE Bin Message Name	FIX Message Code
01	New Order	**D**
03	Ack	**8**
04	Fill	**8**
05	Kill	**8**
06	Cancel Replace	**G**
07	Reject	**9**
08	Quotes	**i**
09	Quote Ack	**b**
12	Cancel Request	**F**
13	Mass Cancel	**q**
14	Mass Cancel Ack	**r**
15	Open Order Request	**AF**
17	Ownership Request Ack	**U29**
18	Ownership Request	**U18**
19	Trade Bust Notification	**8**
34	Request for Execution	**UM**
39	User Notification	**CB**
47	MM Sign In	
48	MM Sign In Ack	
50	Instrument Synchronization List	**U50**
51	Synchronization Time	**U51**
60	Security Definition Request	**C**
61	Security Definition Ack	**d**
62	MM Protection Request	
63	MM Protection Ack	
64	New Wholesale Order	**U64**
65	Wholesale Order Ack	**U65**
100	Logon	**A**
101	Logon Ack	
102	Logon Reject	**3**
103	Logout	**5**
106	Heartbeat	**0**
107	TestRequest	**1**
108	TechnicalReject	

1.2.2 Public Messages

Possible Direction:
Outbound - MDG ▶Client (From MDG To Client)

Market Data Gateway message identifiers, which include message codes and names, are provided throughout the message kinematics section as shown below:

- For public messages sent to the Market:

- The exhaustive list of message codes and names is provided in the table below:

Message Code	Message Name
1001	Market Update
1003	Price Update
1004	Full Trade Information
1005	Market Status Change
1006	Timetable
1008	Real Time Index
1009	Statistics
1011	Index Summary
1012	Strategy Standing Data
1013	Contract Standing Data
1014	Outright Standing Data
1016	LIS Package Structure
1101	Start Of Day
1102	End Of Day
1103	Health Status
1106	Technical Notification
2101	Start Of Snapshot
2102	End Of Snapshot

- For readability purposes on MDG side, multiple channels are not considered. Diagrams show only a single set of channel.

1.2.3 Graphical representations

The diagrams in this document represent the following components:

- The overall Optiq system which is the new integrated trading platform for the Euronext markets, shown as below:

- The Order Entry Gateway which is the private interface between clients and the matching engine:

- The Market Data Gateway (MDG) which sends public messages to the Market:

- The clients' systems, used by the client to send and receive private messages to and from the matching engine, here referred to as Member:

- And the Market represents all the publicly available data sent by the exchange to all subscribers of the public feeds:

Note: for readability purposes the field names in the graphs are abbreviated, e.g. *Order Quantity* is referred to as *OrderQty*, etc.

- Some diagrams are preceded by an order book to facilitate understanding.

  T# indicates the sequence in time for the submission of messages to the order book.

Symbol Index of the Instrument

M1

Outright Instrument

		Bid	Offer		
Time	Qty	Price	Price	Qty	Time
T0	10	0.05	-	70	T2
T1	50	0.05			
T0	10	0.04			

At the start of kinematics, the order book contains a resting order with Time T0. T1 and T2 should be ignored.

In diagram, some private message are followed by T1 (or T2,..). It means that at this stage, T1 (or T1 and T2) are added in the order book at the time T1 and/or T2.

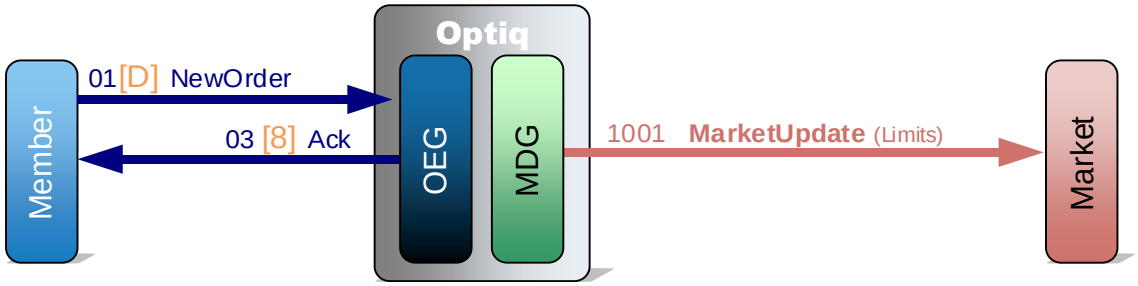
If diagrams are not preceded by an order book, it means that the order book is empty.

1.2.4 Main Principles

A request sent by a client will usually:

- Trigger an outbound acknowledgment message from the matching engine which is exclusively sent to this client, and in some cases this can be followed by other notification messages;
- Trigger one or several market data messages if the request has a direct impact on the Central Order Book (COB).

Below is an abbreviated, generic example of the interaction of messages, for the submission of a **NewOrder**(01) (FIX D) message:



When required diagrams may include division into steps of the scenarios displayed, that are delineated by dotted lines, and are denoted by the number of the step. Numbers denoting the steps in the diagram correspond to the numbers used in the explanation below the diagram.

More detailed diagrams may include additional details for the individual messages, such as, Side, Order Priority, Price, Quantity, etc.

1.2.5 Important Notes

1.2.5.1 Full Trade Information generation

A public message **FullTradeInformation** (1004) is sent in the dedicated Trade and Referential (REFT) channel each time a **MarketUpdate** (1001) following a trade is disseminated to the market by MDG. But for readability purposes it is not shown on the kinematics diagrams.

1.2.5.2 Order Update generation

There is **no** MDG **OrderUpdate** (1002) message dissemination for Derivatives. For Derivative markets, updates of Market Data are provided by price level only, not by individual orders.

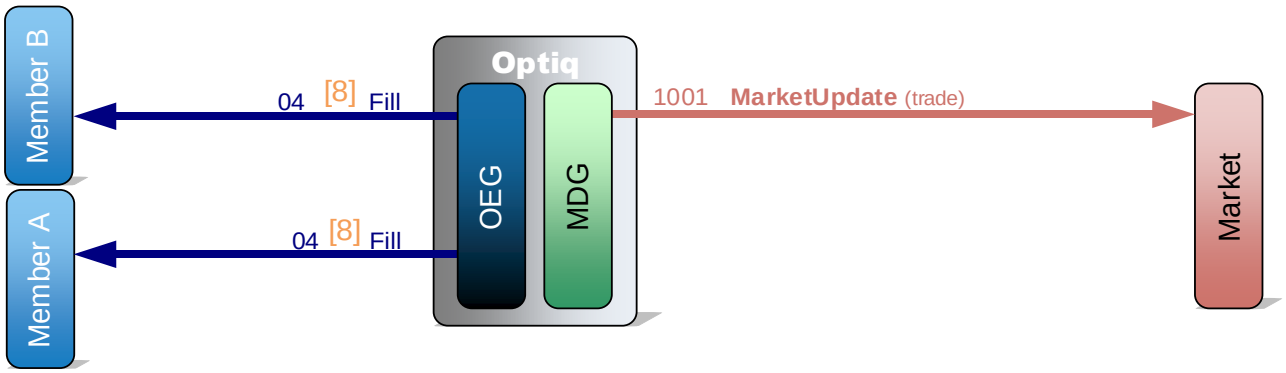
1.2.5.3 Implied prices

Implieds are not considered as orders however the associated Implied prices volume are displayed on the market only if they contribute to the Best Limit.

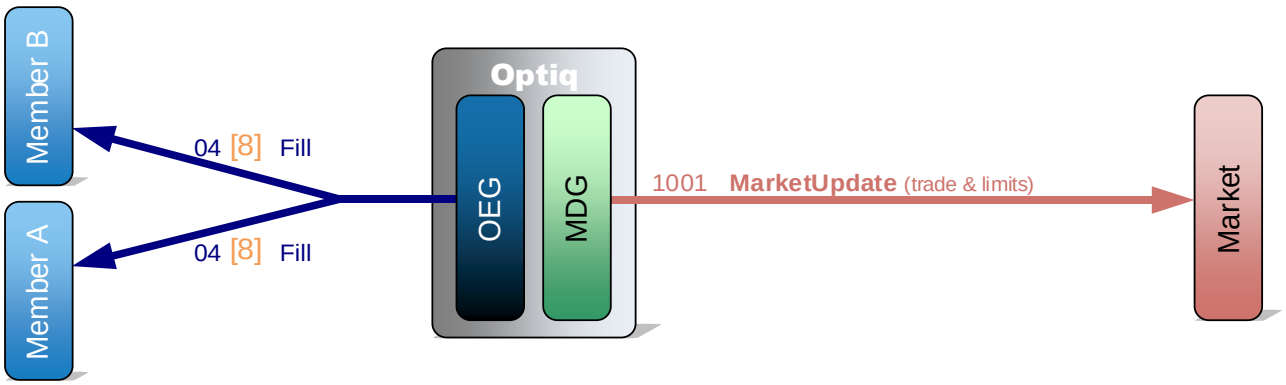
When an implied price contributes to a Best limit, the volume available on the market at that price increases without incrementing the number of orders. This logic allows client to distinguish volumes of implied prices vs. those of explicit orders. As such it is possible to have a Best Limit displayed with price and volume but with a number of orders equal to zero (when relying exclusively on implied prices).

1.2.5.4 Simultaneity of Private Messages

In all the diagrams of this document multiple private messages resulting from the same event (eg. **Fill** (04) (FIX 8) messages due to a trade execution) are represented as if they were sent one by one:



This is done to reduce complexity of the graphical representation and to improve readability. <u>In reality such messages are sent at the same moment</u> to the different members:



For the rest of this document please assume that <u>messages resulting from the same event and sent to different clients are sent at the same moment.</u>

2. COMMON KINEMATICS

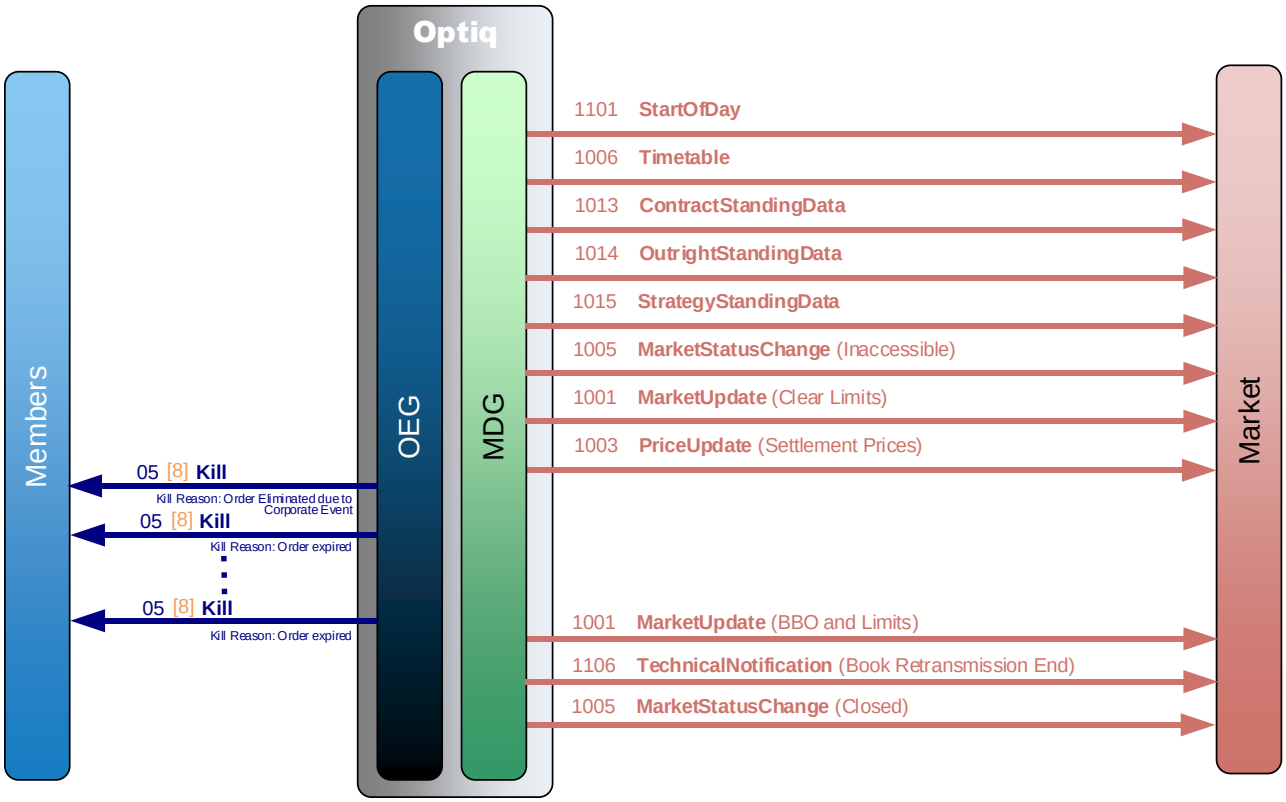
The following public messages contain repeating sections:

- PriceUpdate;
- MarketUpdate;
- MarketStatusChange;
- FullTradeInformation.

Detailed information regarding repeating sections can be found in the document **Euronext Markets – MDG Client Specifications**.

2.1 TRADING SESSION MANAGEMENT

2.1.1 Initialisation of a New Trading Day

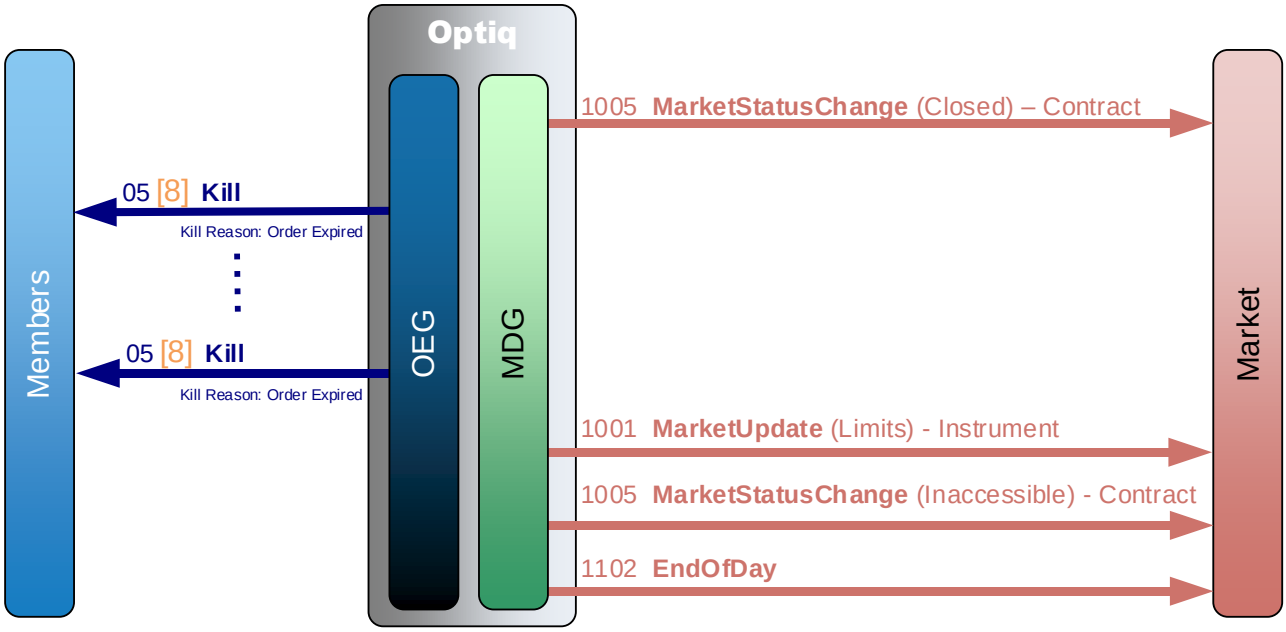


At the initialization of each new trading day the Exchange sends the following public messages (the generation sequence is guaranteed to always be the same):

- **StartOfDay** (1101) message: It is always the first message of the day, which indicates the date of the trading session.
- **Timetable** (1006) message: It provides all the trading patterns that are used across all the contracts.
- **ContractStandingData** (1013) message: For every single contract it provides to the members all the necessary Contract data for the trading day.

- **OutrightStandingData** (1014) message: For every single outright it provides to the members all the necessary Outright data for the trading day.
- **StrategyStandingData** (1015) message: For every active strategy it provides to the members all the necessary Strategy data for the trading day.
- **MarketStatusChange** (1005) message: For every single contract it is sent with *Book State* set to 'Inaccessible', *Trading Period* set to 'Opening' and *Rebroadcast Indicator* set to '0'.
- **MarketUpdate** (1001) message: For every single instrument the limits are cleared at the beginning of the day.
- **PriceUpdate** (1003) message: For every single Outright instrument it provides the previous day's daily Settlement Price.
- **MarketUpdate** (1001) message: For every single instrument it provides both BBO and depth of the order book for order-driven markets with *Rebroadcast Indicator* set to '1'.
- **TechnicalNotification** (1106) message: For every single instrument it notifies the end of the book retransmission.
- **MarketStatusChange** (1005) message: For every single contract a *Book State* set to 'Closed' is sent at the scheduled time.

2.1.2 End Of Day



At the end of the trading day, when the contract is in 'Closed' State with *Trading Period* of 'Closing', expired orders are killed, thus a private **Kill** (05) (FIX 8) message will be sent for each expired order. The orders killed at the end of the day include Day orders, and unexecuted orders in Delta-neutral strategies.

Then, **MarketUpdate** (1001) messages are sent per instrument to update the Limits.

Note: Updates and cancellation of orders during Closed phase in private feed generate **MarketUpdate** (1001) to update limits.

At the scheduled time a **MarketStatusChange** (1005) message is sent for the 'Inaccessible' phase.

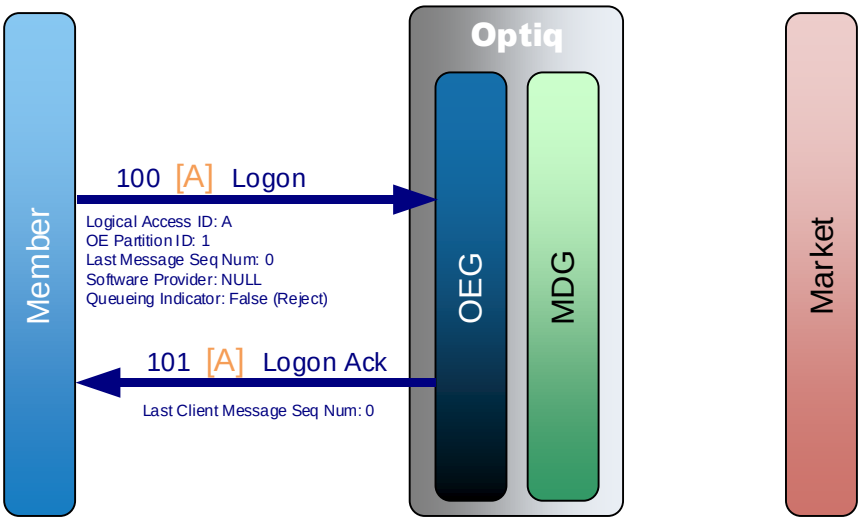
The public **EndOfDay** (1102) message is always the last message sent by the Exchange, it notifies that the platform and its network are now closed (members cannot send nor receive messages until the next trading day).

Note: Clients should be aware that orders eliminated at the end of the session will not be re-broadcast at the start of the next trading session. In case of disconnection at the end of the sessions, clients are advised to remove any expired day orders from their book.

2.2 ADMIN MESSAGES

Please note that all administrative messages exchanged between the client and the exchange are issued per OE session (physical connection).

2.2.1 Successful Logon



At the beginning of each trading day the members must log on to the Order Entry Gateway prior to send any other message.

In order to initiate the connection the member sends a **Logon** (100) (FIX A) message. If the logon is successful the OEG sends back a **LogonAck** (101) message (only in SBE Bin protocol).

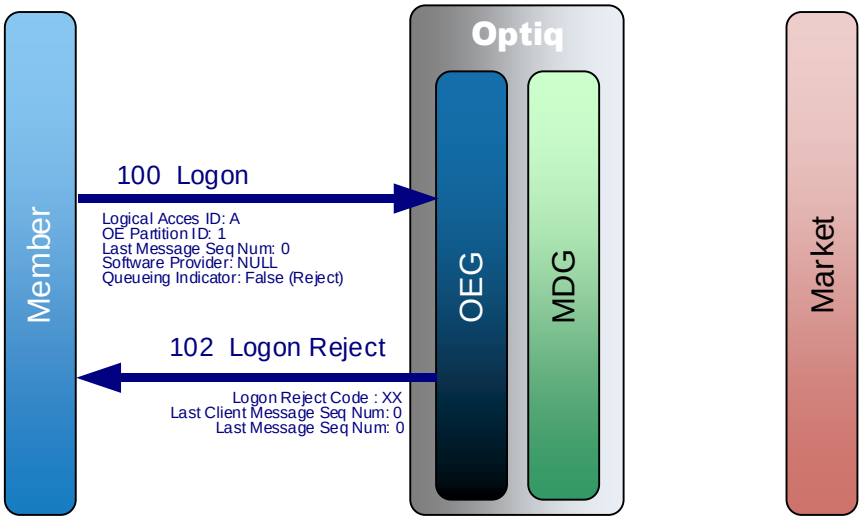
In FIX protocol, if the logon is successful the OEG sends back a **Logon** (A) message. While in SBE the sequence numbers start from 0, in FIX the sequence numbers start from 1.

No message is sent to the Market.

2.2.2 Logon Rejection

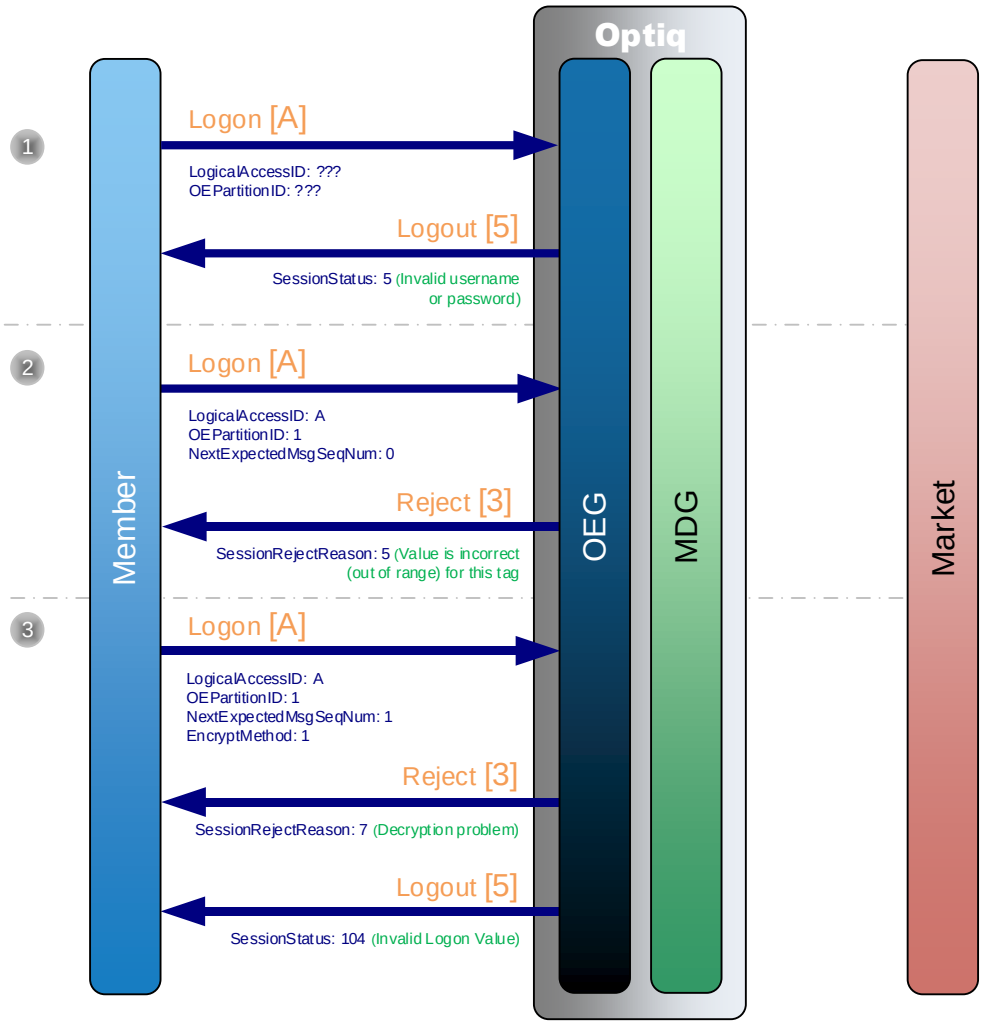
Logon rejection behaviour prescribed by the FIX protocol is different from that adopted for SBE, and for this case two different diagrams are provided, each one specific to the protocol. While at high level the behaviour might be different, the result of the Logon Rejection will be the same.

2.2.2.1 Logon Rejection in SBE



A member sends a **Logon** (100) message in order to initiate the connection with the OEG. If for any reason the **Logon** (100) message is not accepted, the OEG sends back a **LogonReject** (102) message. No message is sent to the Market.

2.2.2.2 Logon Rejection in FIX



A member sends a **Logon** (A) message in order to initiate the connection with the OEG. If for any reason the **Logon** (A) message is not accepted, the OEG sends back a **Logout** (5) message.

Additionally, OEG sends a **Reject** (3) message if the **Logon** (A) is poorly formatted.

① A member sends a **Logon** (A) message in order to initiate the connection with the OEG. If the fields *LogicalAccessID* and *OEPartitionID* are wrong or not recognized for the associated *SenderCompID*, OEG sends back a **Logout** (5) message with *SessionStatus* set to '5' (Invalid username or password).

② A member sends a **Logon** (A) message in order to initiate the connection with the OEG. If the field *NextExpectedMsqSeqNum* is set to '0', OEG sends back a **Reject** (3) message with SessionRejectReason set to '5' (Value is incorrect (out of range) for this tag).

③ A member sends a **Logon** (A) message in order to initiate the connection with the OEG. If the value of the field *EncryptMethod* is different than '0', OEG sends back a **Reject** (3) message with SessionRejectReason set to '7' (Decryption Problem).

No messages are sent to the Market.

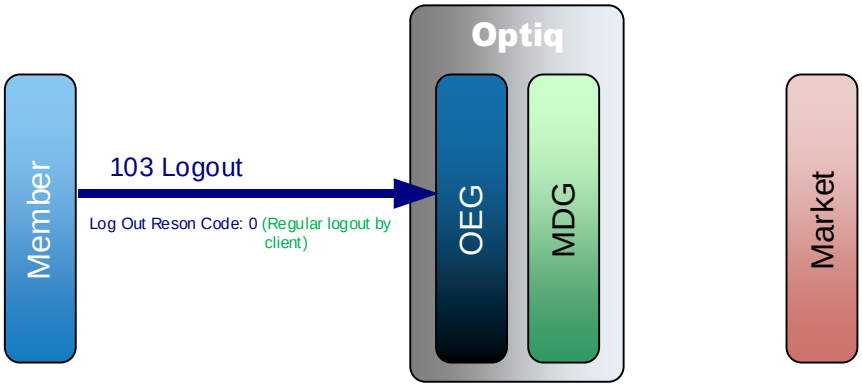
2.2.3 Logout

Logout behaviour prescribed by the FIX protocol is different from that adopted for SBE, and for this case two different diagrams and descriptions of steps are provided, each one specific to the protocol. While at high level the behaviour might be different, the result of the Logout from the system will be the same.

Logout is used to improve session management processes. This message identifies to the exchange if the client has disconnected on purpose or because of technical issue.

Note: This will trigger the Cancel on Disconnect mechanism (only on the specific orders on which it is enabled).

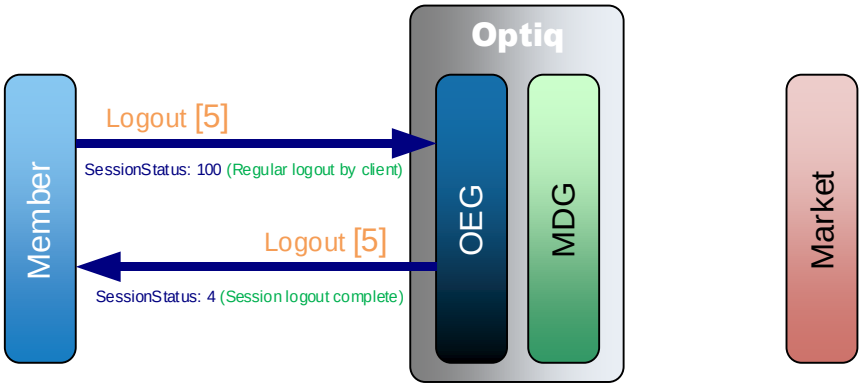
2.2.3.1 Logout in SBE



In order to log out the member sends a **Logout** (103) message, OEG immediately closes the physical connection.

No message is sent to the Market.

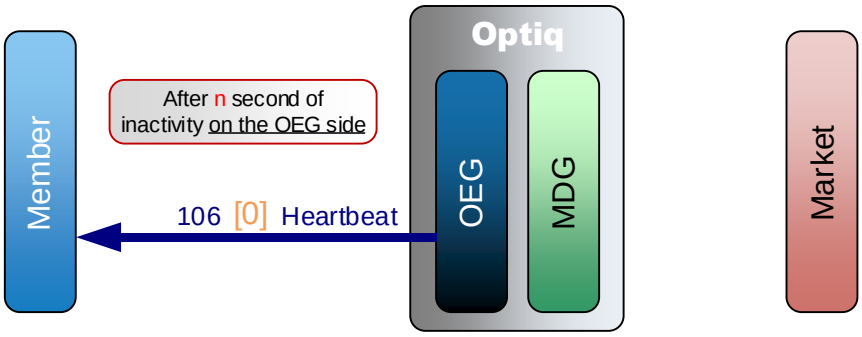
2.2.3.2 Logout in FIX



In order to log out the member sends a **Logout** (5) message with *SessionStatus* set to '100' (Regular logout by client). In response OEG firstly sends back a **Logout** (5) confirmation message with *SessionStatus* set to '4' (Regular logout complete) and then closes the physical connection.

No message is sent to the Market.

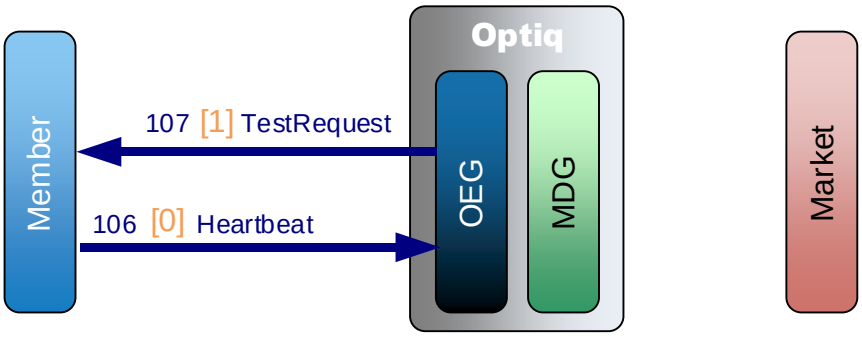
2.2.4 Heartbeat



After *n* second(s) of inactivity on Optiq OEG session side (i.e. when the OEG has not sent any message since *n* second(s)) the OEG sends a **Heartbeat** (106) (FIX 0) message to the member to signify that the connection is still alive from Optiq perspective. The member does not have to respond; it is only a notification from the OEG.

Note: The value of *n* will be provided for each Optiq Segment in the *Connectivity Specifications*.

2.2.5 Test Request



Test Request from Exchange to Client

After *n* second(s) of inactivity on the member side (i.e. when the OEG has not received any message since *n* second(s)) the OEG sends a **TestRequest** (107) (FIX 1) message to the member to request confirmation that the connection is still alive on member side.

The parameter *n* is identified per Optiq Segment in the Connectivity specifications as the period of inactivity.

For SBE:

- If the member issues a message in the following *n* second(s), the **TestRequest** (107) is ignored. Note the message issued by the member can be an **Heartbeat** (106) message or any other application message such as **NewOrder** (01), **CancelReplace** (06).

- If the member does not issue any message in the following *n* second(s), the OEG closes the connection. (This triggers the Cancel on Disconnect mechanism on the orders for which it is enabled.)

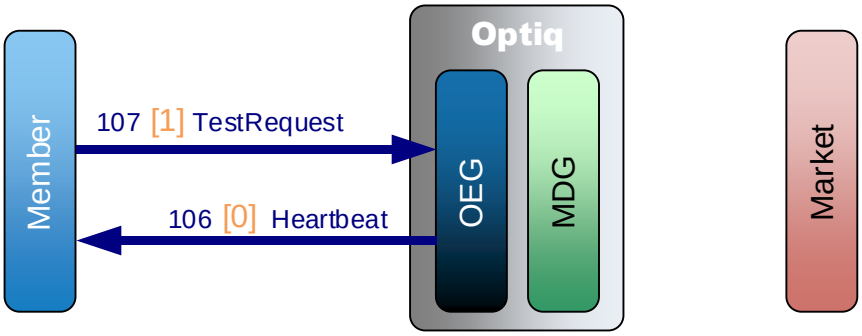
For FIX:

Member has *n* seconds to answer with a **HeartBeat** (0) messages, containing the same value in *TestReqID* (112), as the one sent in the original **TestRequest** (1) message sent by the OEG.

- Following receipt of the TestRequest (1) message, and for the duration of the inactivity period member may send other messages, including application messages and **HeartBeat** (0) messages. The application messages (such as **NewOrderSingle** (D), **CancelReplace** (G)) will be processed by OEG
- At the end of the period of inactivity if the member has not answered with a **HeartBeat** (0) message that contains the expected value of *TestReqID* (112), the client will be disconnected. (This triggers the Cancel on Disconnect mechanism on the orders for which it is enabled.)

Test Request from Client to Exchange

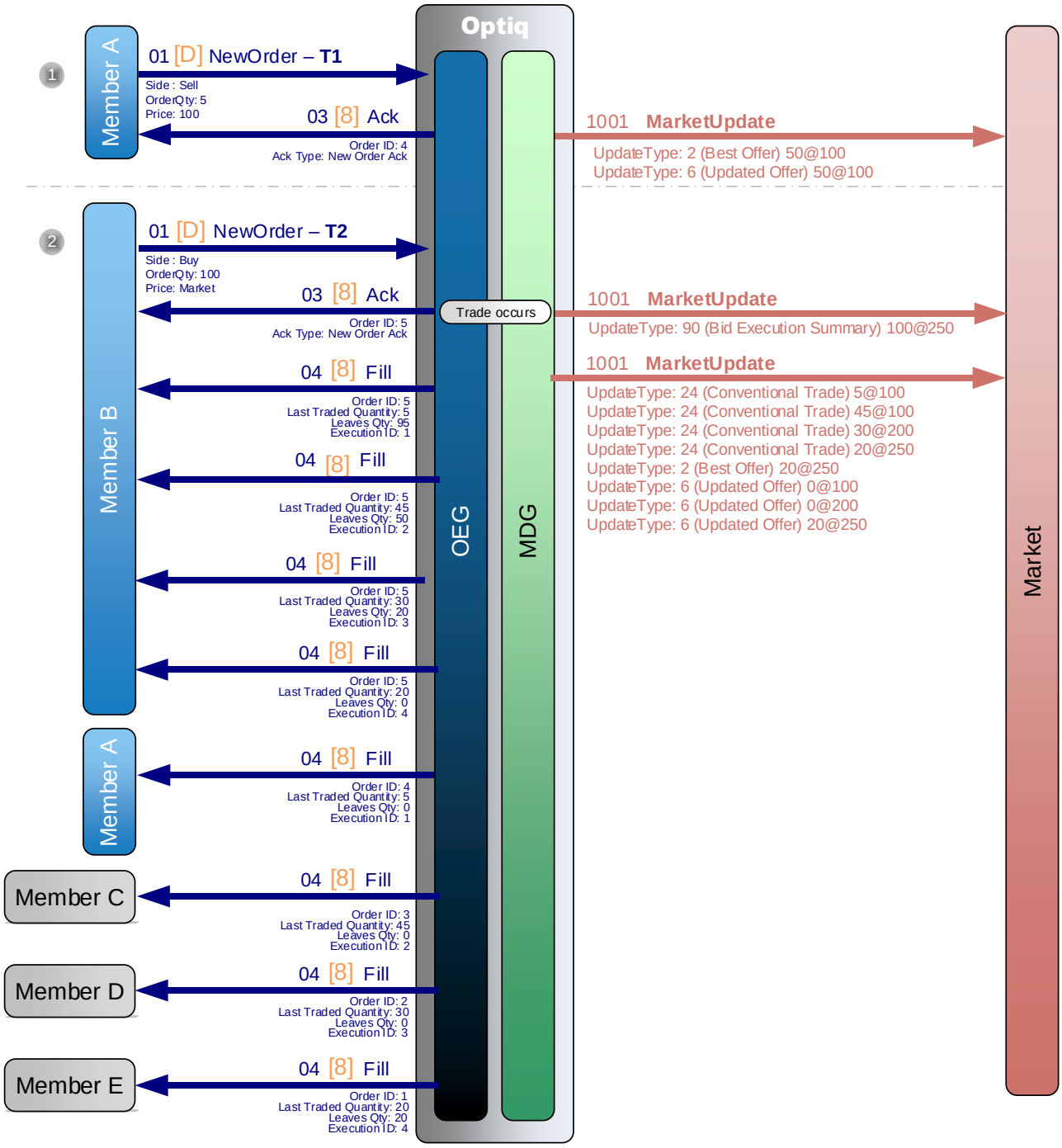
The **TestRequest** (107) (FIX 1) message can also be sent by the Member, in this case the OEG will respond with a **Heartbeat** (106) (FIX 0) message:



2.3 ENTERING AN ORDER

2.3.1 Incoming Order Matched Fully

Symbol Index: M1					
		Bid	Offer		
Time	Qty	Price	Price	Qty	Time
T2	100	Market	100	45	T0
			100	5	T1
			200	30	T0
			250	40	T0



① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 5 and a price of 100.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The order enters the order book without matching and a public **MarketUpdate** (1001) is sent to the market to update the limit.

② Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 100 and a Market order type.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The entering order immediately, and fully, matches the four orders that are in the order book at this time, and the OEG generates a private **Fill** (04) (FIX 8) message to each member involved in the trade, for each leg of the trade. All the Fill messages are sent simultaneously.

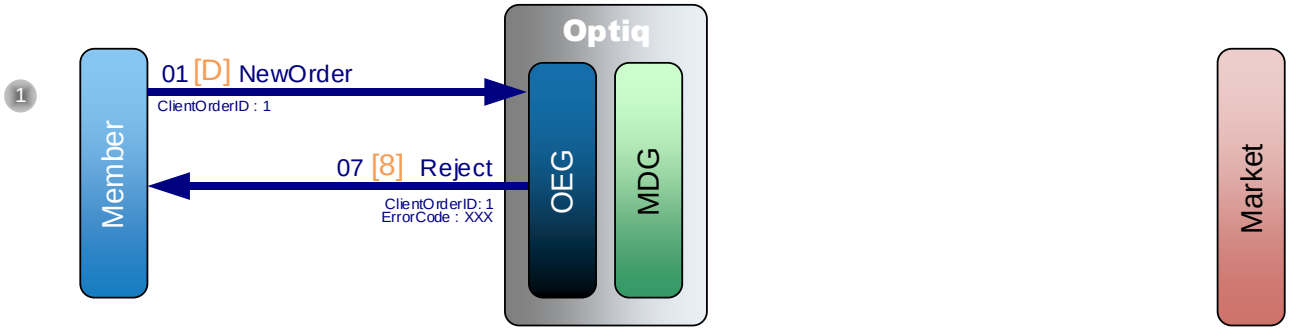
A public **MarketUpdate** (1001) message is immediately sent to the market for the Execution Summary.

Only then, public **MarketUpdate** (1001) messages are sent to the market for the Trades and update of the Limits.

Note: Market Data kinematics are based on the matching scenario Explicit vs Explicit in an Outright. For the full list of scenarios see section "Trading Kinematics"

No dedicated **MarketUpdate** (1001) message is sent for the entry of the second order as it is immediately matched.

2.3.2 New Order Rejected



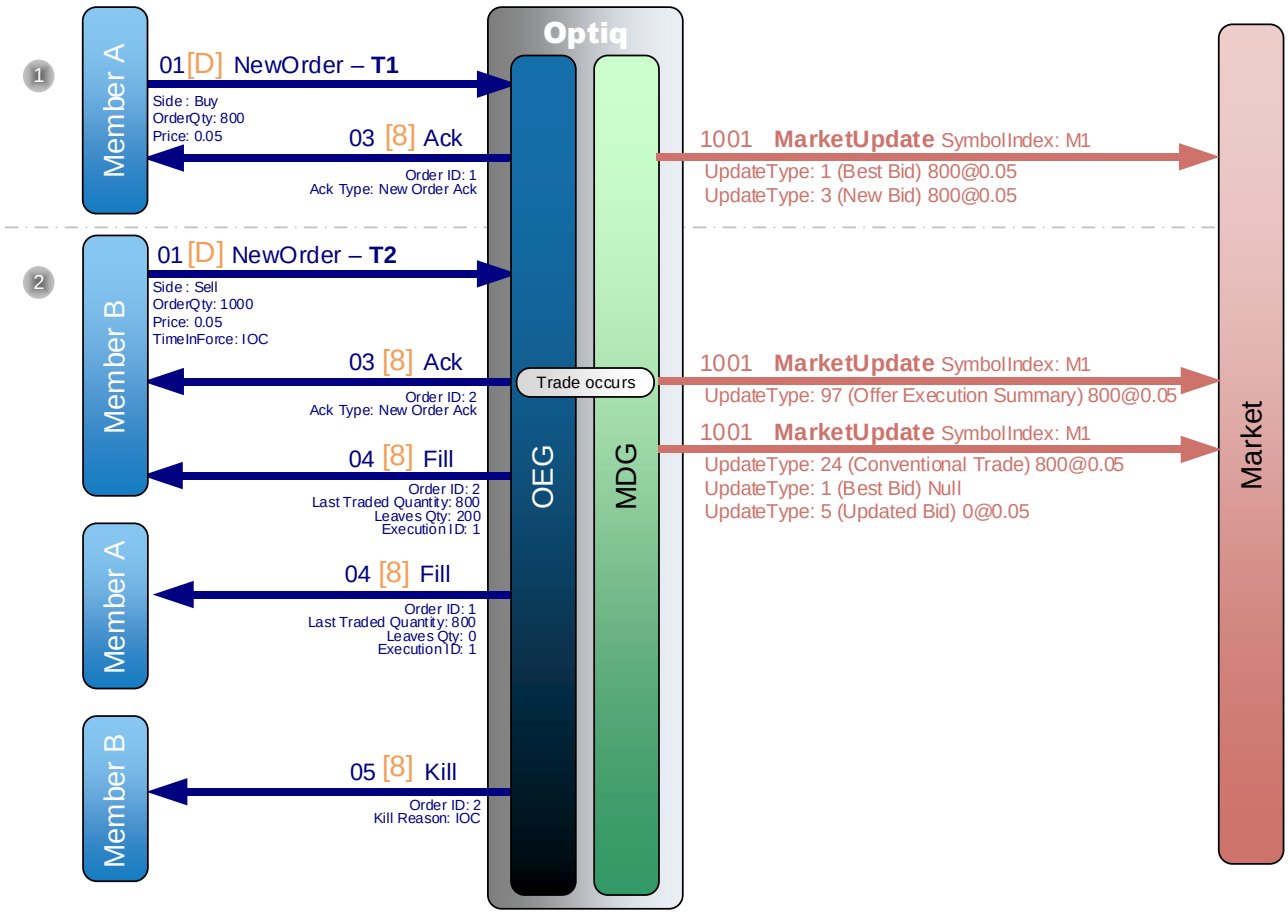
① A Member sends a private **NewOrder** (01) (FIX D) message to enter an order.

If the order is rejected OEG sends back a private **Reject** (07) (FIX 8) message with an *Error Code*. The reason of the rejection can be found using the Error Code value within the *Euronext Markets - Optiq & TCS Error list* document.

No message is sent to the Market.

2.3.3 Immediate Or Cancel Order Partially Filled

SymbolIndex: M1					
		Bid	Offer		
Time	Qty	Price	Price	Qty	Time
T1	800	0.05	0.05	1000	T2



① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 800 and a price of 0.05.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The order enters the order book without matching and a public **MarketUpdate** (1001) message is sent to update the limit.

② Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 1,000, a price of 0.05 and a validity condition of Immediate or Cancel (IOC).

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The entering order immediately matches the first order for a quantity of 800 and OEG sends back a private **Fill** (04) (FIX 8) message to each member to notify the trade execution. As the remaining

quantity cannot be immediately filled, OEG sends back to the Member B a **Kill** (05) (FIX 8) message to cancel the remaining quantity of that order.

A public **MarketUpdate** (1001) message is immediately sent to the market for the Execution Summary.

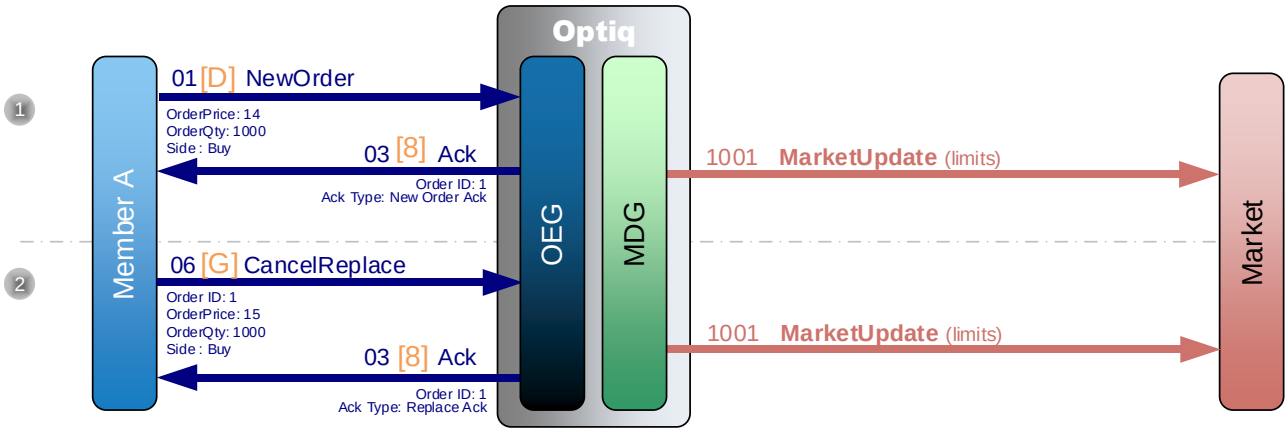
Only then, public **MarketUpdate** (1001) messages are sent to the market for the Trades and the Limits.

Note: Market Data kinematics are based on the matching scenario Explicit vs Explicit in an Outright. For the full list of scenarios see section "Trading Kinematics".

As IOC never enters in the book, there is no dedicated **MarketUpdate** (1001) message sent to the market.

2.4 MODIFYING AN ORDER

2.4.1 Modifying a Resting Order



① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new buy order with a quantity of 1,000 and a price of 14.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The order enters the order book without matching and a public **MarketUpdate** (1001) message is sent to update the limit.

② The same Member sends a private **CancelReplace** (06) (FIX G) message to modify the order by increasing the price up to 15.

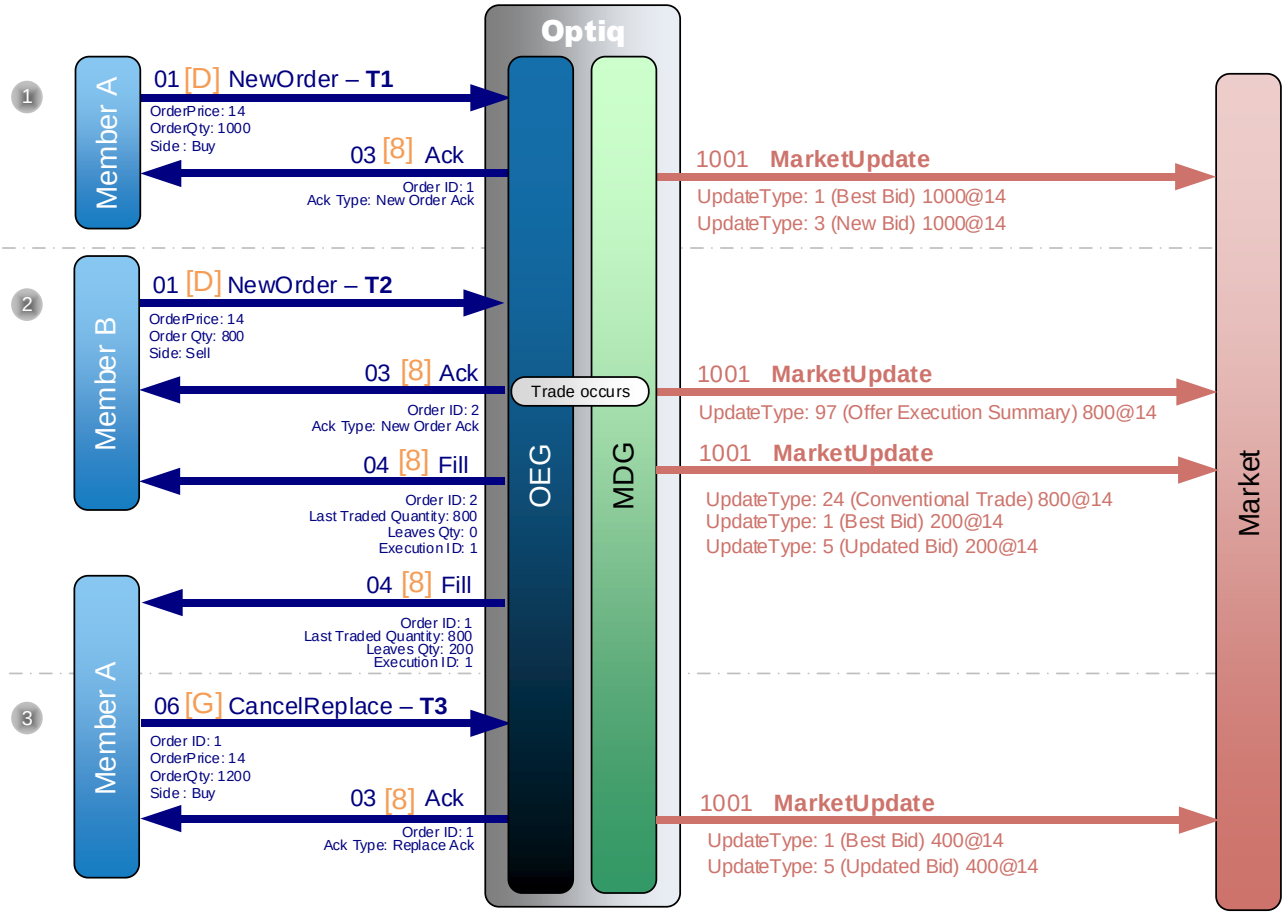
OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order modification.

MDG sends a public **MarketUpdate** (1001) message to update the limits.

Note: In case of a change of an order ownership, i.e. when the **CancelReplace** (06) (FIX G) message is sent from another OE Session, it will follows the same kinematic (no message is sent to the previous owner of the order). For more information about Ownership, please see section Ownership Request

2.4.2 Modifying a Partially Matched Order

Symbol Index: M1					
		Bid	Offer		
Time	Qty	Price	Price	Qty	Time
T1	1000	14	14	800	T2



① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 1,000 and a price of 14.
OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The order enters the order book without matching and a public **MarketUpdate** (1001) message is sent to update the limit.

② Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 800 and a price of 14.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The entering order immediately matches the first order, and OEG sends back a private **Fill** (04) (FIX 8) message to each member to notify of the trade execution.

A public **MarketUpdate** (1001) message is immediately sent to the market for the Execution Summary.

Only then, public **MarketUpdate** (1001) messages are sent to the market for the Trades and the Limits.

③ Later, Member A sends a private **CancelReplace** (06) (FIX G) message to modify the quantity of the original Buy order. As the member wants the leaves quantity to be equal to 400 after the modification, the member indicates a quantity of 1,200 (as 800 have already matched, and leaves quantity is 200).

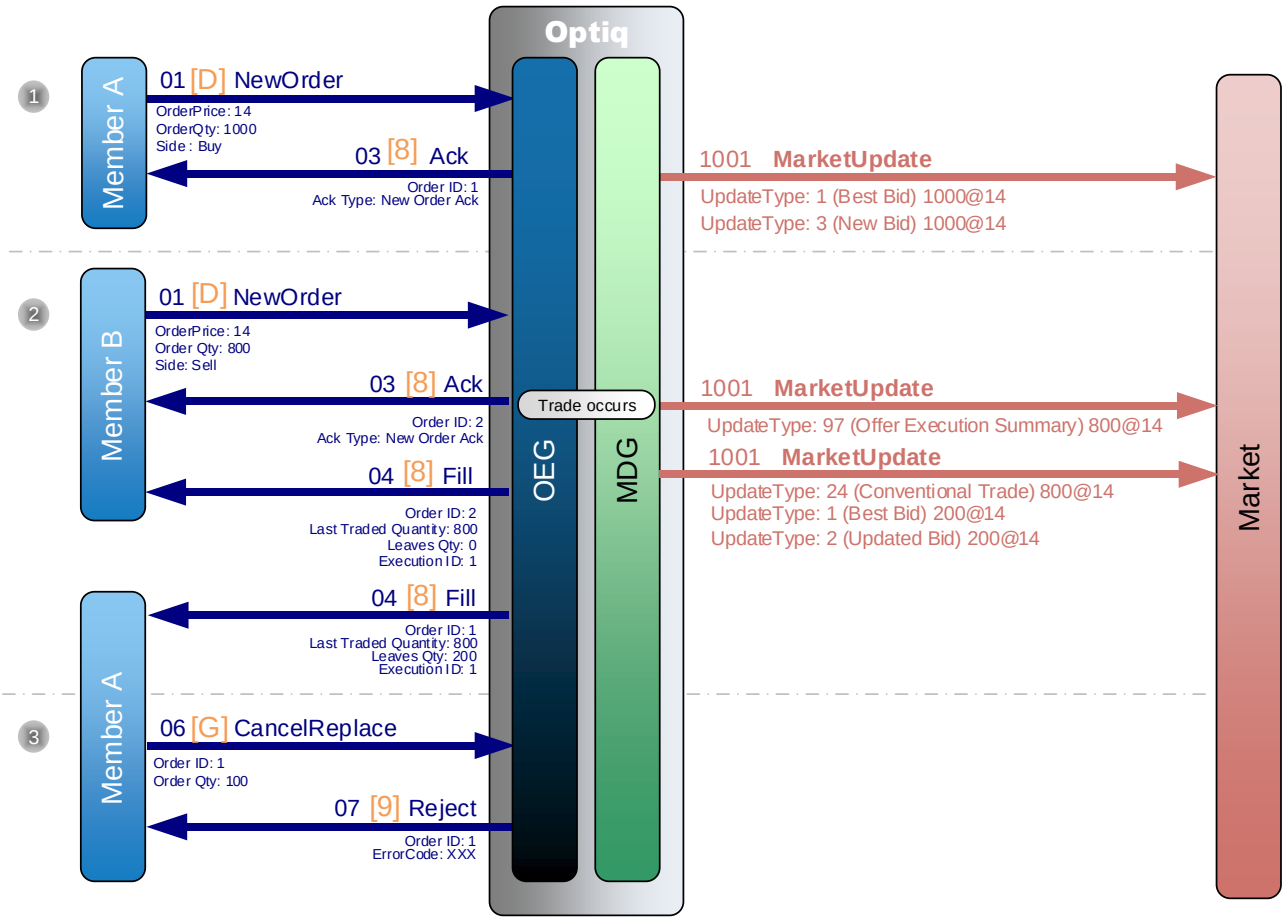
OEG sends back a **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order modification.

A public **MarketUpdate** (1001) message is sent to update the limit.

Note: Market Data kinematics are based on the matching scenario Explicit vs Explicit in an Outright. For the full list of scenarios see section "Trading Kinematics".

There is **no** MarketUpdate (1001) for the entry of the second order as it is immediately matched.

2.4.3 Rejected Modification



① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 1000 and a price of 14.
OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The order enters the order book without matching and a public **MarketUpdate** (1001) message is sent to update the limits.

② Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 800 and a price of 14.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The entering order immediately matches the first order and OEG sends back a private **Fill** (04) (FIX 8) message to each member to notify the trade execution.

A public **MarketUpdate** (1001) message is immediately sent to the market for the Execution Summary.

Only then, public **MarketUpdate** (1001) messages are sent to the market for the Trades and the Limits.

③ Later, Member A sends a private **CancelReplace** (06) (FIX G) message to modify the quantity of the original Buy order. The member indicates a quantity of 100.

OEG sends back a private **Reject** (07) (FIX 9) message to reject the replace operation as the quantity to be modified for an individual order must always be larger than the one already. So the remaining quantity of 200 stays in the order book.

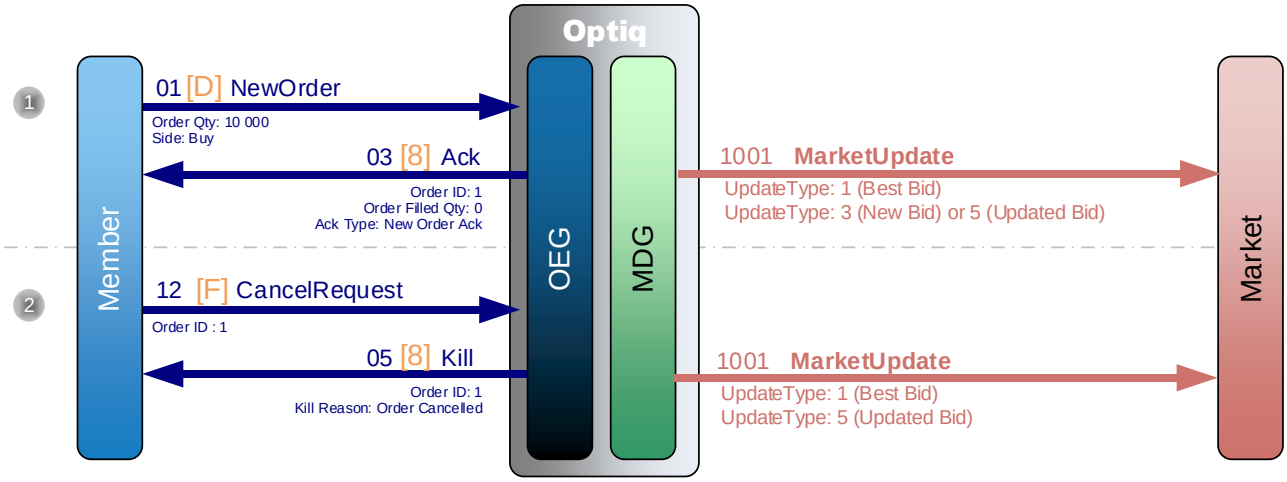
Note: If the member attempts to change the quantity of an order to a value less or equal to the quantity already traded, the order modification will be rejected. In this example, new quantity of 800 will be rejected, a new quantity of 801 will be accepted.

Market Data kinematics are based on the matching scenario Explicit vs Explicit in an Outright. For the full list of scenarios see section "Trading Kinematics".

There is **no MarketUpdate** (1001) for the entry of the second order as it is immediately matched.

2.5 CANCELLING AN ORDER

2.5.1 Cancelling an Unmatched Order



① A Member sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 10,000.
OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

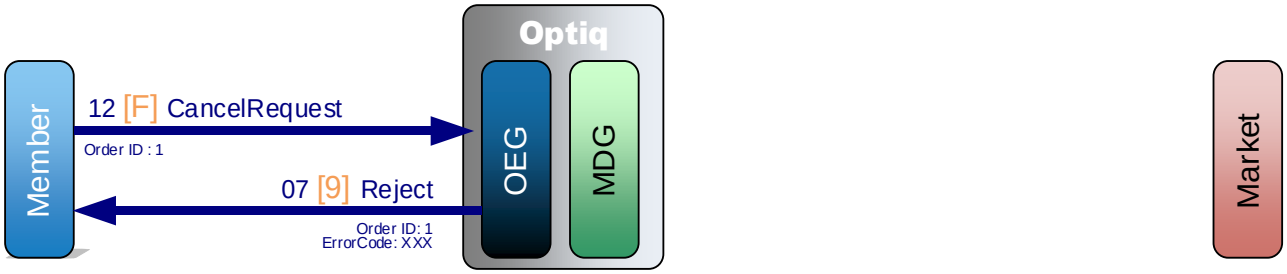
The order enters the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the limit.

② Later the same Member sends a private **CancelRequest** (12) (FIX F) message to cancel the previously entered order.

OEG sends back a private **Kill** (05) (FIX 8) message to confirm that the order request has been cancelled.

A public **MarketUpdate** (1001) message is sent to the market to update the limits.

2.5.2 Rejected Order Cancellation



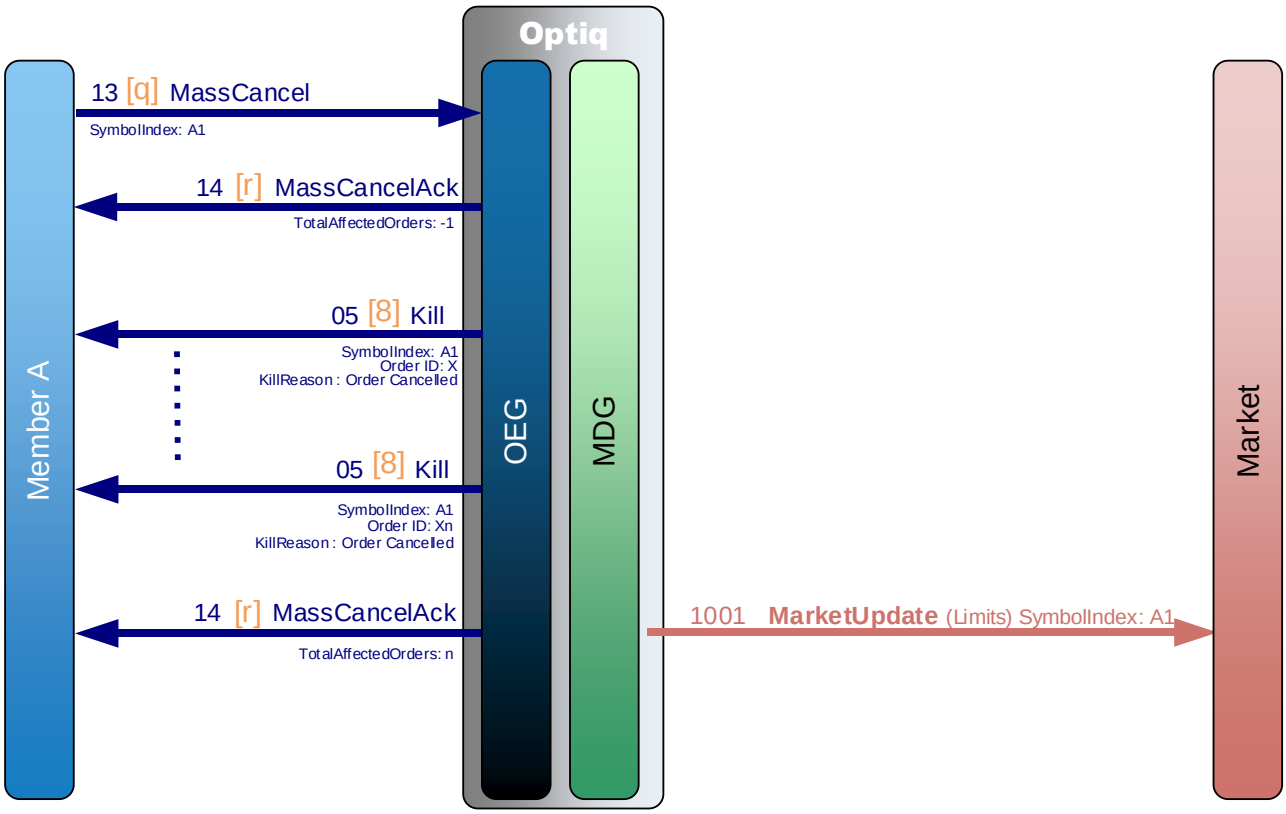
A Member sends a private **CancelRequest** (12) (FIX F) message to cancel an order that has already matched.

OEG sends back a private **Reject** (07) (FIX 9) message to reject the cancellation with an *Error Code*. The reason of the rejection can be found using the Error Code value within the *Euronext Markets - Optiq & TCS Error list* document. As this is a case of functional rejection, **Reject** (07) message contains a system assigned Order ID.

No message is sent to the Market.

2.5.3 Mass Cancellation

2.5.3.1 Mass Cancellation for an Instrument



Member A sends a private **MassCancel** (13) (FIX q) message to cancel orders for an instrument A1.

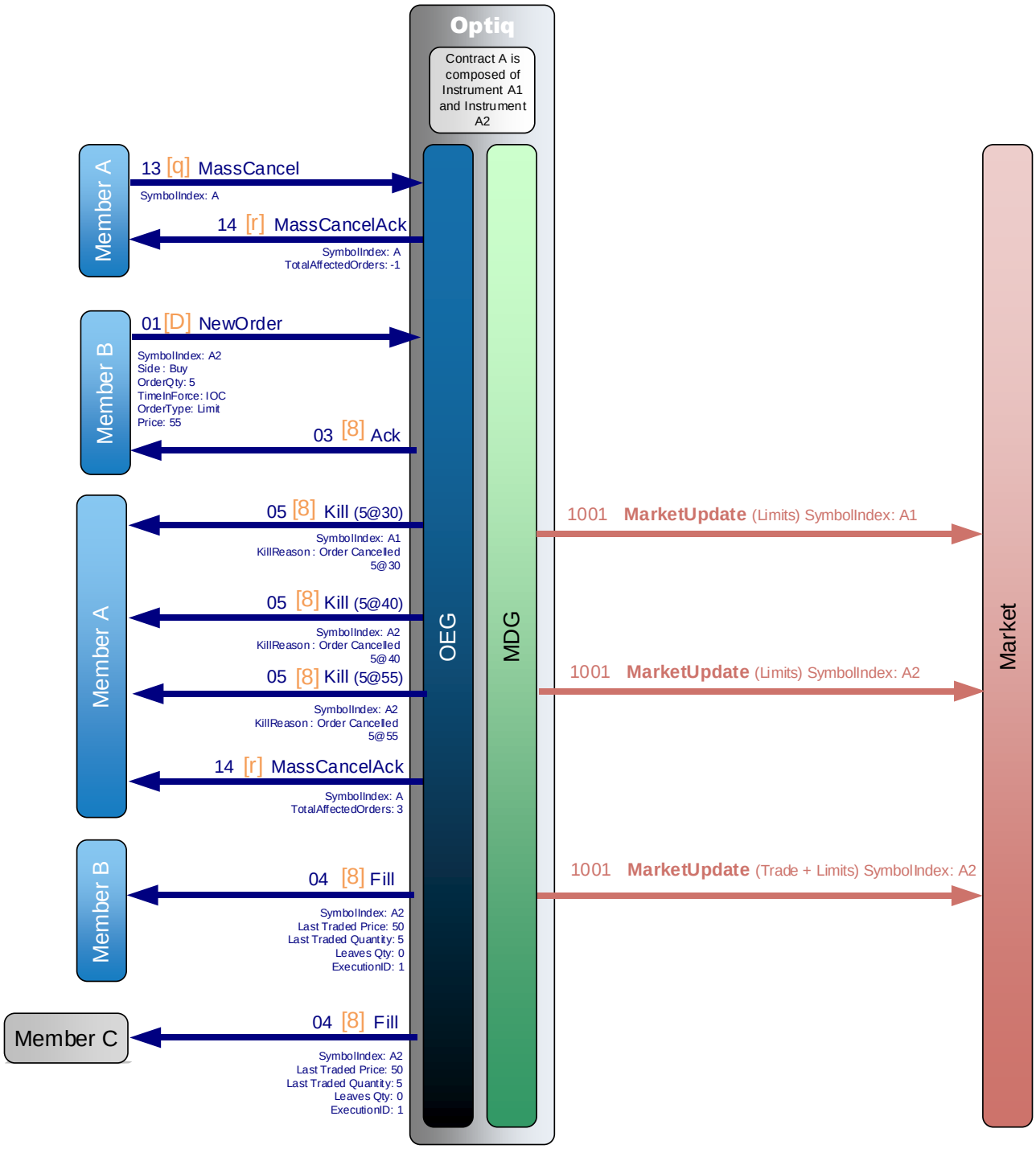
OEG sends back a private **MassCancelAck** (14) (FIX r) message followed by a private **Kill** (05) (FIX 8) message for each killed orders; the mass cancellation process ends with the sending of a new private **MassCancelAck** (14) (FIX r) message identifying the total number of orders cancelled.

A public **MarketUpdate** (1001) message is sent to the market to update the limits.

2.5.3.2 Mass Cancellation for a Contract

A1 Outright Instrument					
		Bid	Offer		
Member	Qty	Price	Price	Qty	Member
D	5	15	20	5	C
			30	5	A

A2 Outright Instrument					
		Bid	Offer		
Member	Qty	Price	Price	Qty	Member
D	5	35	40	5	A
			50	5	C
			55	5	A



Member A sends a private **MassCancel** (13) (FIX q) message to cancel orders for a Contract A, which contains instruments A1 and A2. Member A has orders in both instruments on the Offer side.

Immediately following this Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order on instrument A2, which under other conditions would match one of the orders of Member A.

As Mass Cancellation for Derivatives is processed first and as a complex synchronous instruction, the cancellation of orders for Member A is fully processed first, with all orders on the affected instruments cancelled.

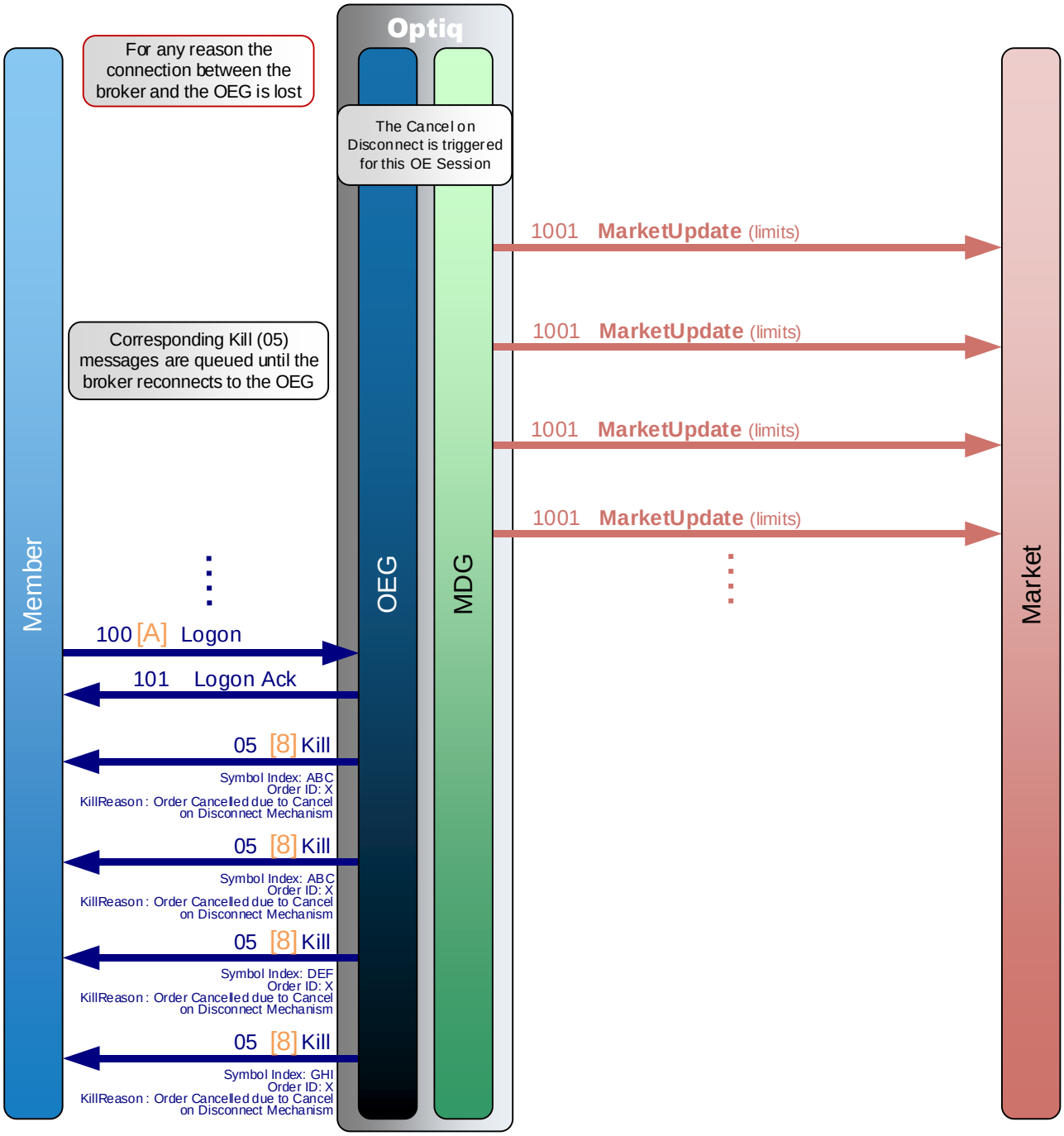
OEG sends back a private **MassCancelAck** (14) (FIX r) message followed by a private **Kill** (05) (FIX 8) message for each killed orders; the mass cancellation process ends with the sending of a new private **MassCancelAck** (14) (FIX r) message identifying the total number of orders cancelled.

As Member A no longer has any orders in the book, matching of the newly entered Buy order for Member B occurs with the order of Member C. For which the **Fill** (04) (FIX 8) messages are sent to each participant of the executed trade.

As a result of both the cancellation of orders of Member A, and the trade between Member B and C - public **MarketUpdate** (1001) messages are sent to the market to update the limits for instruments A1 and A2.

Note: **MassCancel** (13) FIX (q) message applies to all the orders sent by the Firm ID or the combination of Firm ID & Execution Within Firm ShortCode, independent of the Logical Access that submitted the Mass Cancel request. (E.g. : A MassCancel message sent from a Logical Access 1 to cancel orders for Short Code 1 will cancel all the orders of the firm for that Short Code submitted from all the Logical Accesses of that firm).

2.5.4 Cancel on Disconnect Mechanism



The diagram represents a generic case of loss of connection (physical) between a client and a partition.

When a connection is lost between the member and OEG, for any reason, the Cancel on Disconnect (CoD) mechanism is triggered for all OE Sessions concerned by the connection outage. Once the mechanism is triggered, all live orders not flagged to be persisted and belonging to the corresponding OE Session(s) are immediately cancelled for their remaining quantity, regardless of order type and validity type.

For each order cancelled a public **MarketUpdate** (1001) message is sent to the market to update the limits.

For each cancelled order a **Kill** (05) (FIX 8) message is generated and queued until the client reconnects during the trading phases of the same trading day.

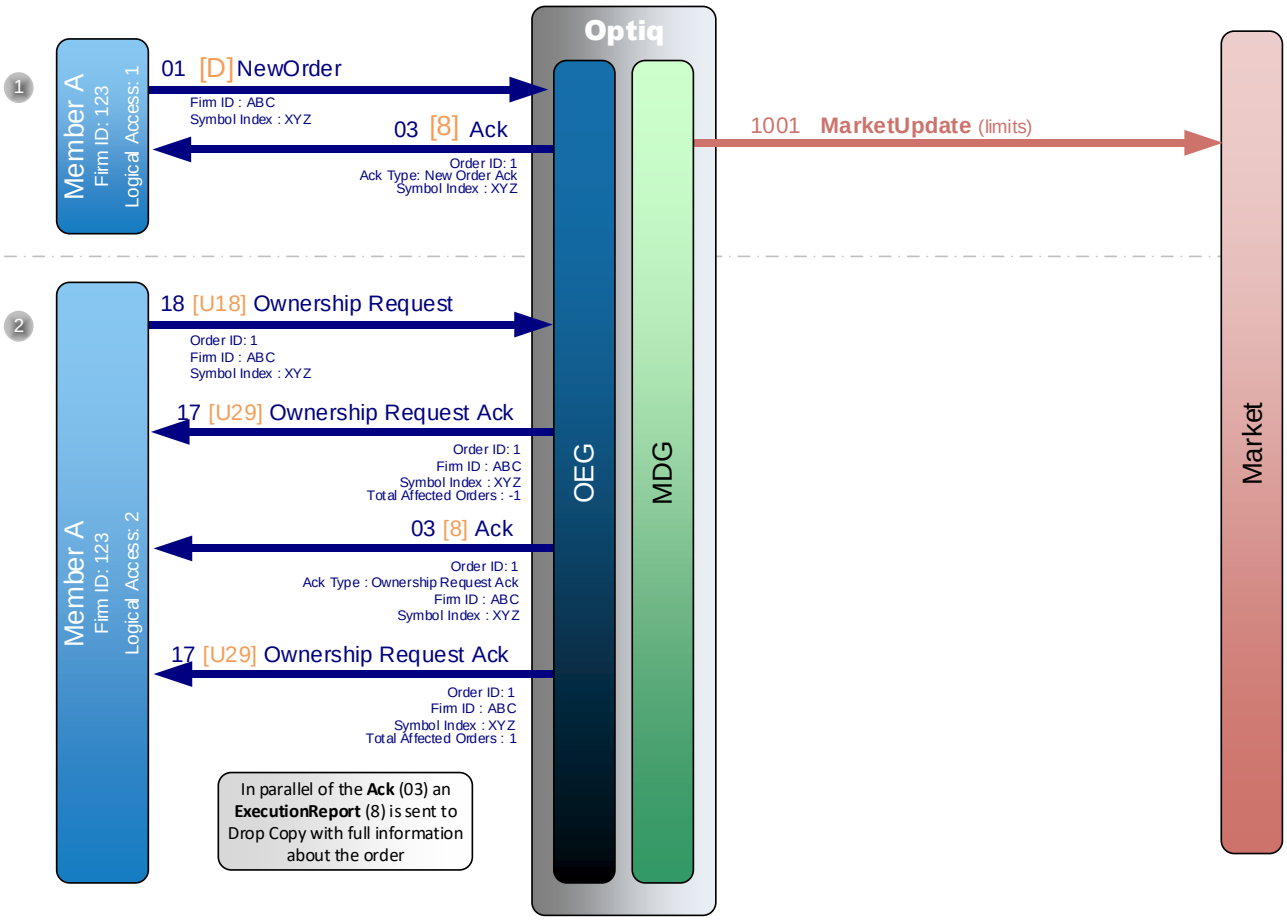
When the Member reconnects with a **Logon** (100) (FIX A) message, if the logon is successful the OEG sends back a **LogonAck** (101) (FIX A) message.

Once the connection is re-established, the Member immediately receives the **Kill** (05) (FIX 8) messages that have been queued.

Note: Scope of Cancel on Disconnect only includes orders sent during the current day, whether through single order submission or through 'Quotes'. Orders entered during a previous business day are not in scope of Cancel on Disconnect and are not impacted.

2.6 OWNERSHIP REQUEST

2.6.1 Ownership request for a specified order ID



① Member A from Logical Access 1 sends a private **NewOrder** (01) (FIX D) message to enter a new order.

OEG sends back an **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order (*Order ID* = 1).

The order enters into the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the limits.

② Member A from Logical Access 2 sends an **Ownership Request** (18) (FIX U18) to request the ownership of the previous order (*Order ID* = 1) sent by Logical Access 1.

OEG sends back an **Ownership Request Ack** (17) (FIX U29) message to Logical Access 2, to confirm the reception of the request (with *Total Affected Orders* = -1).

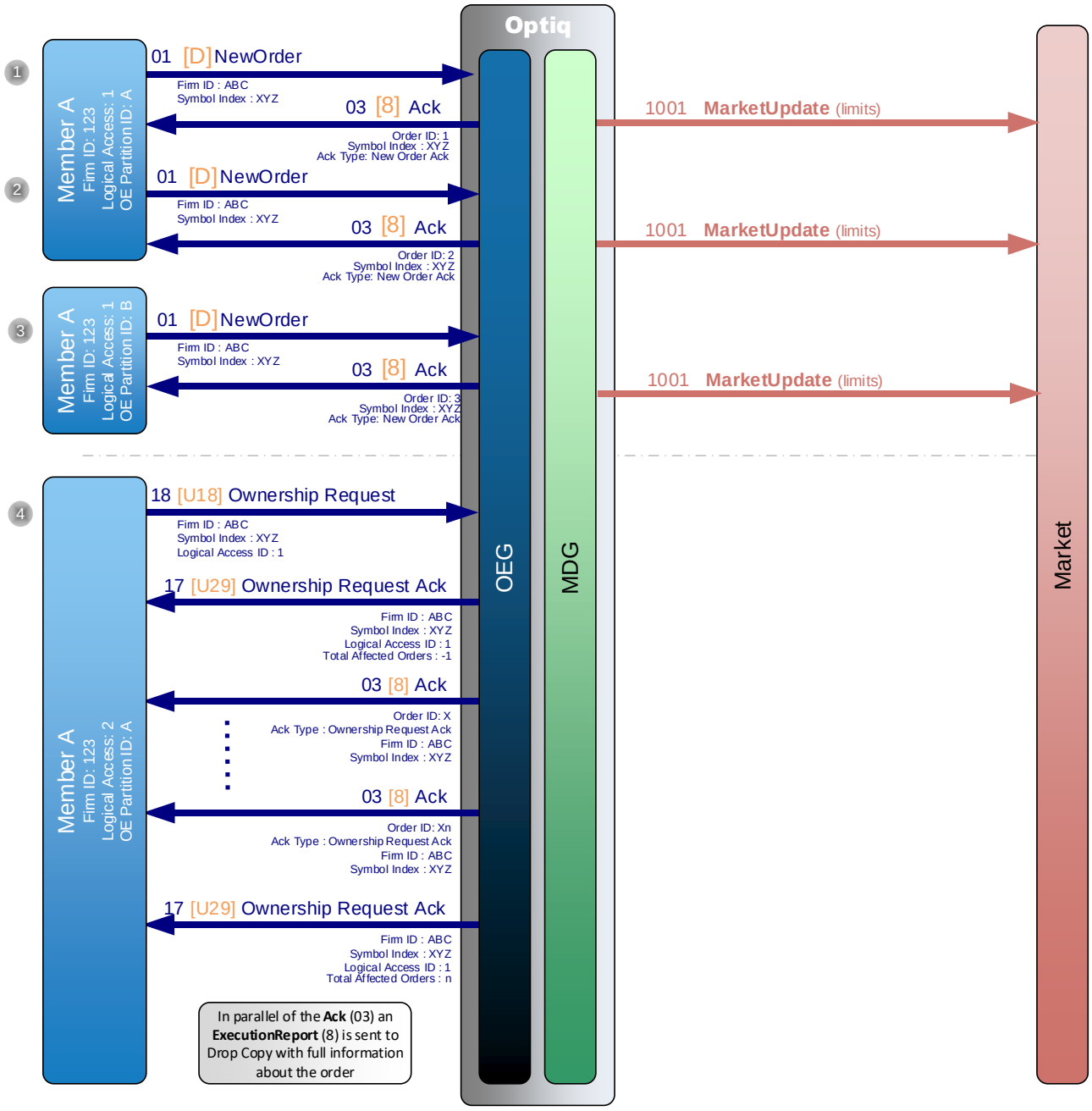
OEG sends back an **Ack** (03) (FIX 8) message to Logical Access 2, to give the detail of the order (*Order ID* = 1). In parallel of the **Ack** (03) (FIX 8) an **ExecutionReport** (8) is sent to Drop Copy with full information about the order.

OEG sends back another **Ownership Request Ack** (17) (FIX U29) message to Logical Access 2, to confirm the successful change of ownership of the order (*Order ID* = 1) from Member A's Logical Access 1 to Member A's Logical Access 2 (*Total Affected Orders* = 1). Logical Access 1 does not receive any messages of this exchange and following the transfer of ownership all unsolicited messages for the affected order are sent to Logical Access 2.

Note: Ownership Request (18) does not apply for Quotes.

All specified Logical Access IDs and OE Sessions belong to the same Firm.

2.6.2 Ownership request for all orders belonging to a Logical Access or OE Session



Logical Access ID and *OE Session ID* are provided by clients in the **Logon** (100) message.

Ownership Request (18) does not apply for Quotes.

① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new order on instrument XYZ.

The order is entered through the OE session 1A (Logical Access ID = 1, OE Partition ID = A).

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order (*Order ID* = 1).

The order enters into the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the limits.

② Member A sends another private **NewOrder** (01) (FIX D) message to enter a new order instrument XYZ.

The order is entered through the OE session 1A (Logical Access ID = 1, OE Partition ID = A).

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order (*Order ID* = 2).

The order enters into the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the limits.

③ Member A sends a private **NewOrder** (01) (FIX D) message to enter a new order instrument XYZ.

The order is entered through the OE session 1B (Logical Access ID = 1, OE Partition ID = B).

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order (*Order ID* = 3).

The order enters into the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the limits.

④ Member A sends an **Ownership Request** (18) (FIX U18) to request the ownership of the orders of the *Logical Access ID* = 1 for the instrument XYZ.

The request is entered through the OE session 2A (Logical Access ID = 2, OE Partition ID = A).

OEG sends back an **Ownership Request Ack** (17) (FIX U29) message to OE session 2A, to confirm the reception of the request (with *Total Affected Orders* = -1).

OEG sends back an **Ack** (03) (FIX 8) message to OE session 2A for each order (*Order ID* = 1, 2 and 3) for the instrument XYZ that are owned by the Logical Access 1.

In parallel of each **Ack** (03) (FIX 8) message an **ExecutionReport** (8) is sent to Drop Copy with full information about the order, with the field *ExecType* (150) set to k = Ownership Request Ack

OEG sends back another **Ownership Request Ack** (17) (FIX U29) message to OE session 2A to confirm the successful change of ownership of the orders belonging to the Logical Access ID = 1 for the instrument XYZ. The ownership of *Order ID* = 1 and 2 from Member A's OE session 1A and *Order ID* = 3 from Member A's OE session 1B transfer to Member A's OE session 2A (*Total Affected Orders* = 3).

OE session 1A and 1B do not receive any messages of this exchange, and following the transfer of ownership all unsolicited messages for the affected orders are sent to OE session 2A.

Note: All specified Logical Access IDs and OE Sessions belong to the same Firm.

3. UNSOLICITED MESSAGES

3.1 ASYNCHRONOUS MESSAGES

3.1.1 Statistics Message

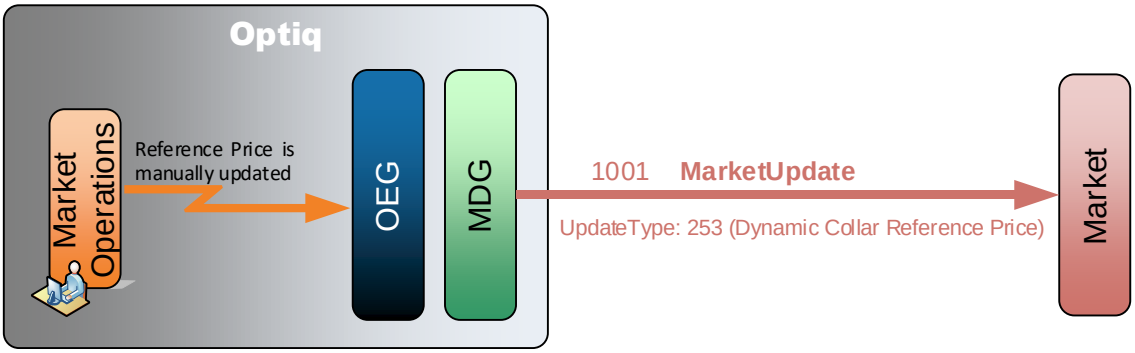
The public **Statistics** (1009) message is sent to the market after each trade, it includes only the information that needs to be updated. It can include minimum and maximum traded prices for daily, yearly and lifetime periods along with the cumulative volume since the start of the trading day and the percentage of variation of the traded price versus the last reference price.

3.1.2 Automatic IMP Calculation

A public **PriceUpdate** (1003) message is sent during the order collection period in real time to the market whenever the IMP Price or quantity have changed.

3.2 ACTIONS PERFORMED BY MARKET OPERATIONS

3.2.1 Reference Price Update

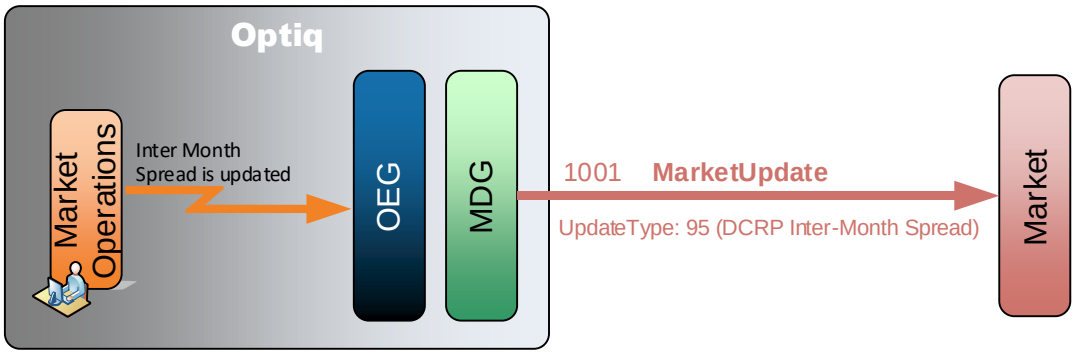


Market Operations send a private command to Optiq to update the reference price on the given instrument.

Optiq sends a public **MarketUpdate** (1001) message to broadcast the new prices.

Note: Only applicable for a contract where the reference price origin is set to Opening Call Price. Data available in **Contract Standing Data** (1013).

3.2.2 Inter-Month Spread Update

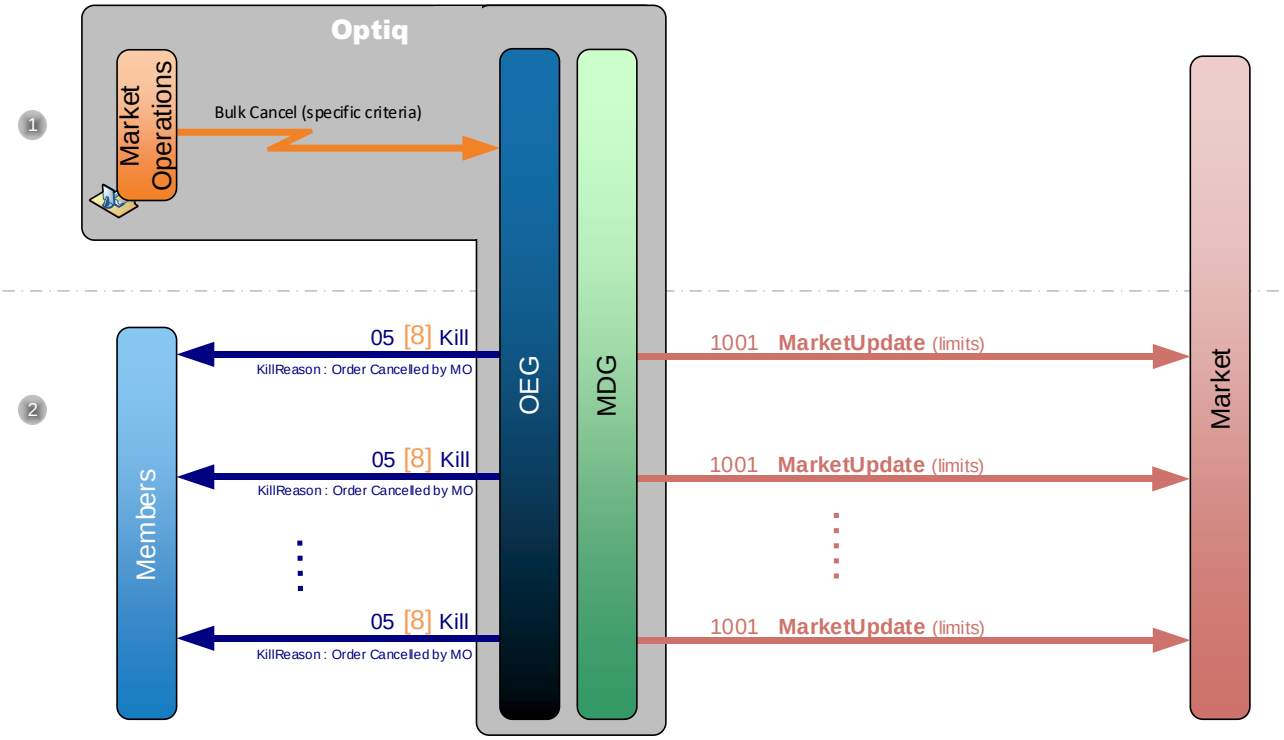


Market Operations send a private command to Optiq to update the Inter-Month Spread on a given instrument.

Optiq sends a public **MarketUpdate** (1001) message to broadcast the new Inter-Month Spread.

Note: Only applicable for a contract where the reference price origin is set to Future Market Price. Data available in **Contract Standing Data** (1013).

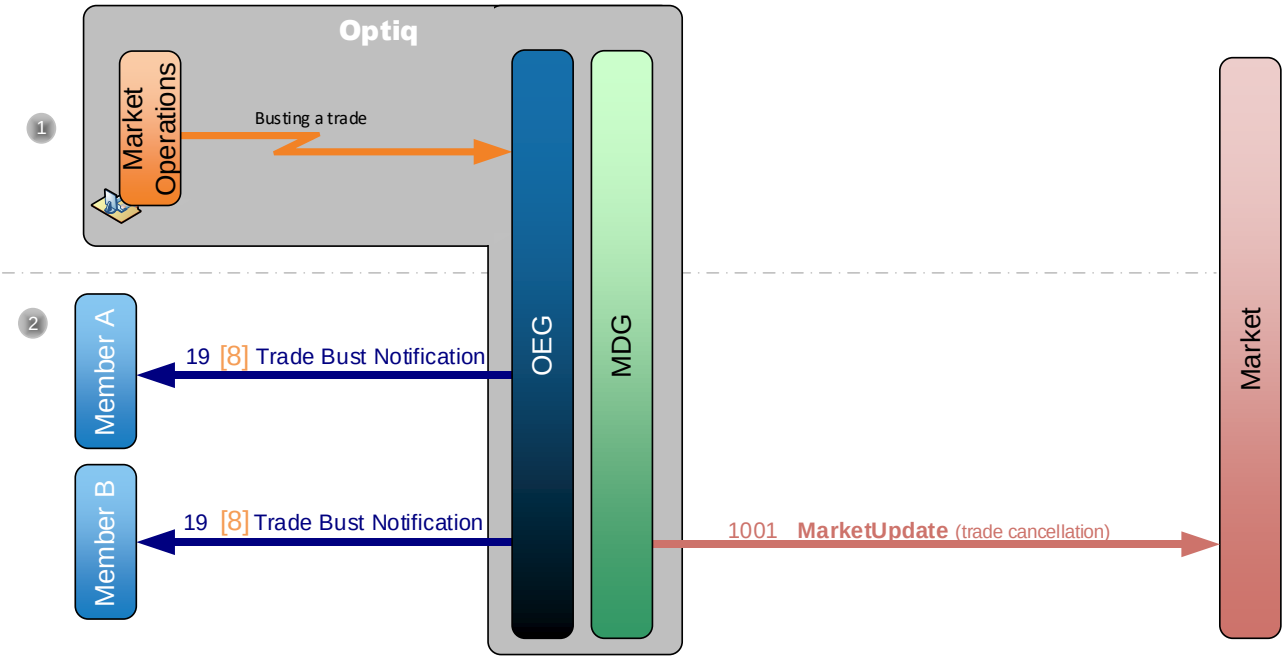
3.2.3 Bulk Order Cancellation by Market Operations



① Market Operations cancel orders matching a specified criterion.

② Optiq sends a private **Kill** (05) (FIX 8) message for each cancelled order to the member who entered the order, and public **MarketUpdate** (1001) messages to the market to update the limits.

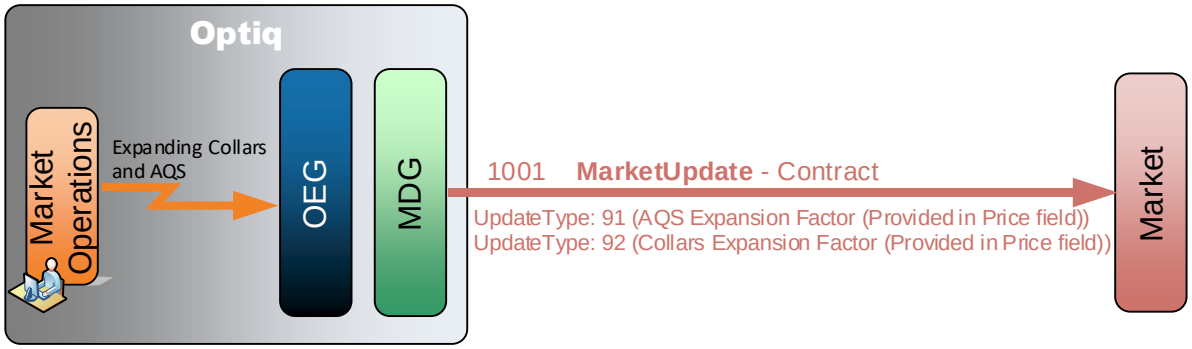
3.2.4 Trade Cancellation



① Market Operations busts a trade.

② Optiq sends a private **TradeBustNotification** (19) (FIX 8) message for the cancelled trade to the members who entered the orders and a public **MarketUpdate** (1001) message to remove the cancelled orders.

3.2.5 Triggering of Fast Market



In case of Fast Market declared by Market Operations, a command is sent to Optiq to expand Collars and AQS spreads for a contract.

Optiq sends a public **MarketUpdate** (1001) message to the market to indicate the expansion factor to apply for Collars and AQS.

Note: Once Fast Market is withdrawn by Market Operations, a public **MarketUpdate** (1001) message is sent to the Market with Expansion Factors set to one (1).

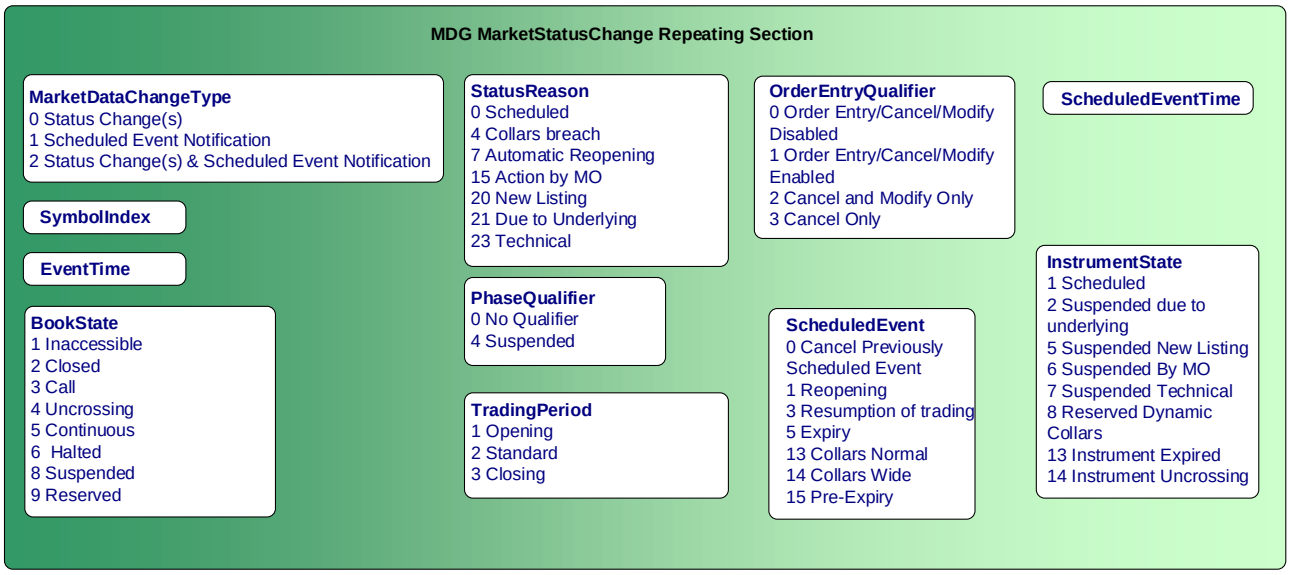
4. MARKET STATUS CHANGES

This section is dedicated to all market publications that deal with changes of Market Status on Euronext Derivatives markets, which are communicated via the **MarketStatusChange** (1005) message.

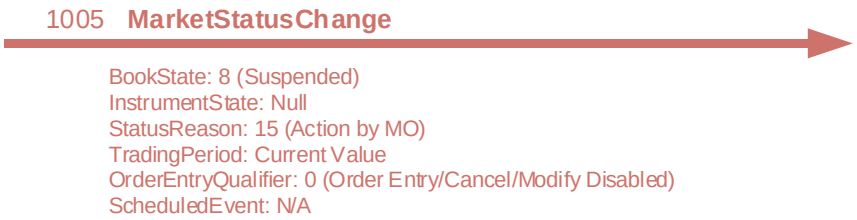
The Market Status of a contract or an instrument can be determined using the following fields:

- **Book State:** Market State of the Contract
- **Instrument State**: Market State of the Instrument
- **Status Reason**: Reason of the state change
- **Phase Qualifier**: Specifics during a trading phase that do not impact the Instrument State or Book State
- **Trading Period**: indicates the trading period
- **Order Entry Qualifier**: Describes whether order entry is allowed for the instrument or the contract
- **Scheduled Event**: Market Event notification
- **Scheduled Time**: Scheduled Event associated time if required

The possible Market Status values on Euronext Derivatives are as follows:



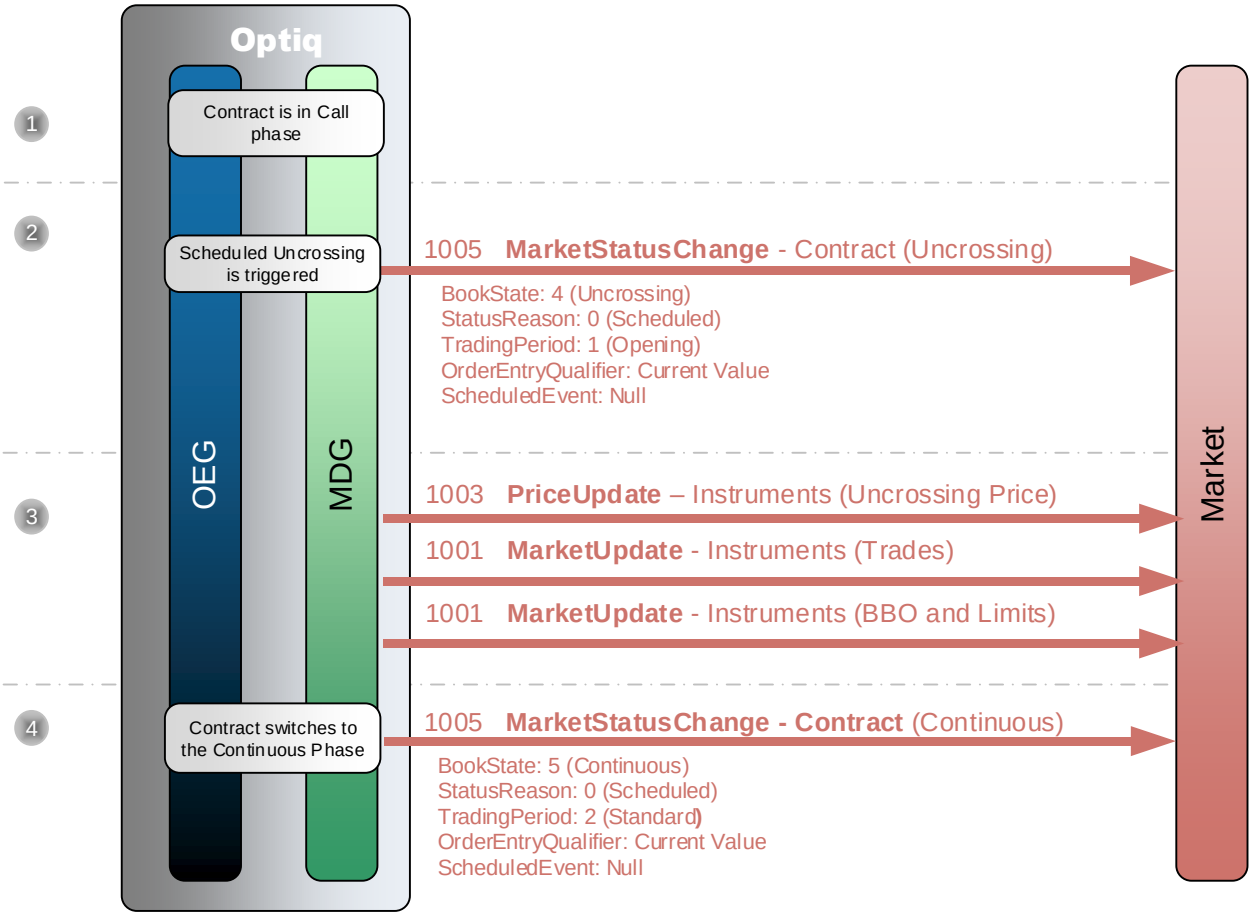
In the following Market Status change example, a contract is manually suspended by Market Operations with Order entry disabled:



- InstrumentState is set to Null. It means that the State of the instrument should follow the contract state which is stored in book state..
- Also, some values of the **MarketStatusChange** (1005) message are set to 'Current Value'. It means that the value is the same as the one sent in the previous **MarketStatusChange** (1005) message.

4.1 AUTOMATIC MARKET STATUS CHANGES

4.1.1 Scheduled Uncrossing



① The Contract is in a Call trading phase as defined in the **TimeTable** and by the pattern associated to this Contract.

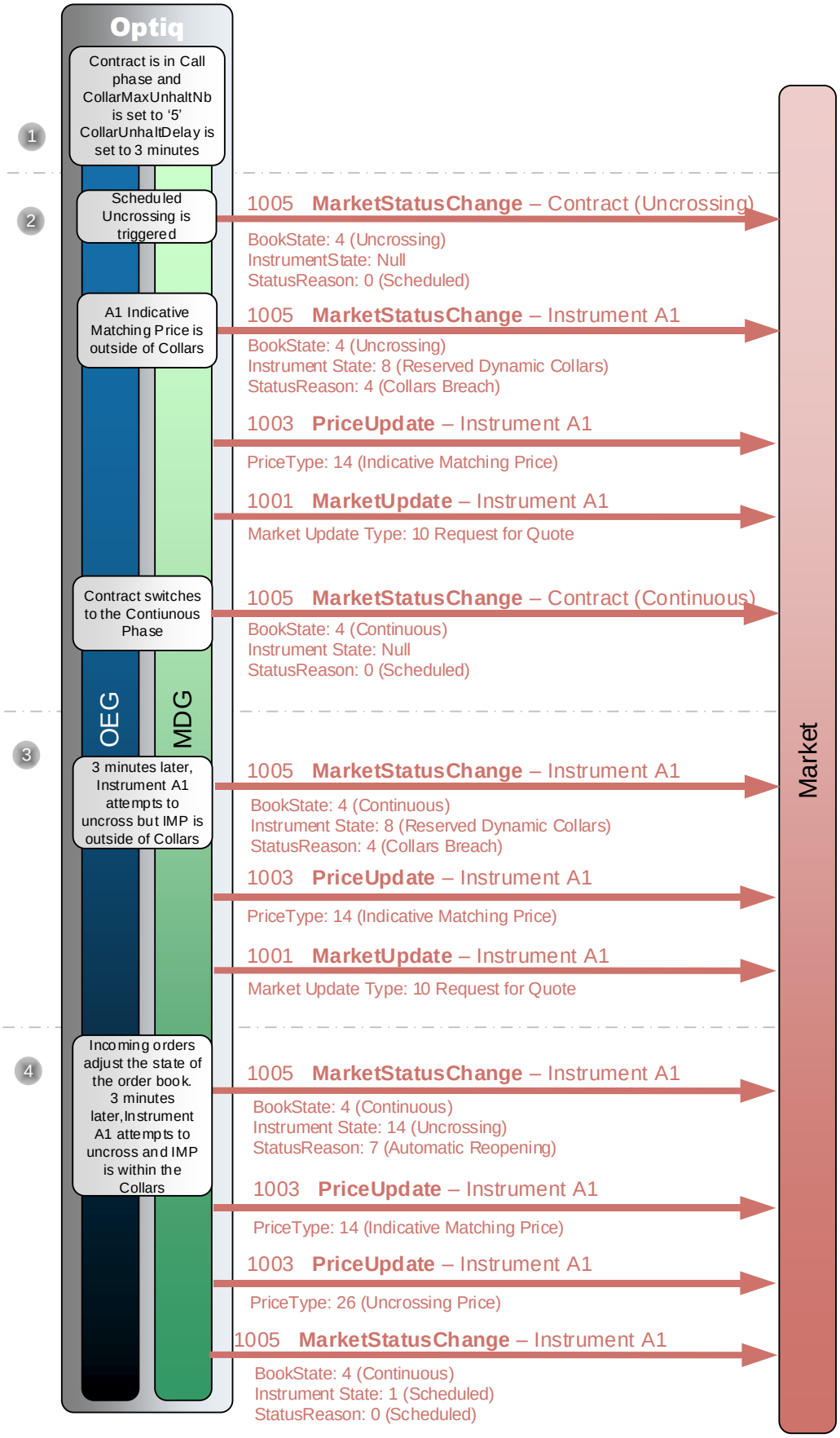
② When the Uncrossing is triggered for the contract a public **MarketStatusChange** (1005) message is disseminated to the market.

③ Right after the status change, a public **PriceUpdate** (1003) message is sent to the market for each Instrument of the contract with the uncrossing price and the quantity at which the uncrossing is performed.

MarketUpdate (1001) message is sent accordingly for each Instrument for Trades, BBO and Limits.

④ Upon contract entering into the Continuous phase, a public **MarketStatusChange** (1005) message is sent to the market to indicate that the Contract is now in a continuous phase.

4.1.2 Trade Price Validation (TPV) triggered at Uncrossing



① The contract is in a Call trading phase as defined in the **TimeTable** and by the pattern associated to this contract.

② When the Uncrossing is triggered for the Contract, the Uncrossing Price for the instrument A1 lies outside Dynamic Collars.

A public **MarketStatusChange** (1005) message is disseminated to the market to indicate the start of the Uncrossing for the Contract.

A second public **MarketStatusChange** (1005) message is immediately sent to the market to indicate the reservation of Instrument A1.

Right after the status change, a public **PriceUpdate** (1003) is sent to the market for instrument A1 with the Indicative Matching Price.

Then, a public **MarketUpdate** (1001) message is sent to the market to request Liquidity in instrument A1 (Request for Quote).

A public **MarketStatusChange** (1005) is sent to the market for the Contract, to inform that it switched to Continuous phase, as defined by the pattern. At that moment instrument A1 remains in the Reserved state.

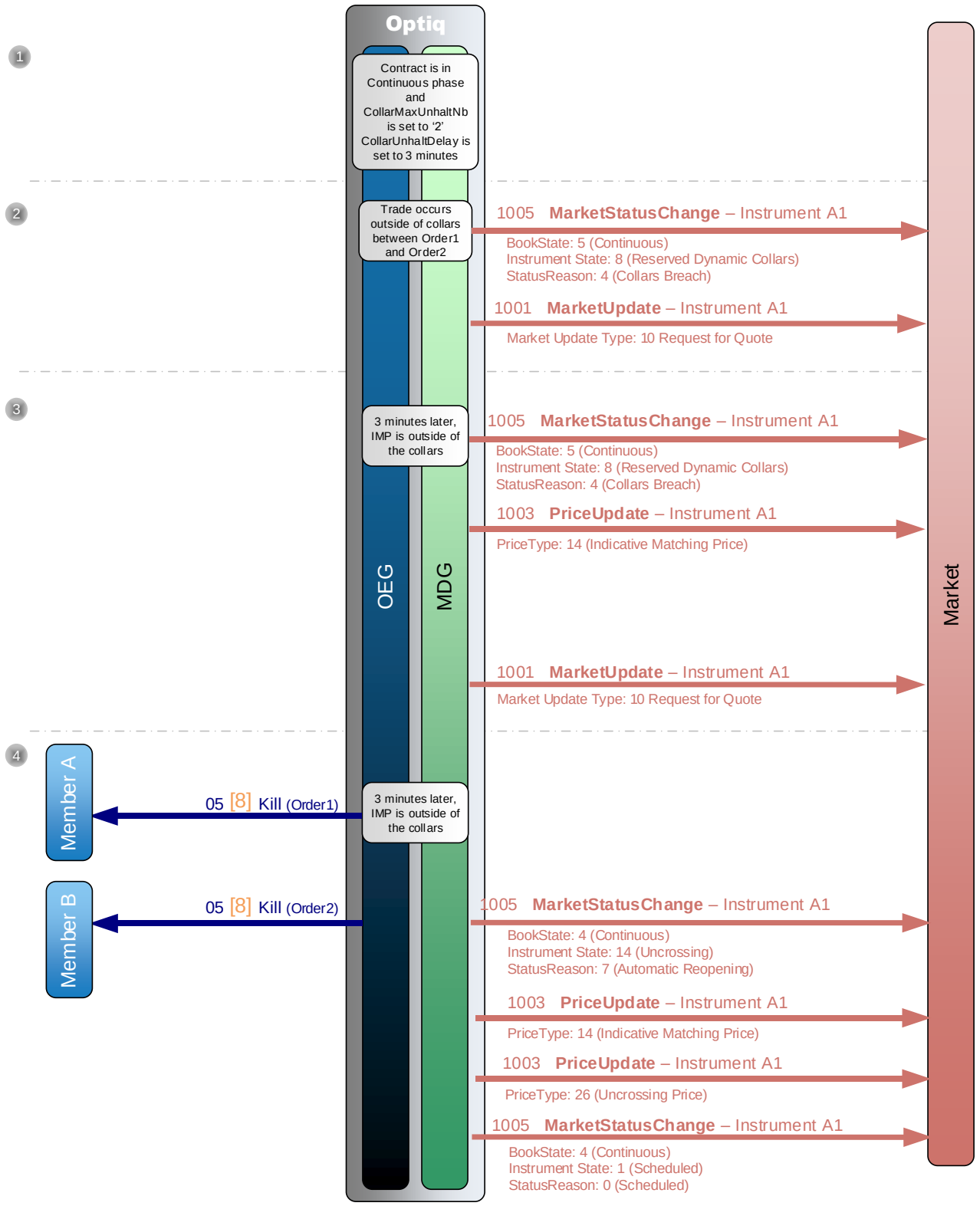
③ Instrument A1 attempts to uncross but the Uncrossing Price is still outside of Collars, a public **MarketStatusChange** (1005) is sent to the market to inform that the Instrument is still Reserved, following by a public **PriceUpdate** (1003) with the Indicative Matching Price and a **MarketUpdate** (1001) to request for Liquidity (Request for Quotes).

④ Incoming orders adjust the Indicative Matching Price which fall now into Collars. Instrument A1 attempts to uncross and the Uncrossing Price lies within Collars, as such it exits its Reserved state. A public **MarketStatusChange** (1005) message is sent to the market to indicate that Instrument A1 switches to Uncrossing. Following this uncrossing no trades took place.

A public **PriceUpdate** (1003) is sent to the market for instrument A1 with the Uncrossing Price.

Then, a public **MarketStatusChange** (1005) is sent when the Instrument A1 switches to Continuous. From this point on, instrument re-joins the TimeTable of the Contract.

4.1.3 Trade Price Validation (TPV) triggered at Continuous



① The contract is in a Continuous trading phase as defined in the **TimeTable** and by the pattern associated to this contract. For this example, the number of uncrossing attempts when TPV is triggered is set to 2 and the duration between each attempt is set to 3 minutes as defined in the Contact Standing Data. For the values set for use in Trade Price Validation for number of attempts and duration of TPV period clients should refer to the Contract Standing Data.

② A trade occurs outside of collars, TPV mechanism is triggered and a **MarketStatusChange** (1005) is immediately sent to the market to indicate the reservation of Instrument A1.

Then, a public **MarketUpdate** (1001) message is sent to the market to request Liquidity in instrument A1 (Request for Quote).

③ Three minutes later (as defined in the field CollarUnhaltDelay from Contract Standing Data) the IMP is outside of collars. A public **MarketStatusChange** (1005) is sent to the market to indicate the Uncrossing attempt of Instrument A1 following by a public **PriceUpdate** (1003) with the Indicative Matching Price (IMP).

As the IMP is outside of collars, a public **MarketStatusChange** (1005) is sent to the market to indicate the reservation of Instrument A1 following by a public **MarketUpdate** (1001) to request for Liquidity (Request for Quotes).

④ Three minutes later (as defined in the field CollarUnhaltDelay from Contract Standing Data), the IMP is still outside of collars. The number of maximum uncrossing attempts is reached (defined in the field CollarMaxUnhaltNb from Contract Standing Data).

Consequently, **Kill** (05) (FIX 8) messages are sent to members for orders outside of collars and involved in IMP computation.

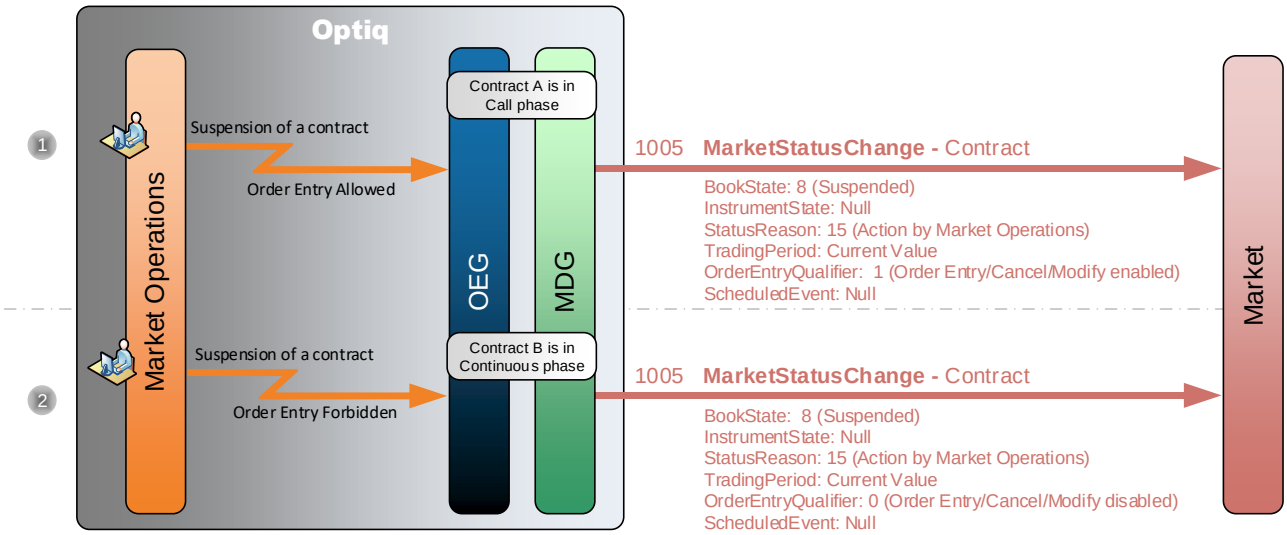
A public **MarketStatusChange** (1005) is sent to the market to indicate the Uncrossing attempt of Instrument A1 followed by a public **PriceUpdate** (1003) with the Indicative Matching Price.

Then a public **PriceUpdate** (1003) is sent to the market with the Uncrossing Price following by a **MarketStatusChange** (1005) to indicate that the instrument is now in Continuous phase.

Note: For readability purposes, incoming orders during Reservation are not in the diagrams.

4.2 Market Status Changes Due To Manual Intervention

4.2.1 Contract Suspended by Market Operations



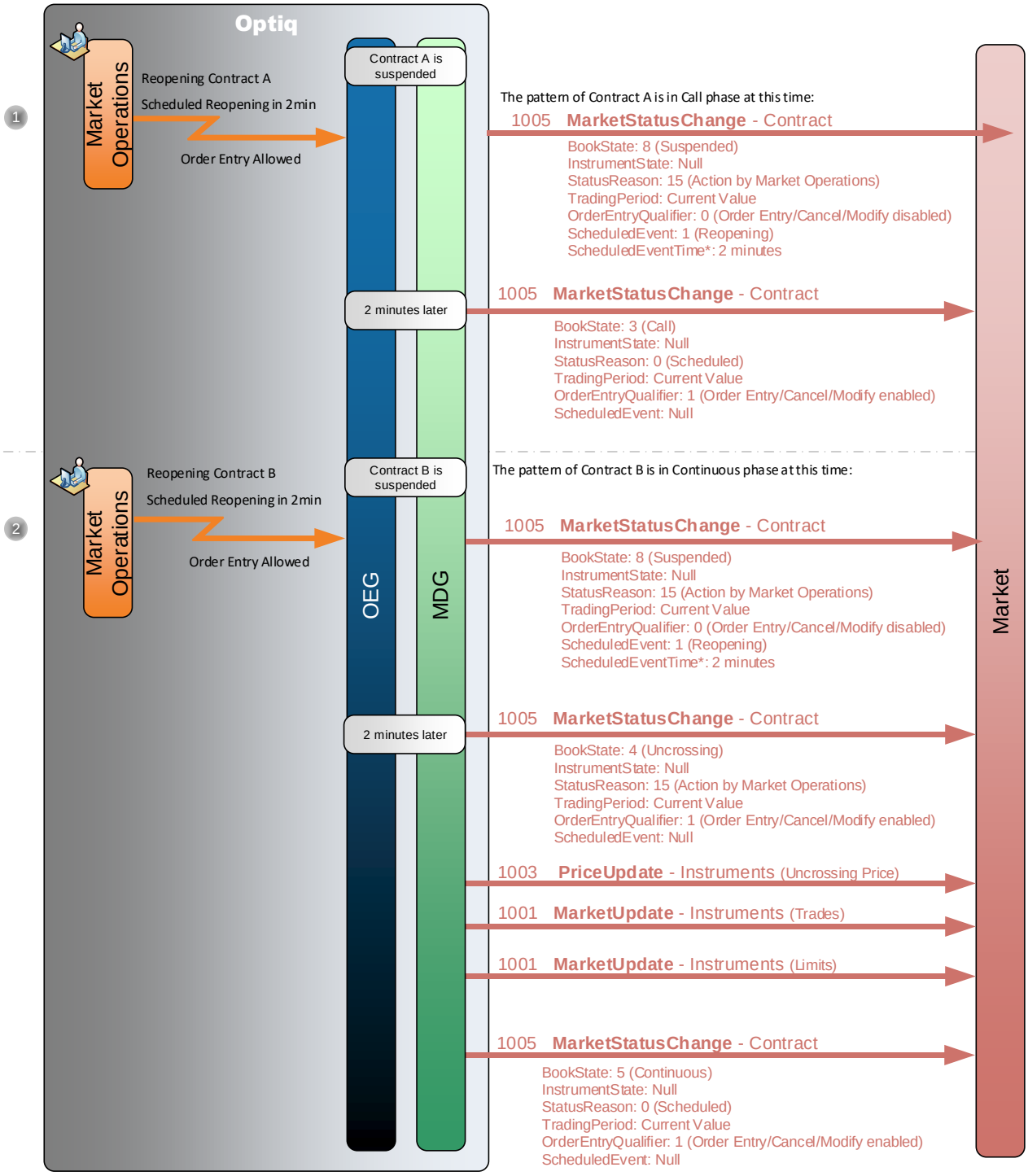
*Contract A is in a Call trading phase, and Contract B is in Continuous trading phases, according to the **TimeTable** and by the pattern associated to this contracts.*

① Market Operations suspends the Contract A and set the order entry as enabled. This is communicated to the market by a public **MarketStatusChange** (1005) message for the Contract A.

② Market Operations suspends the Contract B and disables the order entry. This is communicated to the market by a public **MarketStatusChange** (1005) message for the Contract B. Order Entry Qualifier in this case is not related to the phase, and is populated based on the command by Market Operations.

Note: Book State is the State of the Contract. Instrument State is sent only if the State of the Instrument has been updated else it is set to Null.

4.2.2 Contract Reopened by Market Operations



**ScheduledEventTime: For readability purposes it is expressed as a duration in minutes but in reality this field is expressed as nanoseconds since Epoch.*

Contract A is in a Call trading phase, and Contract B is in Continuous trading phase, according to the ***TimeTable*** *and by the pattern associated to these contracts. Both contracts are suspended.*

① Market Operations schedule the reopening of Contract A in two minutes. As a result, a public MarketStatusChange (1005) message is sent to the market to notify the reopening of Contract A in two minutes.

Two minutes later, the Contract comes back to the Call phase, as defined by its pattern for this time. This is communicated to the market by a public **MarketStatusChange** (1005) message.

② Market Operations schedule the reopening of Contract B in two minutes. As a result, a public MarketStatusChange (1005) message is sent to the market to notify the reopening of Contract B in two minutes.

Two minutes later, the Contract goes to the Continuous phase as defined by its pattern at this time. Before going into Continuous phase an Uncrossing is performed. When the Uncrossing is triggered a public **MarketStatusChange** (1005) message is disseminated to the market.

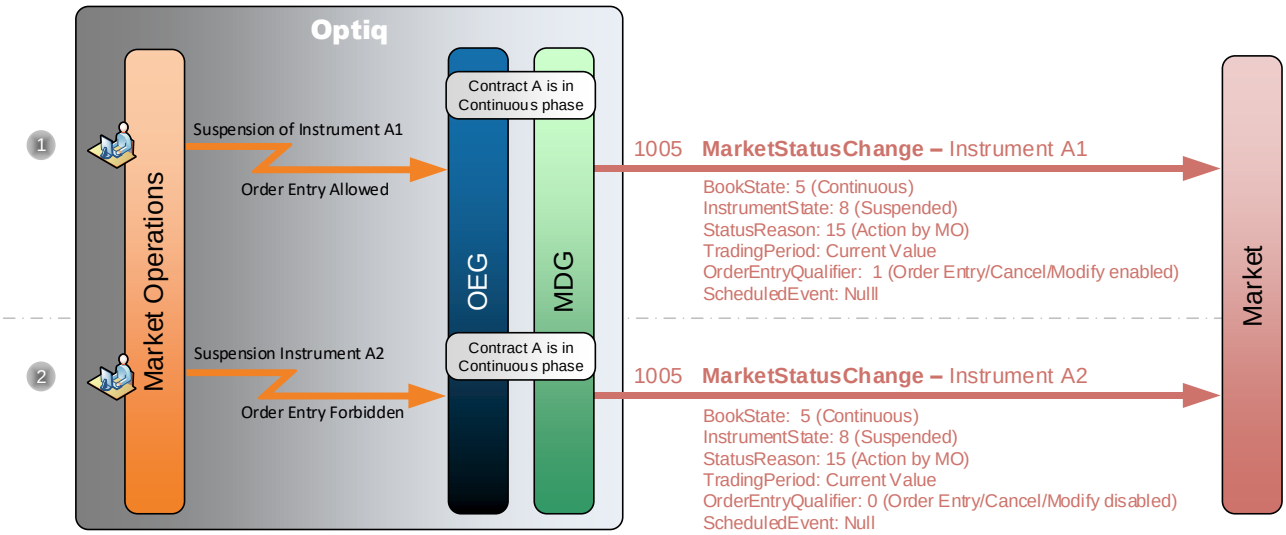
For each Instrument, if the Uncrossing Price lies within the collars, a public **PriceUpdate** (1003) message is sent to the market with the uncrossing price and the quantity at which the uncrossing is performed.

For each trade generated a public **MarketUpdate** (1001) is sent.

At the end of the uncrossing process a public **MarketUpdate** (1001) message is sent to update the values of each limit that has changed.

When the uncrossing is fully performed the Contract B switches to a Continuous phase. This is communicated to the market by a public **MarketStatusChange** (1005) message.

4.2.3 Instrument Suspended by Market Operations



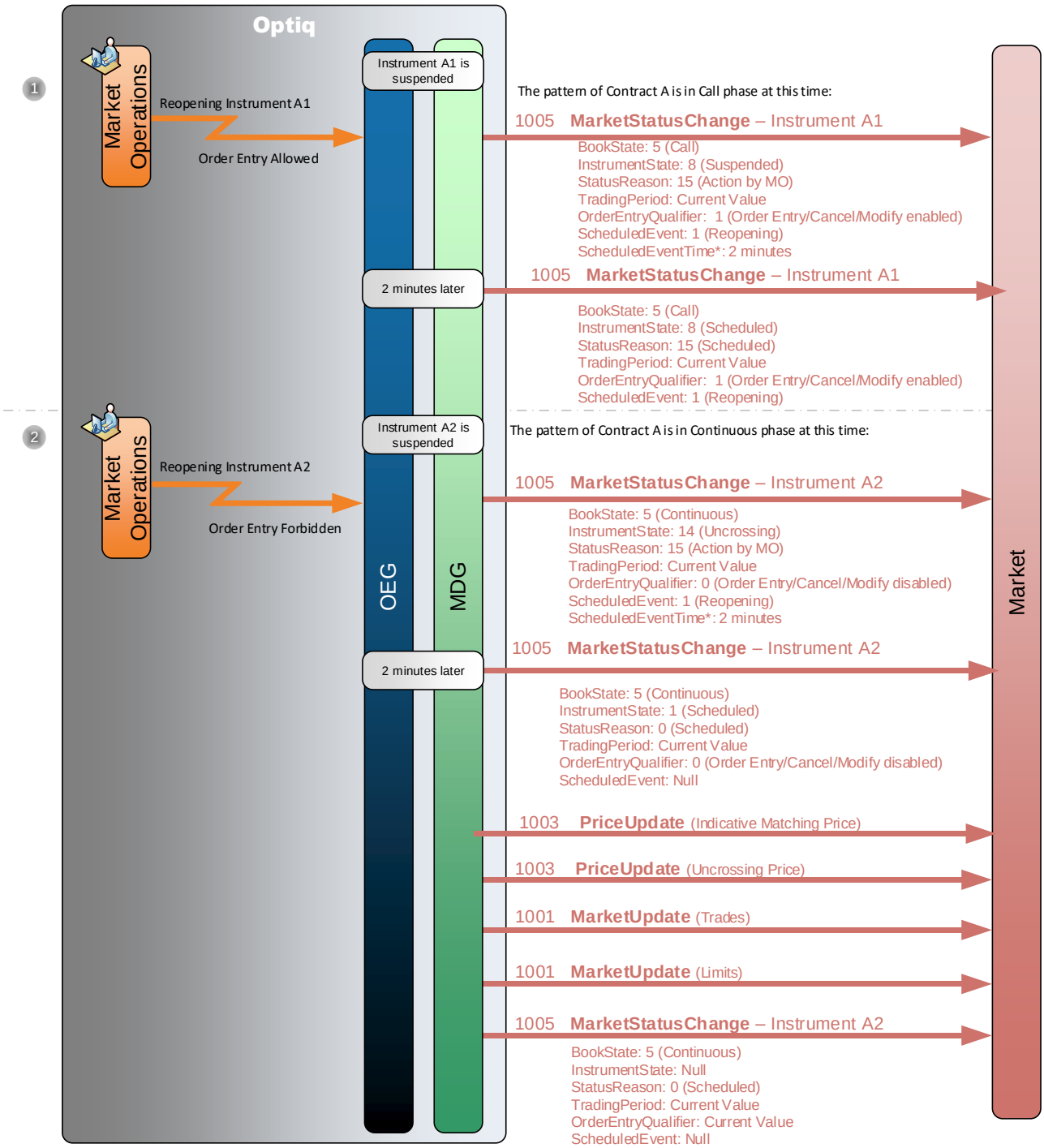
*Contract A is in a Continuous trading phase as defined in the **TimeTable** and by the pattern associated to this contract. Instruments A1 and A2 are part of the contract.*

① Market Operations suspends Instrument A1 and set the Order Entry as enabled. This is communicated to the market by a public **MarketStatusChange** (1005) message for the instrument.

② Market Operations suspends the instrument and disables the Order Entry. This is communicated to the market by a public **MarketStatusChange** (1005) message for the instrument.

Note: No **MarketStatusChange** (1005) is disseminated for the Contract.

4.2.4 Instrument Reopened by Market Operations



**ScheduledEventTime: For readability purposes it is expressed as a duration in minutes but in reality this field is expressed as nanoseconds since Epoch.*

*Contract A is in a Call trading phase as defined in the **TimeTable** and by the pattern associated to this contract. Instruments A1 and A2 are part of the Contract, and both are suspended.*

① Market Operations reopens the instrument A1. The instrument goes to the Call trading phase as defined by the pattern of its Contract at this time. This is communicated to the market by a public **MarketStatusChange** (1005) message.

② Market Operations reopens the instrument A2. The instrument goes to a Continuous trading phase as defined by the pattern of its Contract at this time. Before coming back to Continuous an Uncrossing is performed.

When the Uncrossing is triggered for the instrument and if the uncrossing price lies within the collars the uncrossing is performed and a public **MarketStatusChange** (1005) message is disseminated to the market for the instrument.

Right after the status change a public **PriceUpdate** (1003) message is sent to the market with the uncrossing price and the quantity at which the uncrossing is performed.

For each trade generated a public **MarketUpdate** (1001) is sent for the trade.

At the end of the uncrossing process a public **MarketUpdate** (1001) message is sent to update the values of each limit that has changed.

When the uncrossing is fully performed the instrument switches to the Continuous trading phase.

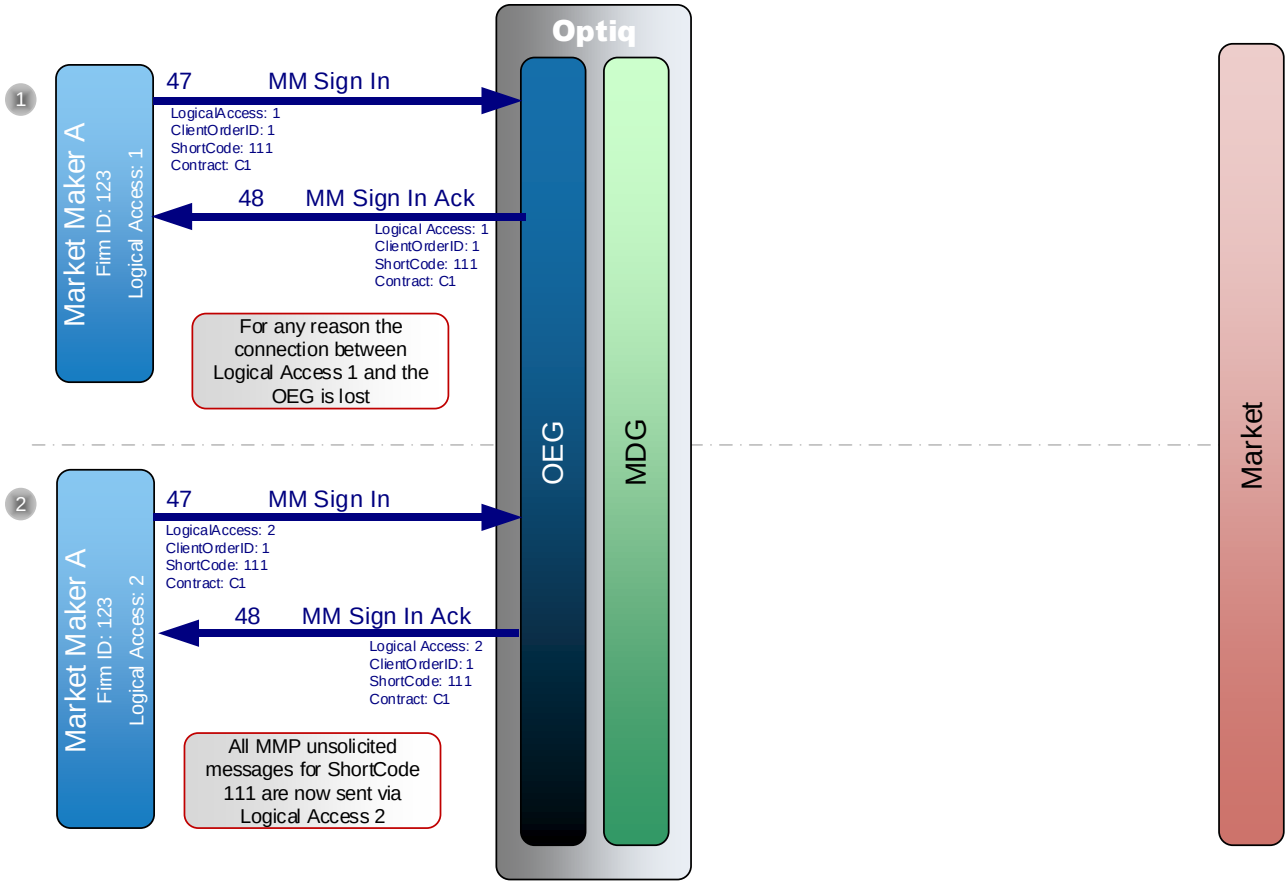
This is communicated to the market by a public **MarketStatusChange** (1005) message for the instrument.

5. MARKET MAKER MESSAGES

Market Maker messages for Derivatives are available only in SBE format.

5.1 MM SESSION MESSAGES

5.1.1 Successful MM Sign-in & Unsolicited Messages



A Market Maker "trading key" is defined by the combination of Firm ID and Execution Within Firm ShortCode. Both Logical Access 1 and 2 are already logged onto the OEG.

① Market Maker A sends a **MM Sign In** (47) message to declare their Execution Within Firm ShortCode 111 via the Logical Access 1 on Contract C1.

OEG sends back a **MM Sign In Ack** (48) message to confirm the successful receipt and technical processing of the message. All associated unsolicited messages are sent to Logical Access 1.

Market Maker A loses the connection with the OEG via the Logical Access 1.

② In order to retrieve future unsolicited messages, Market Maker sends a private **MM Sign In** (47) with the same Execution Within Firm ShortCode 111 as in step 1.

All MMP unsolicited messages for Market Maker A in relation to Contract C1 will be sent to Logical Access 2.

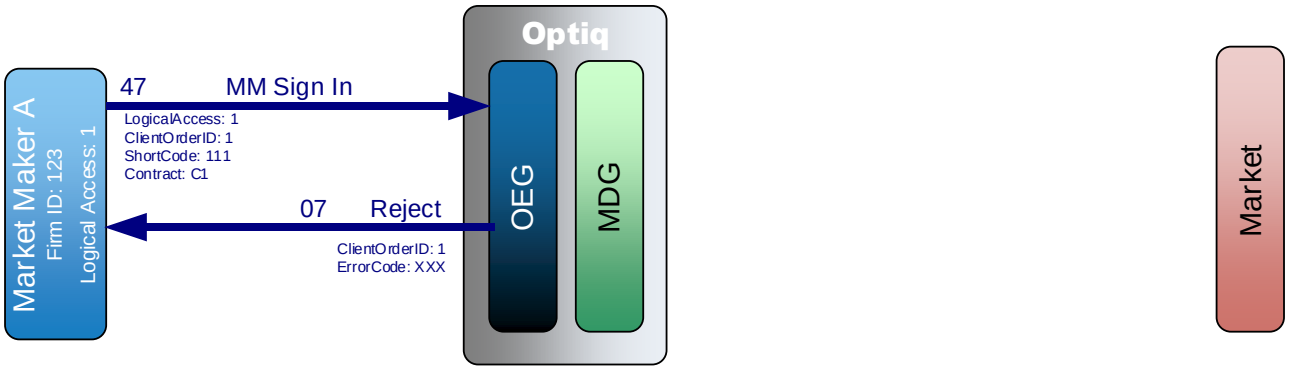
Note: Market Maker A can lose the connection in two cases:

(1) Logical Access is still technically up, no technical issue between member and Optiq but In-House issue on member side
(2) Connection is technically lost and Logical Access is down

In the first case, messages are sent by OEG to member in any case. In the second case, all MMP messages behave like any others messages and are queued by OEG to be sent once the Logical access reconnects.

A single Market Making Logical Access may establish multiple MM sessions, by submitting different short codes, on the same or different contracts.

5.1.2 MM Sign-in Rejection



*A Member Firm 123 sends a private **MM Sign In** (47) message to declare a Execution Within Firm ShortCode 111, on Contract C1. For this example the member 123 is not authorized as a Market Maker on contract C1.*

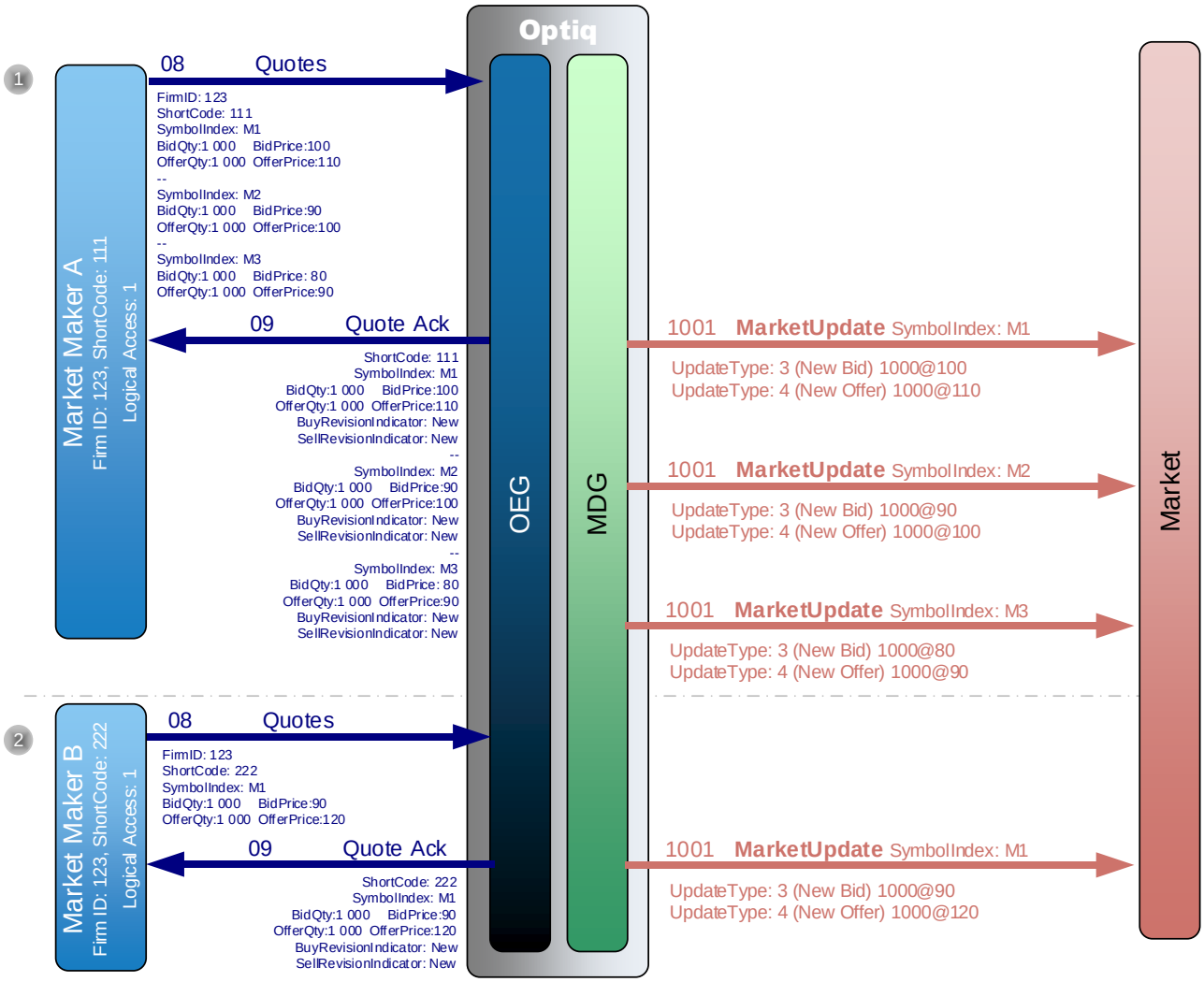
The MM Sign-in message is rejected and OEG sends back a private **Reject** (07) message with an *Error Code*. The reason of the rejection can be found using the Error Code value within the *Euronext Markets - Optiq & TCS Error list* document.

No message is sent to the Market.

5.2 ENTERING QUOTES

Market Maker messages (i.e. Quotes) for Derivatives are available only in SBE format.

5.2.1 Mass Quote Accepted



① A Member Firm 123 previously signed-in for Execution Within Firm ShortCodes 111 and 222.

Firm sends a private **Quotes** (08) message for Execution Within Firm ShortCode 111 to enter new quotes for 3 instruments.

- For Instrument M1: Buy quote with a quantity of 1,000 and price of 100; Sell quote with a quantity of 1,000 at a price of 110.
- For Instrument M2: Buy quote with a quantity of 1,000 and price of 90; Sell quote with a quantity of 1,000 at a price of 100.
- For Instrument M3: Buy quote with a quantity of 1,000 and price of 80; Sell quote with a quantity of 1,000 at a price of 90.

OEG sends back a private **Quote Ack** (09) message to confirm the successful receipt and technical processing of the quotes.

The quotes enter the order book without matching and public **MarketUpdate** (1001) messages are sent to the market to update the BBO (if any) and the limits.

② A second Market Maker belonging to the same Firm ID sends a private **Quotes** (08) message for Execution Within Firm Shortcode 222 to enter a new Buy quote with a quantity of 1,000 at a price of 90 along with another Sell quote with a quantity of 1,000 at a price of 120 for Instrument M1.

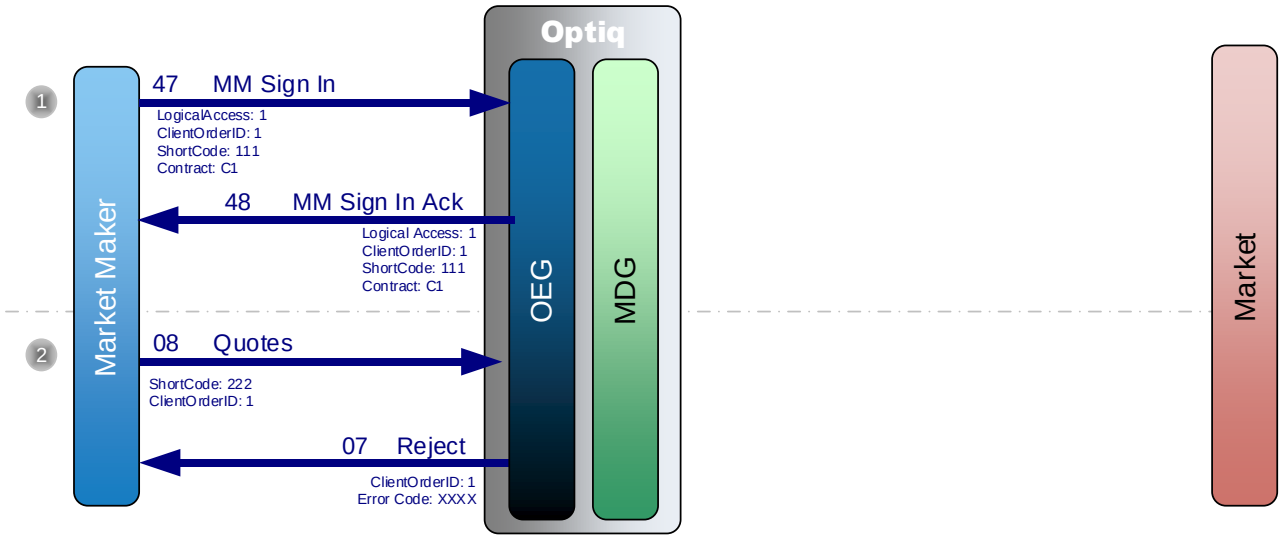
As the Quote is sent from a different Execution Within Firm ShortCode than the existing Quote in the book M1, the Quote enters the order book.

Note: In this example, entering quotes create new limits and do not update BBO.

The contract identified to route the message is the contract of the first Instrument (M1).

All following instrument inside the **Quotes** (08) message must be related to the same Contract, otherwise the Quotes will be individually rejected.

5.2.2 Mass Quote Fully Rejected



① A Member sends a private **MM Sign In** (47) message to declare the Execution Within Firm Shortcode 111 on Contract C1.

OEG sends back a private **MM Sign In Ack** (48) message to confirm the successful receipt and technical processing of the message.

② The same Member (same Firm ID) sends a private **Quotes** (08) message using an Execution Within Firm Shortcode that is not declared via MM Sign-in message to Optiq.

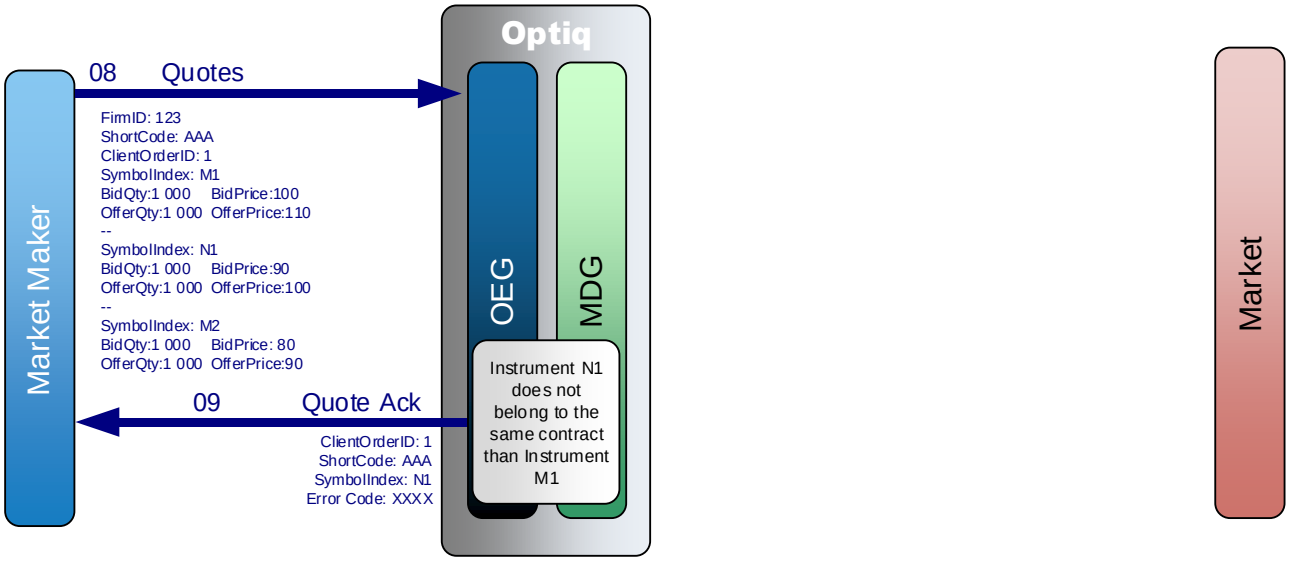
The entire **Quotes** (08) message is rejected and the OEG sends back a private **Reject** (07) message. The reason of the rejection can be found using the Error Code value within the *Euronext Markets – Optiq & TCS Error list* document.

No message is sent to the Market.

Note: The **Reject** (07) message is sent to fully reject the **Quotes** (08) message.

The **Quote Ack** (09) message is sent to individually reject a specific quote.

5.2.3 Mass Quote Individually Rejected



A Market Maker sends a **Quotes** (08) message for three instruments: M1, N1, M2. The second instrument N1 does not belong to the same contract as the first instrument in the Quote, i.e. M1.

The second Quote is rejected so OEG sends back a private **Quote Ack** (09) to reject this quote.

For the submission in this example **Quote Ack** (09) will respond with repeating groups for the three submitted instruments as following:

Repeating group 1 for instrument M1

Bid – Accepted, with the Bid Error Code being set to zero (0) – meaning no errors

Offer – Accepted, with the Offer Error Code being set to zero (0) – meaning no errors

Repeating group 2 for instrument N1

Bid – Rejected, with Bid Error Code being set to 1153 – “Quote must be sent on the same contract as the first valid quote”.

Offer – Rejected, with Offer Error Code being set to 1153 – “Quote must be sent on the same contract as the first valid quote”.

Repeating group 3 for instrument M2

Bid – Accepted, with the Bid Error Code being set to zero (0) – meaning no errors

Offer – Accepted, with the Offer Error Code being set to zero (0) – meaning no errors

Note: The **Quote Ack** (09) message is sent to individually reject a specific quote.

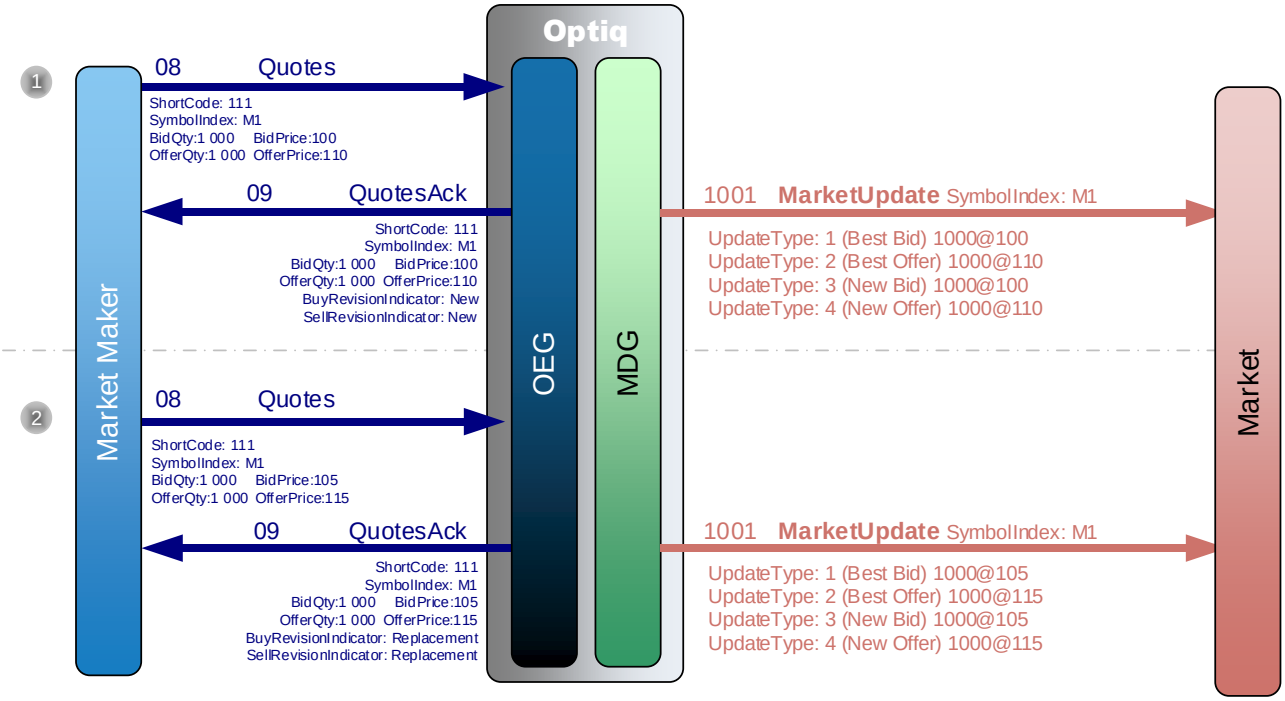
The **Reject** (07) message is sent to fully reject the **Quotes** (08) message.

All Quotes within a **Quotes** (08) message for Derivatives markets must belong to the same Contract.

Optiq identifies the contract of refence based on the first valid instrument in the **Quotes** (08) message.

5.3 MODIFYING A QUOTE

5.3.1 Modifying an Unmatched Quote



Firm previously declared Execution Within Firm ShortCode 111 for market making on Contract M, which includes instrument M1.

① A Market Maker sends a private **Quotes** (08) message to enter a new Buy quote with a quantity of 1,000 at a price of 100 along with another Sell quote with a quantity of 1,000 at a price of 110.

OEG sends back a private **QuotesAck** (09) message to confirm the successful receipt and technical processing of the quotes.

The quotes enter the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the BBO and the limits.

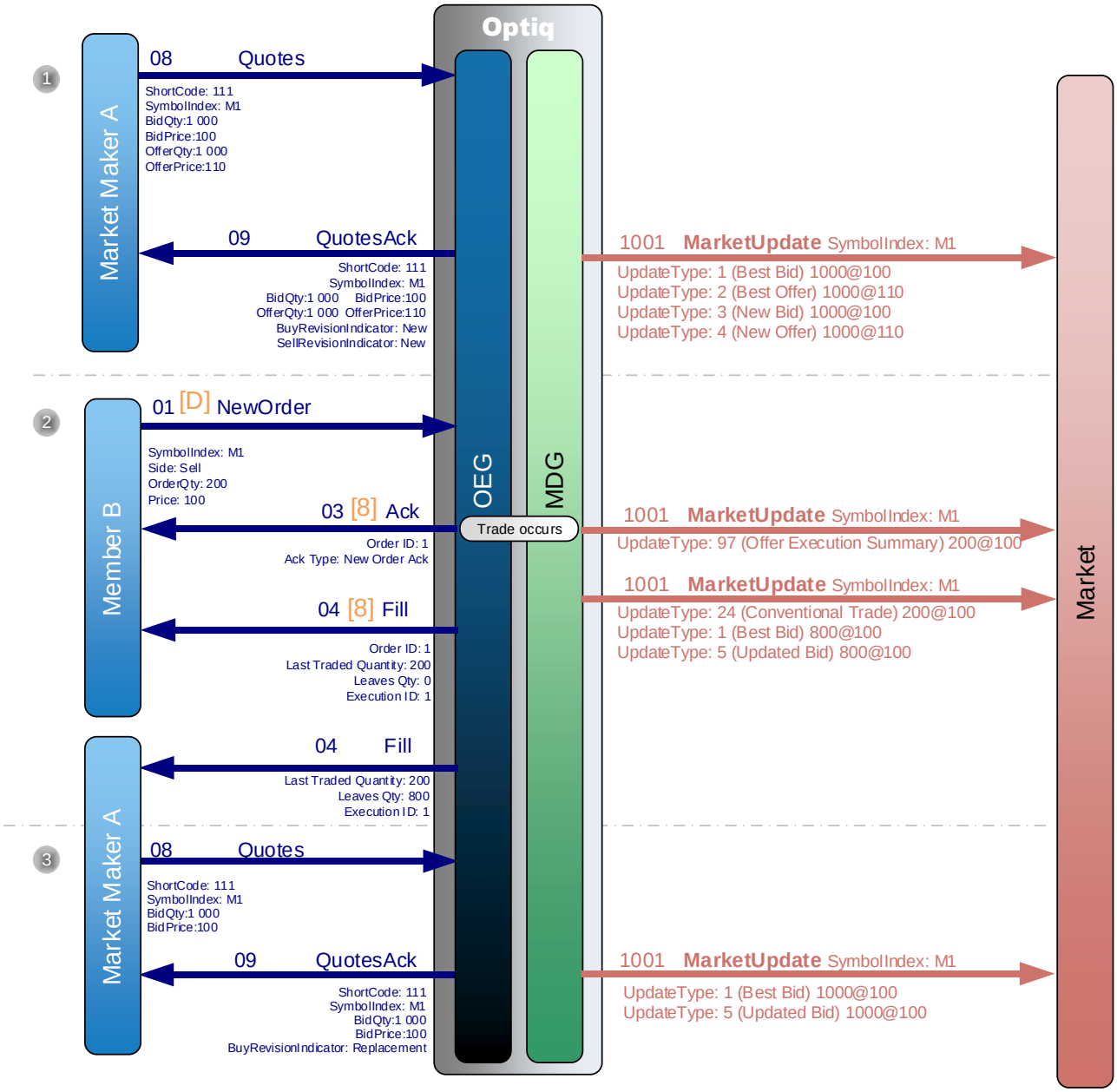
② The same Market Maker (with the same Execution Within Firm ShortCode as in Step 1) sends a private **Quotes** (08) message to revise the Buy quote with a new price of 105 and the Sell quote with a new price of 115.

OEG sends back a private **QuotesAck** (09) message to confirm the successful receipt and technical processing of the quotes. The existing quotes are replaced because new quotes are sent from the same Execution Within Firm ShortCode. The *Revision Indicator* for the both sides is set to 'Replacement' as these new quotes are replacing the old ones.

The quotes enter the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the BBO and the limits.

Note: For Derivatives, Quantity set in the **Quotes** (08) message is the Quantity the Market Maker wants to display in the Order Book.

5.3.2 Modifying the Volume of a Partially Matched Quote



① A Market Maker sends a private **Quotes** (08) message to enter a new Buy quote with a quantity of 1,000 at a price of 100 along with another Sell quote with a quantity of 1,000 at a price of 110.

OEG sends back a private **QuoteAck** (09) message to confirm the successful receipt and technical processing of the quotes.

The quotes enter the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the BBO and the limits.

② Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 200 and a price of 100.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The entering order immediately matches the order from the Quote submitted by the Market Maker A and OEG sends back a private **Fill** (04) (FIX 8) message to each member to publish the trade execution.

A public **MarketUpdate** (1001) message is immediately sent to the market for the Execution Summary.

Then public **MarketUpdate** (1001) messages are sent to the market for the Trades and the Limits.

③ Market Maker A sends a private **Quotes** (08) message to revise the Buy quote without modify the Sell quote. The quantity of the Buy quote is set to 1,000 meaning that the member wants a displayed quantity of 1,000 in the order book. The quantity of the Sell quote is set to *Null* meaning that the existing Sell Quote should not be updated.

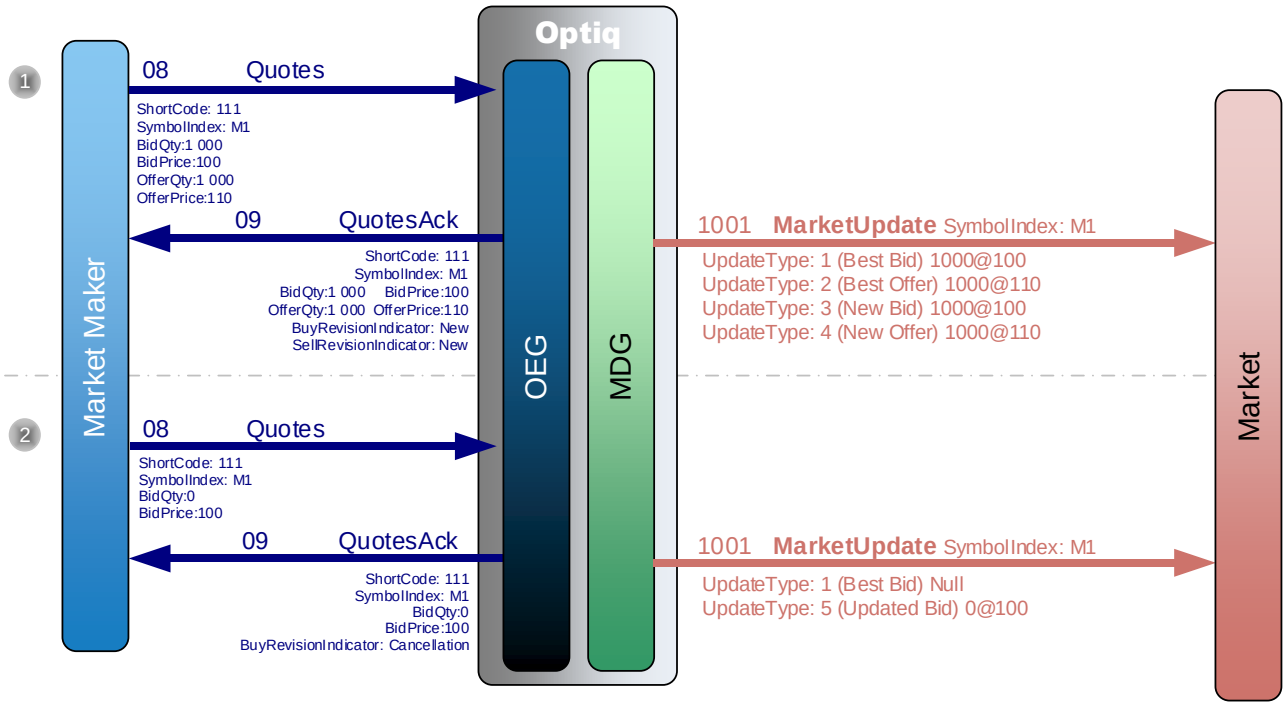
OEG sends back a private **QuoteAck** (09) message to confirm the successful receipt and technical processing of the quote. The *Revision Indicator* for the Buy side is set to 'Replacement' as the new Buy quote is replacing the old one.

A public **MarketUpdate** (1001) message is sent to the market to update the BBO and the Limits.

Note: For Derivatives, Quantity set in the **Quotes** (08) message is the Quantity the Market Maker wants to display in the Order Book.

Modifying the price of a partially matched quote leads to the same behaviour.

5.4 CANCELLING QUOTES



① A Market Maker sends a private **Quotes** (08) message to enter a new Buy quote with a quantity of 1,000 at a price of 100 along with another Sell quote with a quantity of 1,000 at a price of 110.

OEG sends back a private **QuoteAck** (09) message to confirm the successful receipt and technical processing of the quotes.

The quotes enter the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the limits.

② The same Market Maker (with the same Execution Within Firm ShortCode as in step 1) sends a private **Quotes** (08) message with a quantity of 0 to cancel the Buy quote.

OEG sends back a private **QuoteAck** (09) message to confirm the successful receipt and technical processing of the quotes. The *Revision Indicator* for the Buy side is set to 'Cancellation'.

A public **MarketUpdate** (1001) message is sent to the market to update the BBO and the Limits.

Note: CancelReplace (06) and **CancelRequest** (12) messages are not applicable for Quotes.

5.5 MM PROTECTION MESSAGES

For readability purposes for MM Protection, private and public messages related to trades are not displayed in the diagram.

Market Maker Protection messages for Derivatives are available only in SBE format.

Unsolicited messages sent by the OEG for the market maker protection facility are sent to the Logical access identified in the sign-in message.

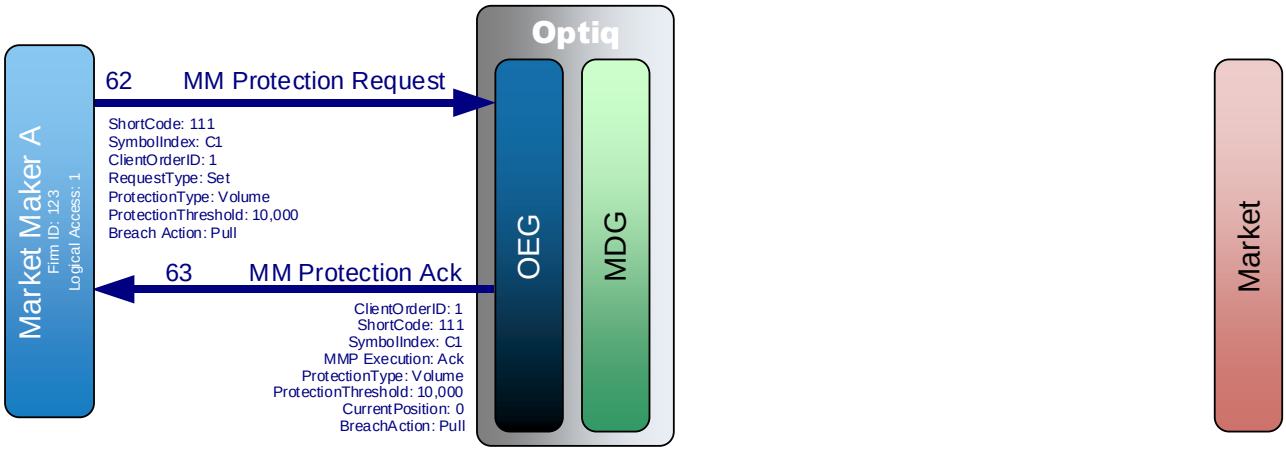
- Ack for Update of exposure

Solicited messages are replied back to the Logical Access that initiated the request.

- Ack for Set / Get / Update
- Reject

Kill messages triggered by breach of Market Maker protection are sent to the Logical Access that originally sent the order.

5.5.1 Setting the MM Protection



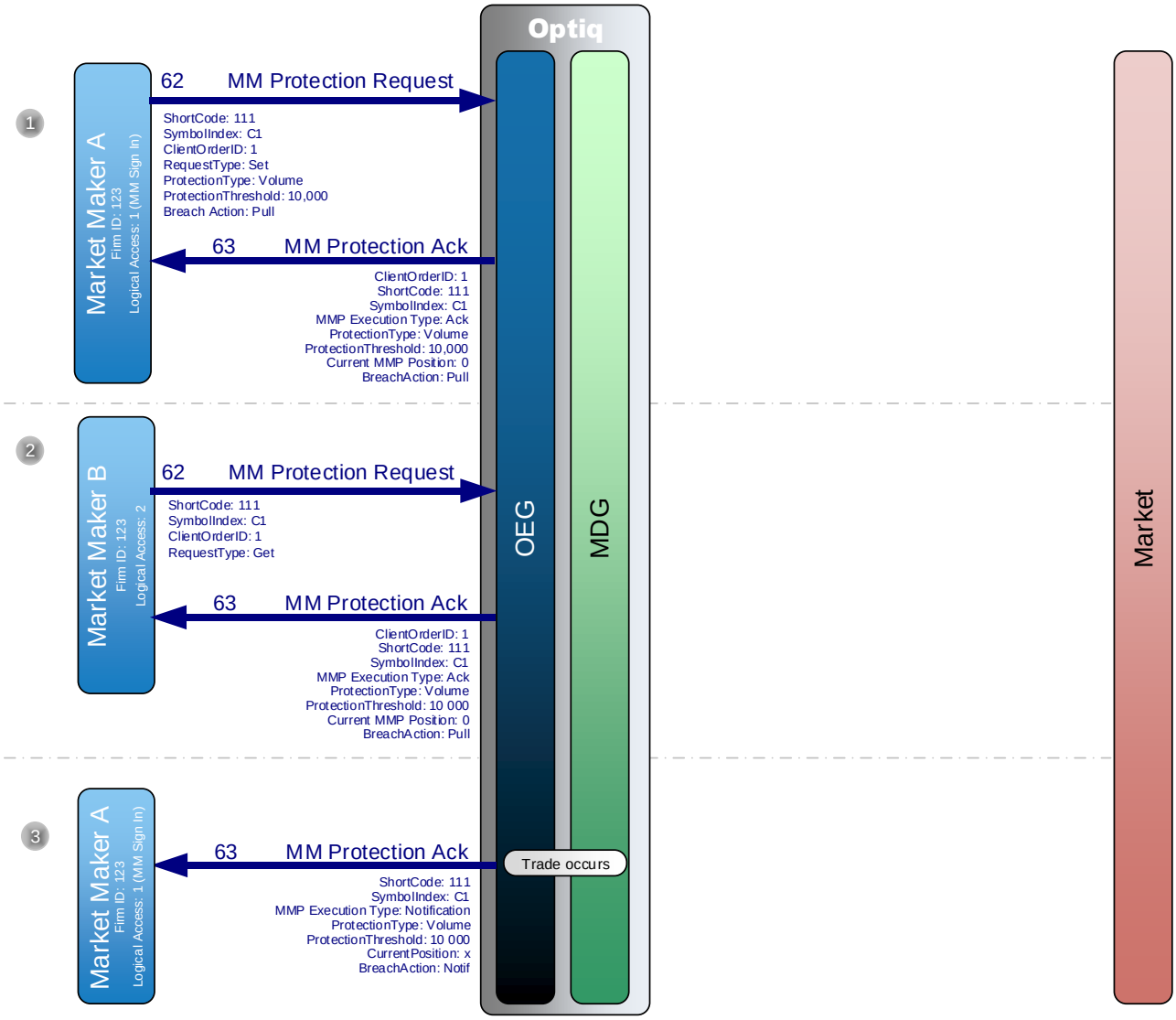
Market Maker A sends a private **MM Protection Request** (62) message to set a Protection Threshold with a volume of 10,000 for the Contract C1.

OEG sends back a private **MM Protection Ack** (63) message to confirm the successful receipt and technical processing of the setting.

No message is sent to the Market.

Note: A private **MM Protection Request** (62) message with *RequestType* = 'Set' resets the *Current MM Position*, unlike the same request set with a *RequestType* = 'Adjust'. Submitting messages to Adjust MM protection only adjusts the configuration of the protection.

5.5.2 Requesting the MM Protection State



① Market Maker A from Logical Access 1 send a **MM Protection Request** (62) message to set the MM Protection for Execution Within Firm ShortCode 111.

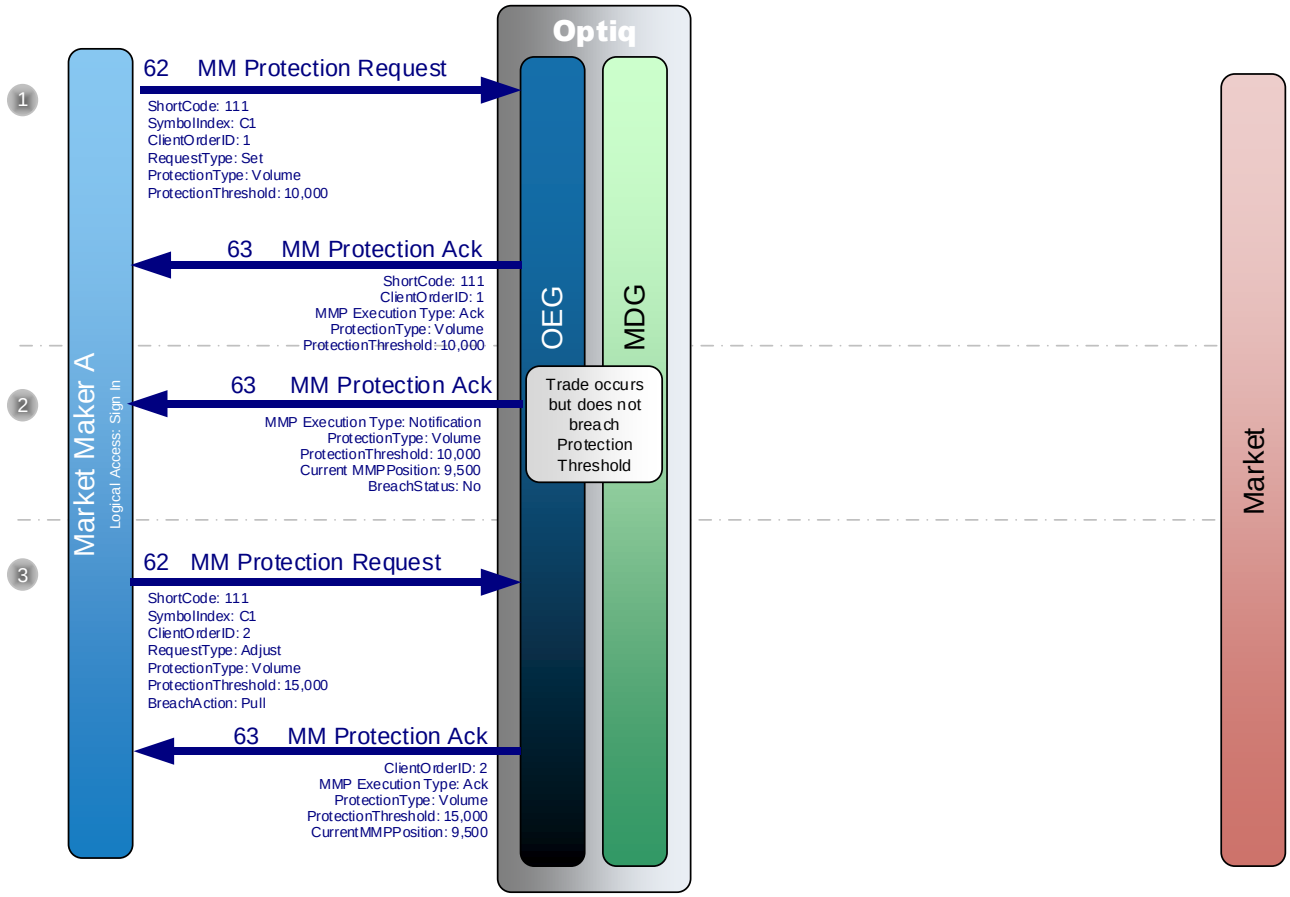
OEG sends back a private **MM Protection Ack** (63) message to the Logical Access 1, to confirm the successful receipt and technical processing of the message.

② Market Maker B from a Logical Access different than Market Maker A (but same Firm ID) sends a **MM Protection Request** (62) to get the status of the current MM Protection for Execution Within Firm ShortCode 111.

OEG sends back a private **MM Protection Ack** (63) message to provide the current position for Execution Within Firm ShortCode 111, which is routed to Logical Access 2.

③ A trade occurs without breaching a threshold, the Current Position of Execution Within Firm ShortCode 111 is updated and a private **MM Protection Ack** (63) is sent to the Logical Access defined in the **MM Sign In** (47) message.

5.5.3 Adjusting the MM Protection



① Market Maker A sends a private **MM Protection Request** (62) message to set a Protection Threshold with a volume of 10,000 for the Contract C1.

OEG sends back a private **MM Protection Ack** (63) message to confirm the successful receipt and technical processing of the setting.

② A trade occurs involving Market Maker A (with same Execution Within Firm ShortCode as in step 1) without breaching of the Protection Threshold. OEG sends a private **MM Protection Ack** (63) to Market Maker A to notify market maker of the new current MM protection position.

③ Market Maker A sends a private **MM Protection Request** (62) to adjust the Protection volume Threshold from 10,000 to 15,000.

OEG sends back a private **MM Protection Ack** (63) to Market Maker A to confirm the successful receipt and technical processing of the message. The MM protection position is not reset.

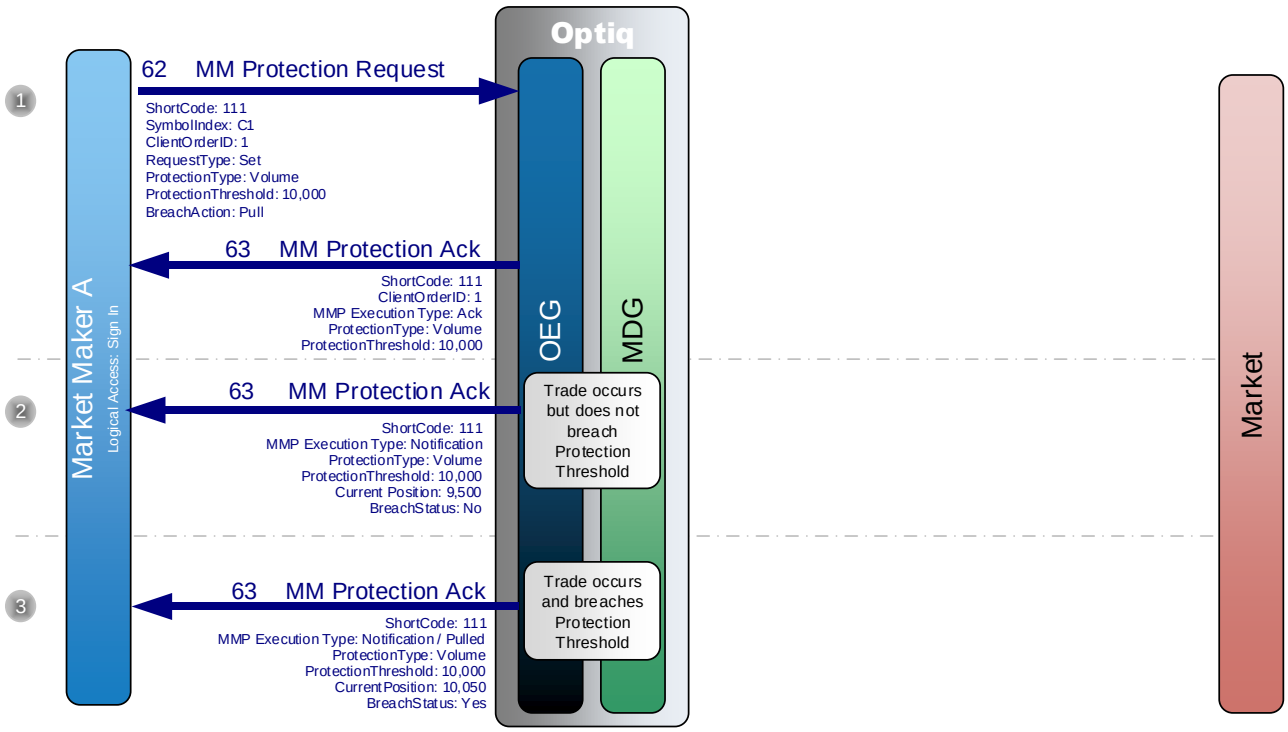
Note: A **MM Protection Request** (62) with *RequestType* = 'Adjust' does not reset the *Current MM Position*, unlike the same request set with a *RequestType* = 'Set'. Submitting messages to Adjust MM protection only adjusts the configuration of the protection.

Updates of the MM Protection values can only be done via the Logical Access that submitted the sign-in and set the MM Protection for the Firm and short code.

Upon setup of MM protection OEG will send the updated MM protection level for every trade, even if the Breach Action is not set.

5.5.4 Breach of MM Protection

For readability purposes the individual Fill and Market Update messages are not explicitly shown.



① Market Maker A sends a private **MM Protection Request** (62) message to set a Protection for a Volume of 10,000 for the Contract C1.

OEG sends back a private **MM Protection Ack** (63) message to confirm the successful receipt and technical processing of the setting.

② A trade occurs involving Market Maker A (with same Execution Within Firm ShortCode as in step 1), OEG sends a private **MM Protection Ack** (63) to Market Maker A to notify the new current position.

③ Another trade occurs involving Market Maker A (with same Execution Within Firm ShortCode as in step 1). This trade breaches the Protection Threshold.

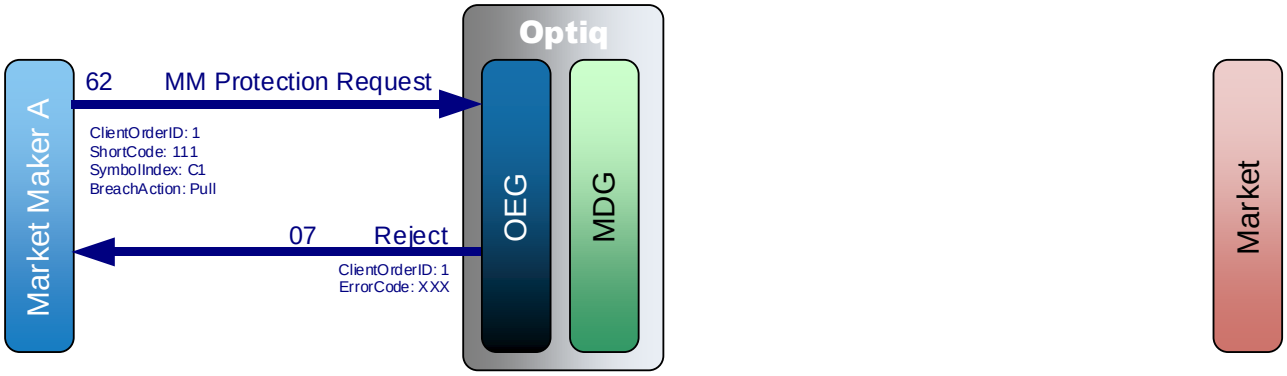
OEG sends a private **MM Protection Ack** (63) to Market Maker A to notify of the breach of MM Protection and the associated Breach Action.

Note: Following the breach, OEG will behave according to the Breach Action set.

In case it was set to "Pull" – all open orders for that Firm, Short Code and Contract combination will be cancelled. Market Maker will receive an individual **Kill** (05) (FIX 8) message for each cancelled order.

In case breach action is not set - all orders remain in the book, and market maker will continue receiving updates of their MM position upon occurrence of any trade.

5.5.5 MM Protection Rejected



Market Maker A sends a private **MM Protection Request** (62) message to set a MM Protection.

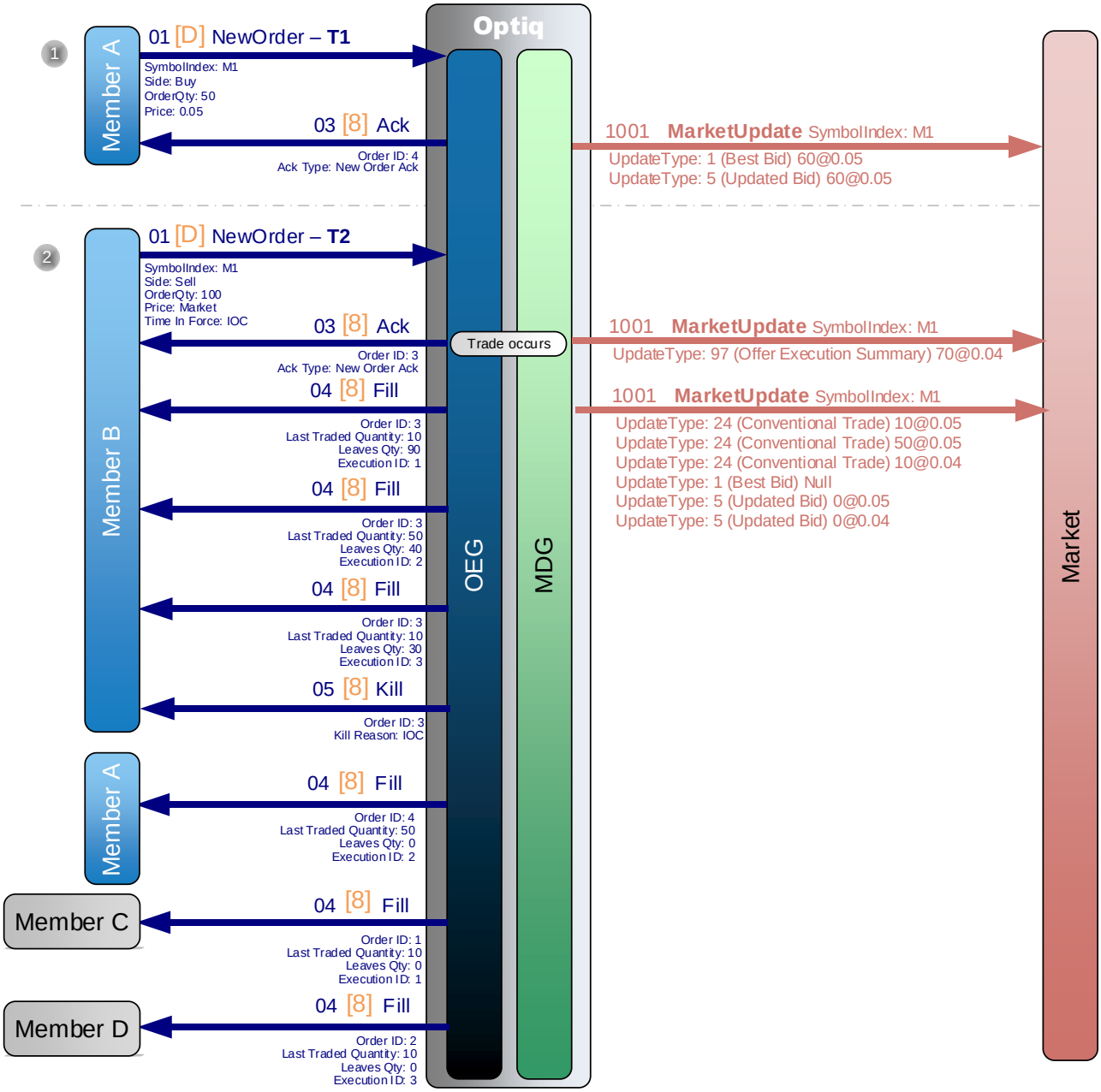
If the message is rejected OEG sends back a private **Reject** (07) message with an *Error Code*. The reason of the rejection can be found using the Error Code value within the *Euronext Markets - Optiq & TCS Error list* document.

Note: Cases leading to a rejection are: Execution Within Firm ShortCode is not declared; Member is not a Market Maker; Attempt to adjust MMP Threshold below the current MM Position (i.e. breaching the threshold).

6. TRADING KINEMATICS

6.1 EXPLICIT VERSUS EXPLICIT IN AN OUTRIGHT (NO IMPLIED PRICING)

M1 Outright Instrument					
		Bid	Offer		
Time	Qty	Price	Price	Qty	Time
T0	10	0.05	-	100	T2
T1	50	0.05			
T0	10	0.04			



① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 50 and a price of 0.05.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The order enters the order book without matching and a public **MarketUpdate** (1001) message is sent to update the Limit.

② Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 100 and a price to Market and a validity condition of Immediate or Cancel (IOC).

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The entering order immediately matches the three orders and OEG sends back a private **Fill** (04) (FIX 8) message to each member involved in the trade to notify the trade execution.

OEG sends back to Member B a private **Kill** (05) (FIX 8) message to kill the remaining quantity.

A public **MarketUpdate** (1001) message is immediately sent to the market for the Execution Summary.

Only then, public **MarketUpdate** (1001) messages are sent to the market for the Trades and the Limits.

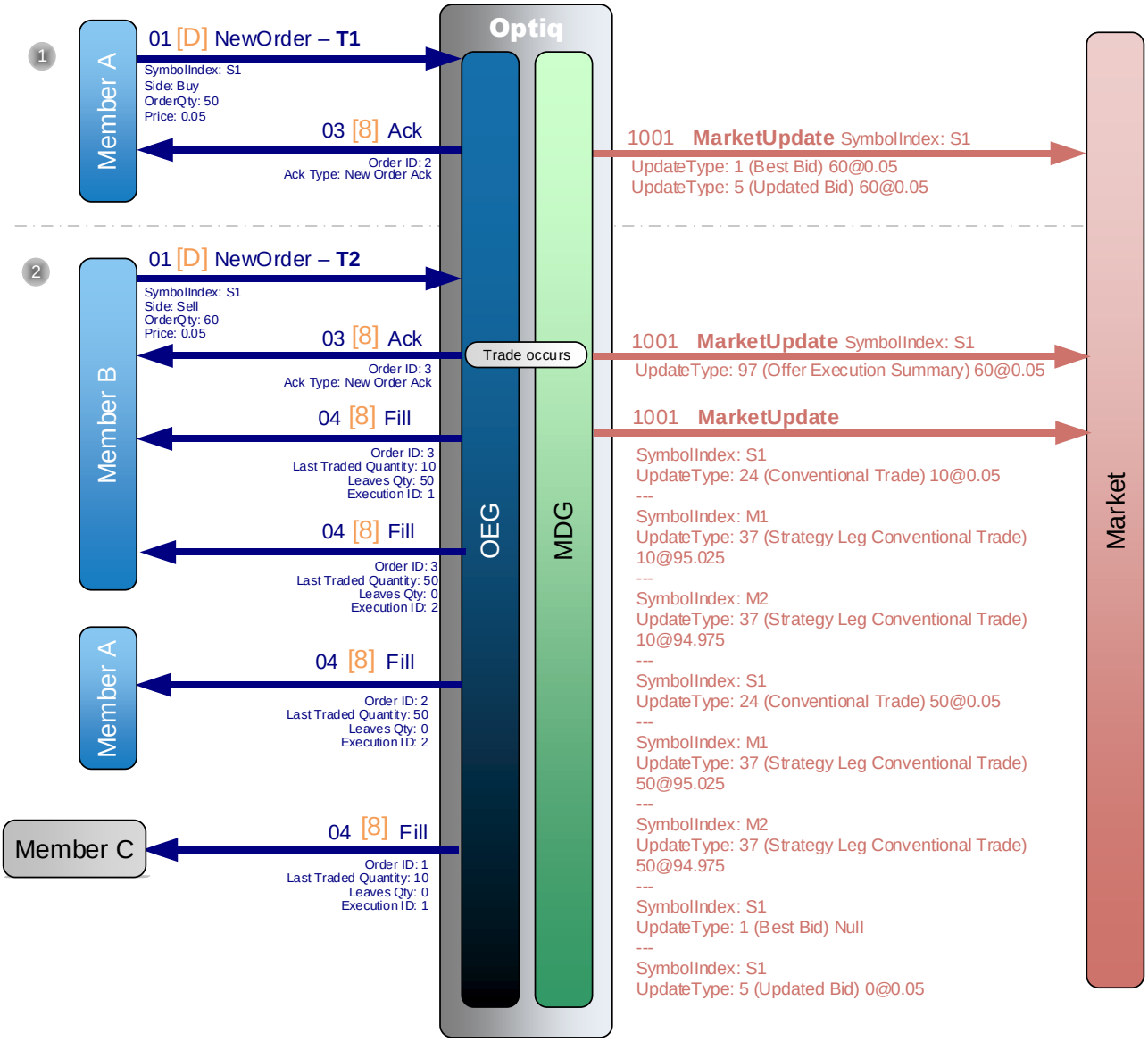
Note: No dedicated **MarketUpdate** (1001) message is sent for the entry of the second order as it is immediately matched.

6.2 EXPLICIT VERSUS EXPLICIT IN STRATEGY (NO IMPLIED)

M1					
Outright Instrument					
		Bid	Offer		
Time	Qty	Price	Price	Qty	Time

M2					
Outright Instrument					
		Bid	Offer		
Time	Qty	Price	Price	Qty	Time

S1					
Strategy Instrument					
Calendar Spread (**M1 – M2**)					
		Bid	Offer		
Time	Qty	Price	Price	Qty	Time
T0	10	0.05	0.05	60	T2
T1	50	0.05			



① Member A sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 50 and a price of 0.05.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The order enters the order book without matching and a public **MarketUpdate** (1001) message is sent to update the limit.

② Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 60 and a price of 0.05.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The entering order immediately matches the first order and OEG sends back a private **Fill** (04) (FIX 8) message to each member to publish the trade execution.

A public **MarketUpdate** (1001) message is immediately sent to the market for the Execution Summary of the Strategy

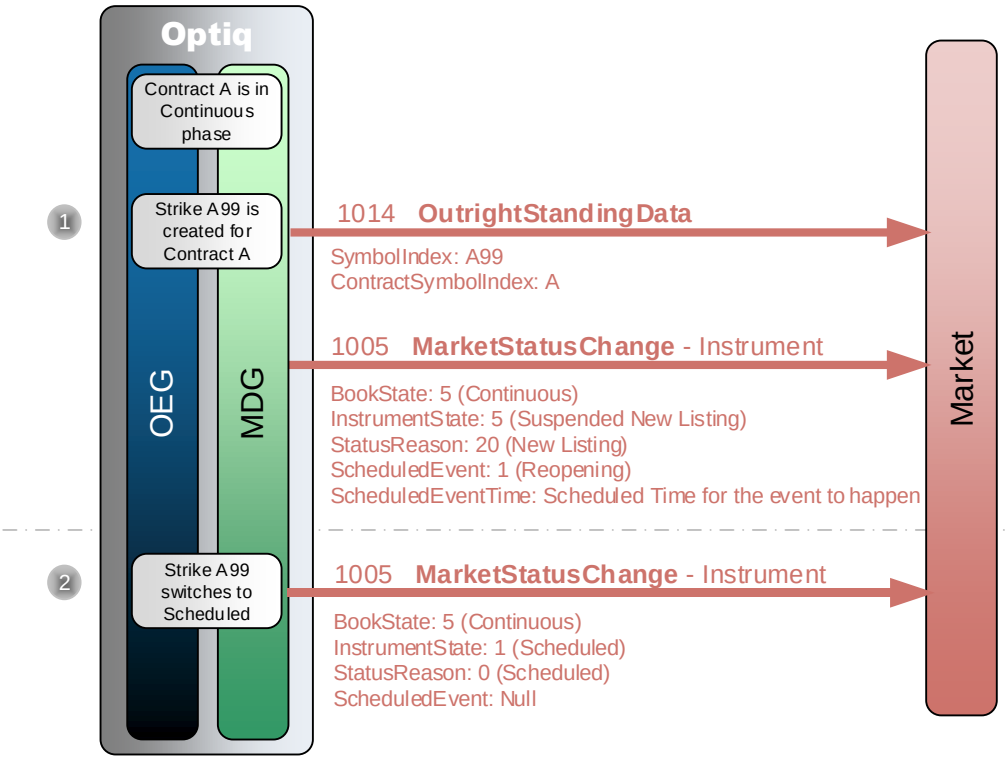
Only then, public **MarketUpdate** (1001) messages are sent to the market for the Trade in the Strategy (S1) and trades for each leg of the strategy (i.e. the Trades for the individual Outrights) that are flagged as the Strategy Leg Conventional Trade.

Following publication of updates for the strategy and strategy legs, another set of **MarketUpdate** (1001) messages are sent for BBO and Limits updates.

Note: Order present in the book with timestamp T0 is at a price that does not participate in matching, and as such remains in the book.

7. INTRADAY INSTRUMENT CREATION

7.1 INTRADAY STRIKE CREATION

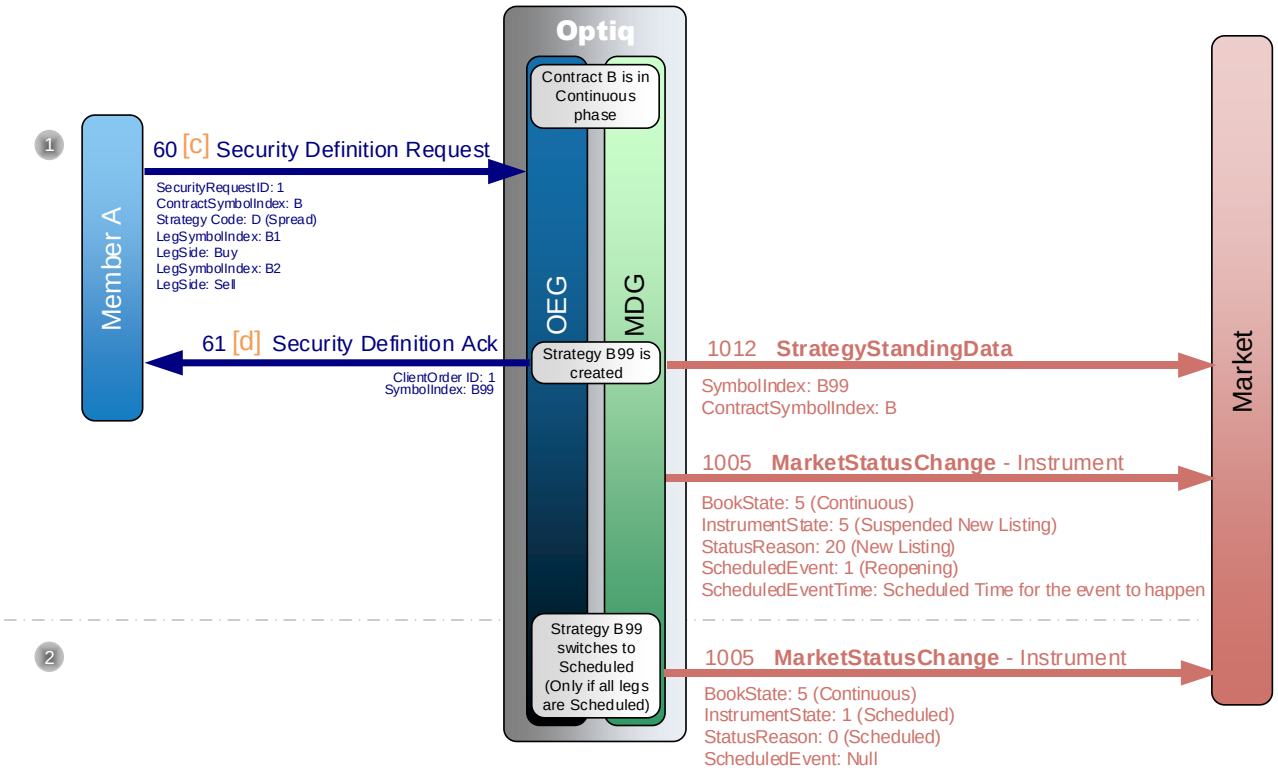


① Optiq creates a new Strike (A99) for Contract A. A public **Outright Standing Data** (1014) message is sent to the market, with the referential details associated to this new Strike. Creation of new instruments requires a brief period of new instrument configuration. As such, creation message is followed by a public **Market Status Change** (1005), as the strike is created in suspended state "Suspended New Listing", and the expected time of the strike becoming available for trading within the *ScheduledEventTime* field.

② Upon the strike A99 becoming available for trading, a public **Market Status Change** (1005) is sent to the market to indicate that Strike A99 is now in state Scheduled and follows the pattern and state of the Contract A.

7.2 INTRADAY STRATEGY CREATION

7.2.1 Intraday Strategy Creation Accepted



① Intraday strategy creation is initiated by the members by submitting a **Security Definition Request** (60) (FIX c) message to the OEG.

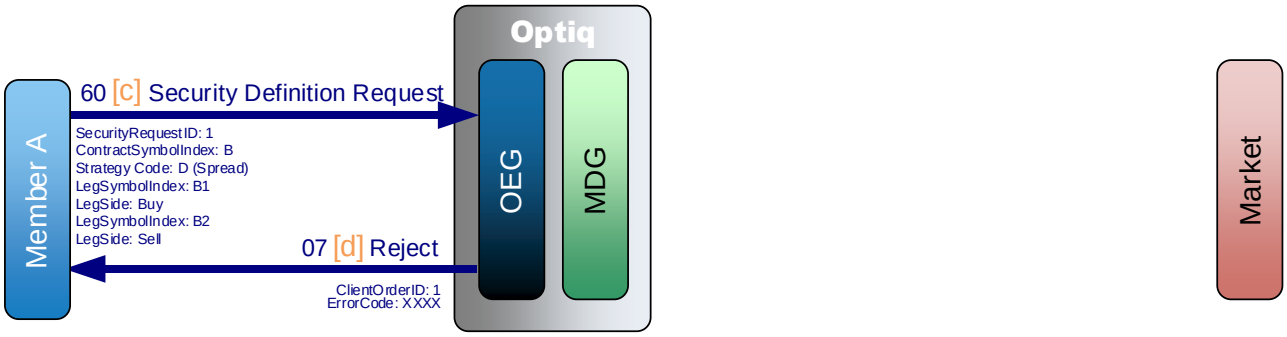
OEG responds with the **Security Definition Ack** (61) (FIX d) message, to provide member with the Symbol Index of the strategy.

If the strategy does not yet exist, creation is communicated to the market by sending a public **Strategy Standing Data** (1012) message. Creation of new instruments requires a brief period of price and leg status identification. As such, creation message is followed by the **Market Status Change** (1005) message for that strategy, with the state of "Suspended New Listing", and the expected time of the strategy becoming available for trading within the *ScheduledEventTime* field.

② If the strategy does not yet exist, upon identification of the appropriate price conditions for the strategy it will be made available for trading, at which point a new public **Market Status Change** (1005) message for that strategy is sent to the market with the state of the strategy being set to "Scheduled", which will follow the overall state of the contract.

Note: In case a member submits a **Security Definition Request** (60) FIX (c) for a strategy that already exists in Optiq, OEG sends back a private **Security Definition Ack** (61) FIX (d) with the Symbol Index of the existing Strategy. No messages are disseminated to the Market.

7.2.2 Intraday Strategy Creation Rejected



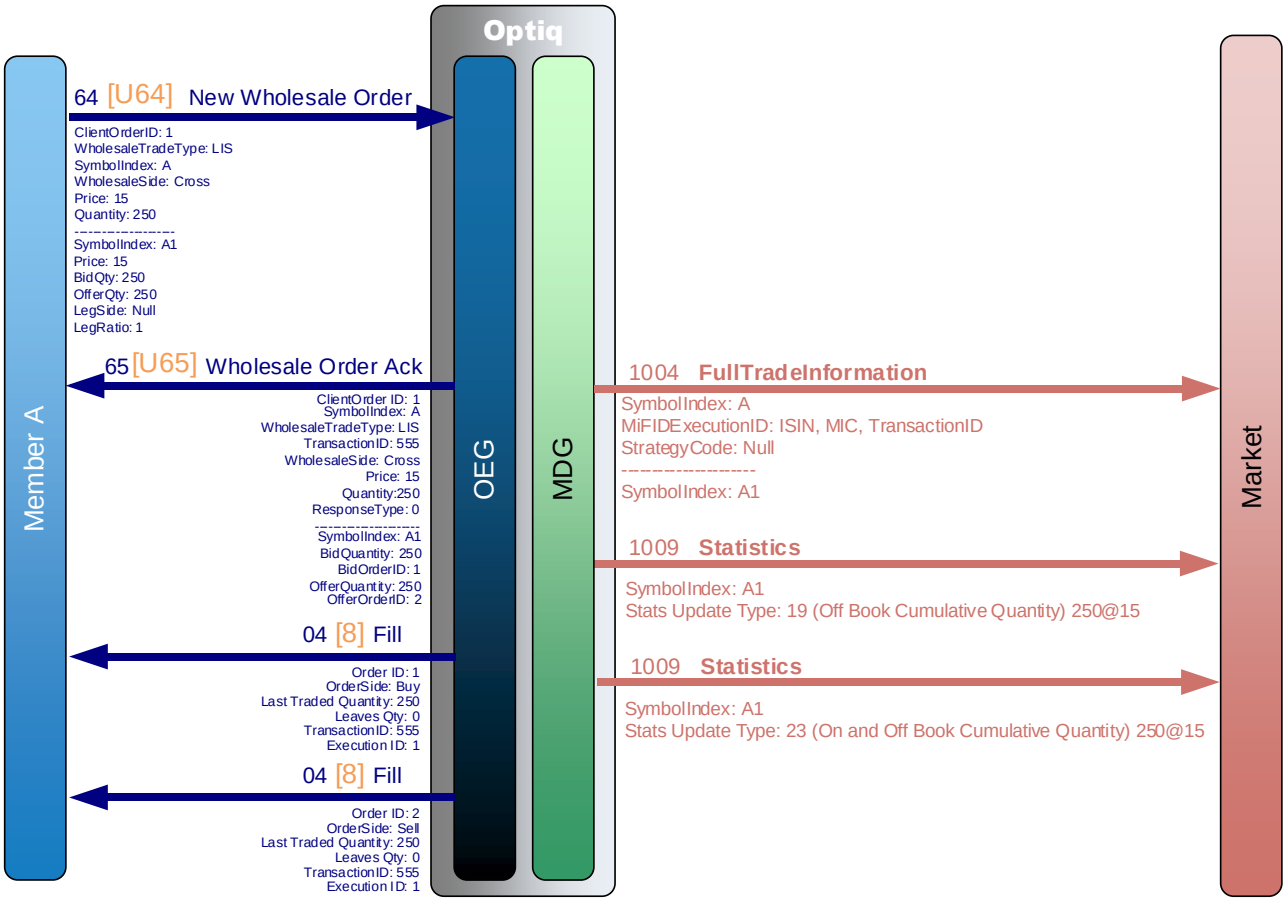
Member A sends a private **Security Definition Request** (52) (FIX c) message to create a strategy.

If the message is rejected OEG sends back a private **Reject** (07) (FIX d) message with an *Error Code*. The reason of the rejection can be found using the Error Code value within the *Euronext Markets - Optiq & TCS Error list* document.

No message is sent to the market.

8. WHOLESALES

8.1 CROSS ON AN OUTRIGHT



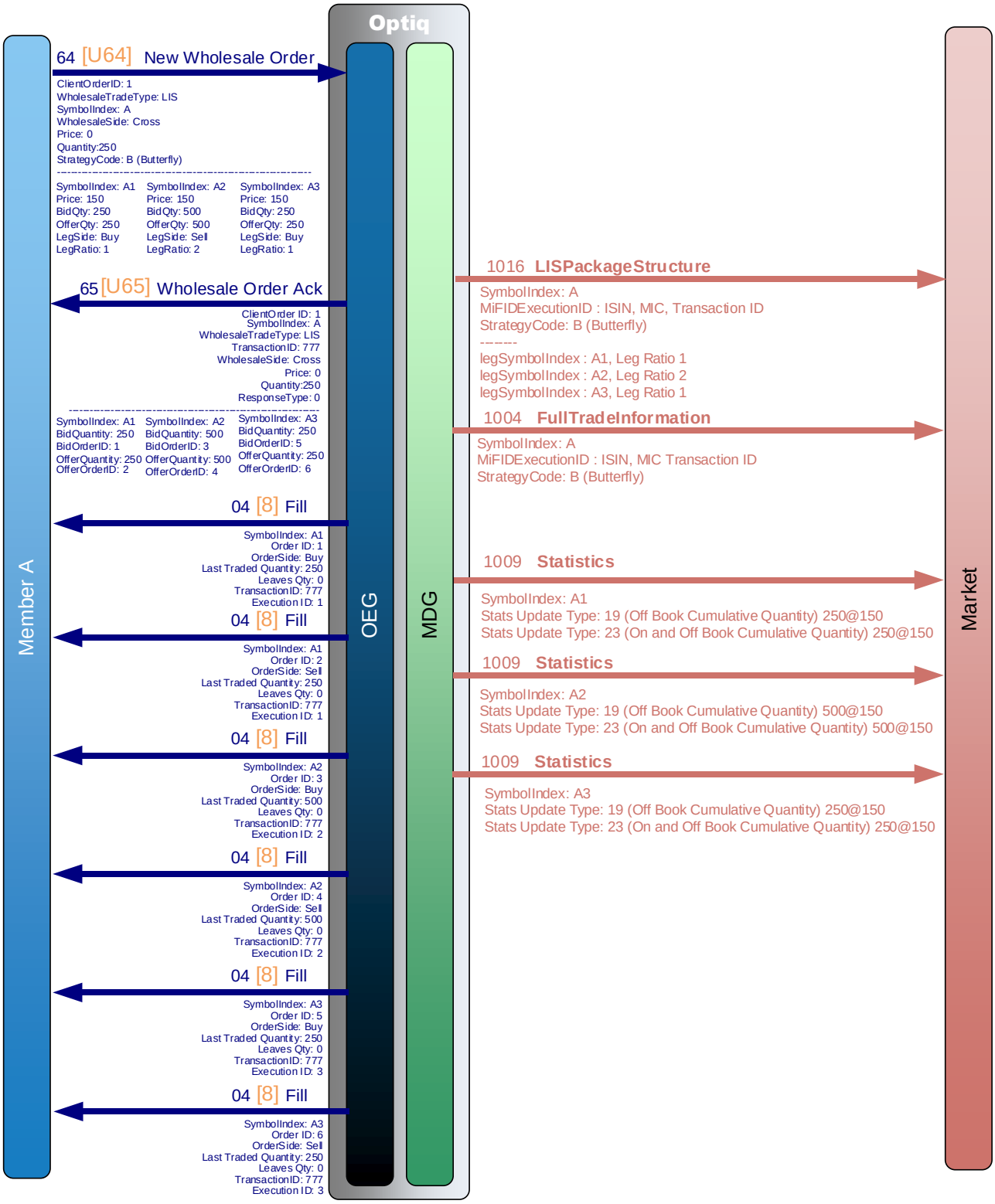
Member A sends a private **NewWholesaleOrder** (64) (FIX U64) message to initialize a new Wholesale transaction on the instrument A1, providing both sides of the transaction, as a Cross order.

OEG sends back a private **WholesaleOrderAck** (65) (FIX U65) message to confirm the successful receipt and technical processing of the Wholesale Order, with the field *Response Type* set to 0 = Accept, and provides the system generated *TransactionID*.

The transaction results in immediate match and the OEG generates a private **Fill** (04) (FIX 8) message for each leg of the trade.

A public **FullTradeInformation** (1004) message is sent to the market for the transaction. This is followed by two **Statistics** (1009) messages sent to update the statistics of the Cumulative Quantity.

8.2 CROSS ON A STRATEGY



Member A sends a private **NewWholesaleOrder** (64) (FIX U64) message to initialize a new Wholesale transaction on Contract A, on a strategy. The submission contains the information to setup the strategy for the transaction both sides of the transaction.

In this example the strategy submitted is a Butterfly, and the details of the strategy submitted match the defined structure and characteristics of the strategy.

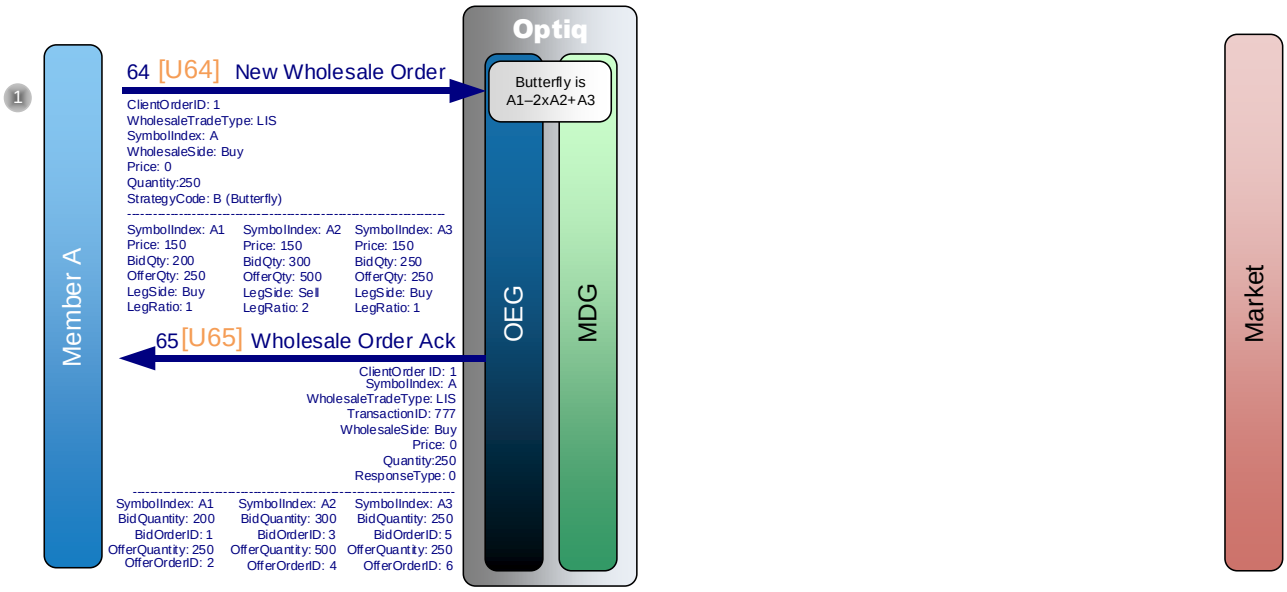
OEG sends back a private **WholesaleOrderAck** (65) (FIX U65) message to confirm the successful receipt and technical processing of the Wholesale Order, with the field *Response Type* set to 0 = Accept, and provides the system generated *TransactionID*.

The transaction results in immediate match in the strategy and the OEG generates a private **Fill** (04) (FIX 8) message for each Outright leg of the trade.

A public **LIS Package Structure** (1016) associated to its **FullTradeInformation** (1004) message are sent to the market for the transaction for Contract A. This is followed by **Statistics** (1009) messages sent to update the statistics of the Cumulative Quantity, for each individual Outright leg of the Strategy.

8.3 NEW WHOLESALE ORDER ON STRATEGY FOR OPTIONS

The steps of this kinematics scenario are split into multiple diagrams. Also, for readability purposes, Fill (04) messages seems to be sent first for Member B and then for Member A. In reality those messages are sent in the same time for Member A and Member B.

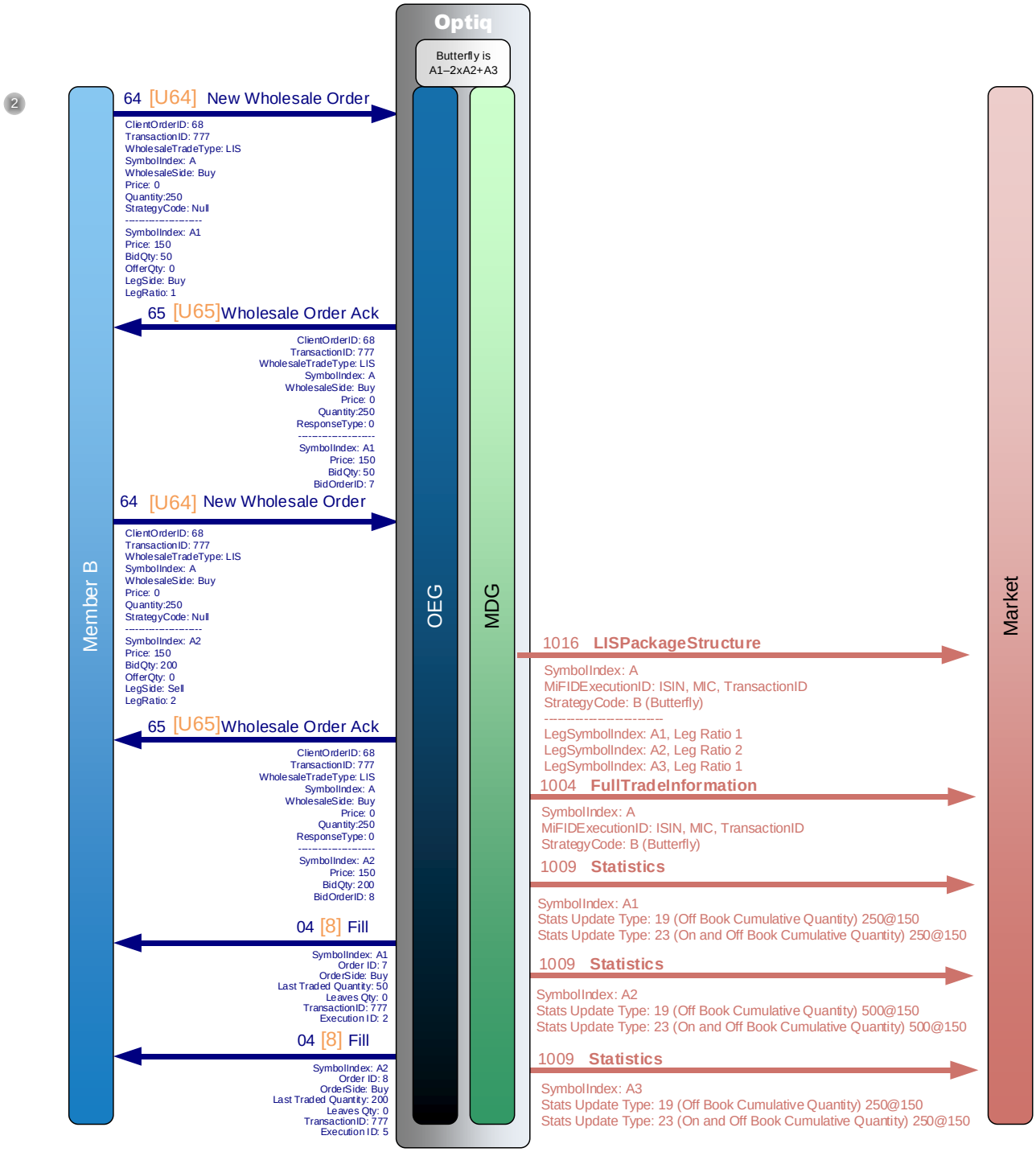


① Member A sends a private **NewWholesaleOrder** (64) (FIX U64) message to initialize a new Wholesale transaction on Contract A, on a strategy for an Option. The submission contains the information to setup the strategy for the transaction both sides of the transaction.

In this example the strategy submitted is a Butterfly, and the details of the strategy submitted match the defined structure and characteristics of the strategy. Part of the submitted transaction contains crossed quantity on instrument A3, and the remaining legs are awaiting a Reactor to complete the transaction.

OEG sends back a private **WholesaleOrderAck** (65) (FIX U65) message to confirm the successful receipt and technical processing of the Wholesale Order, with the field *Response Type* set to 0 = Accept, and provides the system generated *TransactionID*.

No message is sent to the market.



② Member B sends a private **NewWholesaleOrder** (64) (FIX U64) message to initialize a new Wholesale transaction on Contract A, on a strategy. The submission contains the information to setup the strategy for the transaction both sides of the transaction.

In this example the strategy submitted is a Butterfly, and the details of the strategy submitted match the defined structure and characteristics of the strategy. This response is targeted as a Reaction to the declaration done in Step 1 by Member A, and as such contains the *TransactionID* that was generated by system and sent to Member A, and was communicated between the two members.

OEG sends back a private **WholesaleOrderAck** (65) (FIX U65) message to Member B to confirm the successful receipt and technical processing of the Wholesale Order.

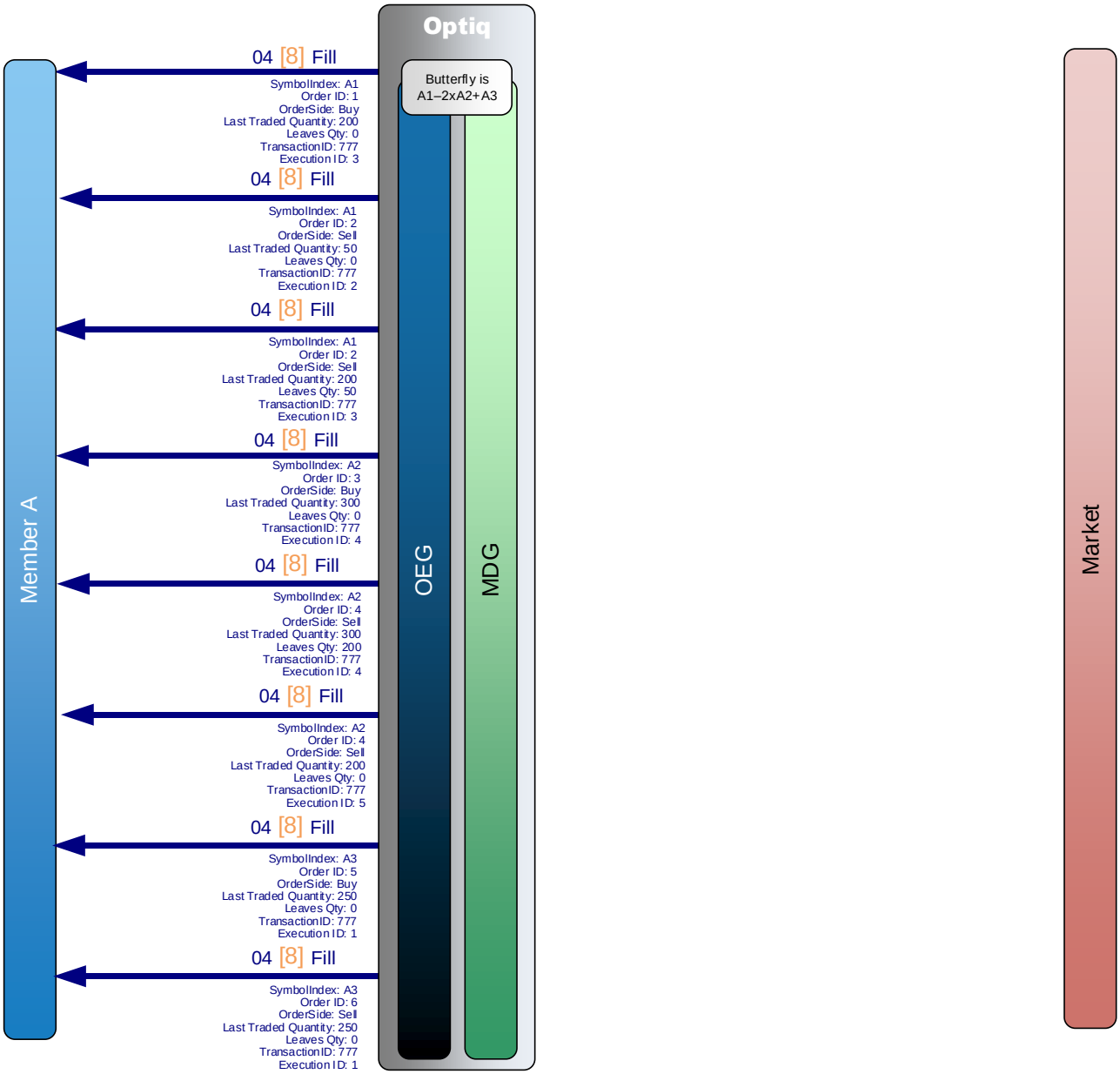
The submission by Member B completes the transaction and results in immediate match for all the legs of the strategy.

OEG generates a private **Fill** (04) (FIX 8) message for each Outright leg of the strategy.

The diagram above displays the two Fill messages sent to Member B, for the match in leg A1 and A2.

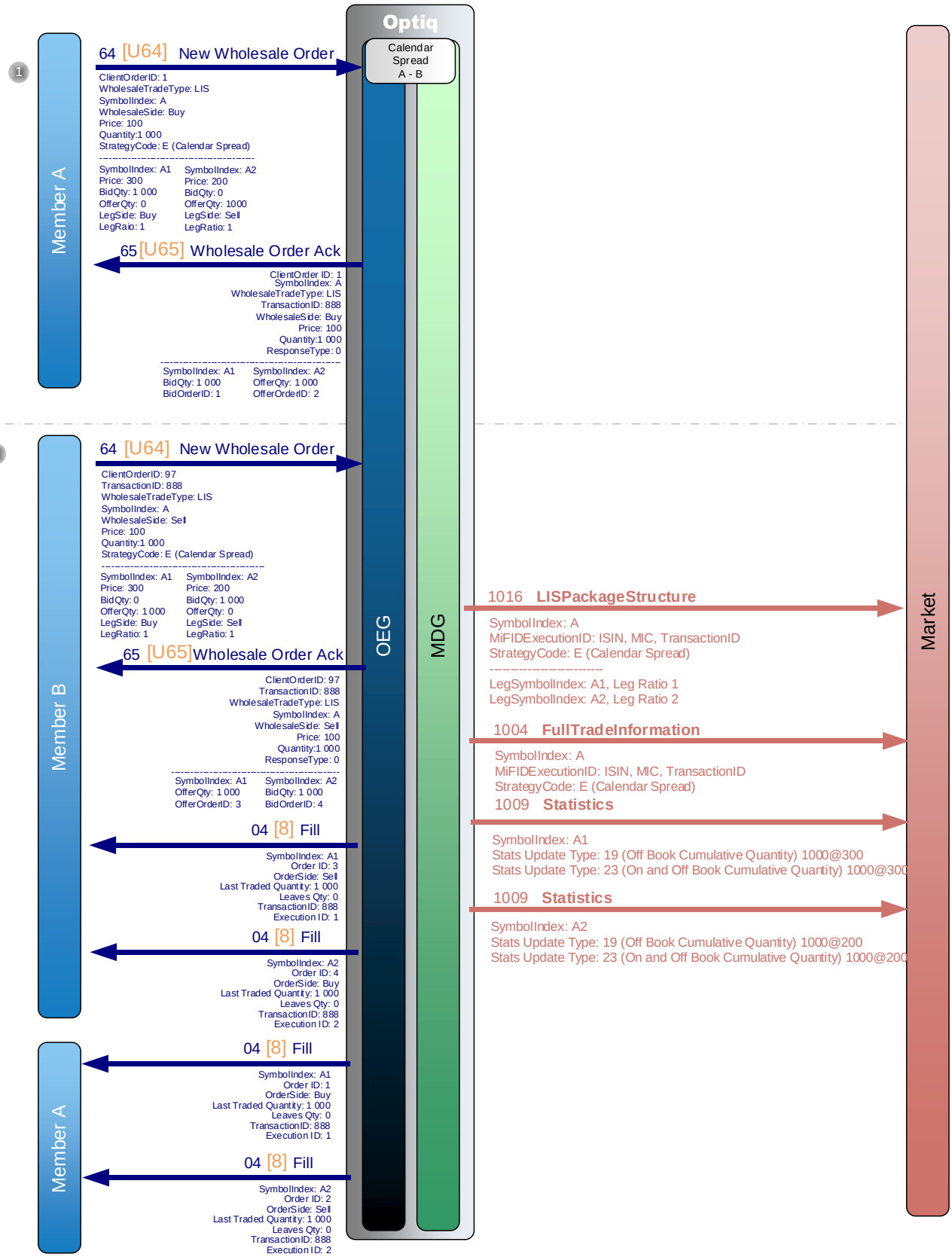
For readability the Fill messages to Member A are shown in the following diagram.

A public **LIS Package Structure** (1016) message associated to its **FullTradeInformation** (1004) message are sent to the market for the transaction for Contract A. This is followed by **Statistics** (1009) messages sent to update the statistics of the Cumulative Quantity, for each individual Outright leg of the Strategy. This covers all the public messages for the transaction.



The diagram above displays the **Fill** (04) (FIX 8) message sent to Member A for the crossed quantity on all the submitted legs, as well as the matches against Member B on the A1 and A2. The associated public messages are described in the diagram above.

8.4 NEW WHOLESALE ORDER ON STRATEGY FOR FUTURES



① Member A sends a private **NewWholesaleOrder** (64) (FIX U64) message to initialize a new Wholesale transaction on Contract A, on a strategy for a Future. The submission contains the information to setup the strategy for the transaction both sides of the transaction.

In this example the strategy submitted is a Calendar Spread, and the details of the strategy submitted match the defined structure and characteristics of the strategy.

OEG sends back a private **WholesaleOrderAck** (65) (FIX U65) message to confirm the successful receipt and technical processing of the Wholesale Order, with the field *Response Type* set to 0 = Accept, and provides the system generated *TransactionID*.

No message is sent to the market.

② Member B sends a private **NewWholesaleOrder** (64) (FIX U64) message to initialize a new Wholesale transaction on Contract A, on a strategy. The submission contains the information to setup the strategy for the transaction both sides of the transaction.

This response is targeted as a Reaction to the declaration done in Step 1 by Member A, and as such contains the *TransactionID* that was generated by system and sent to Member A, and was communicated between the two members.

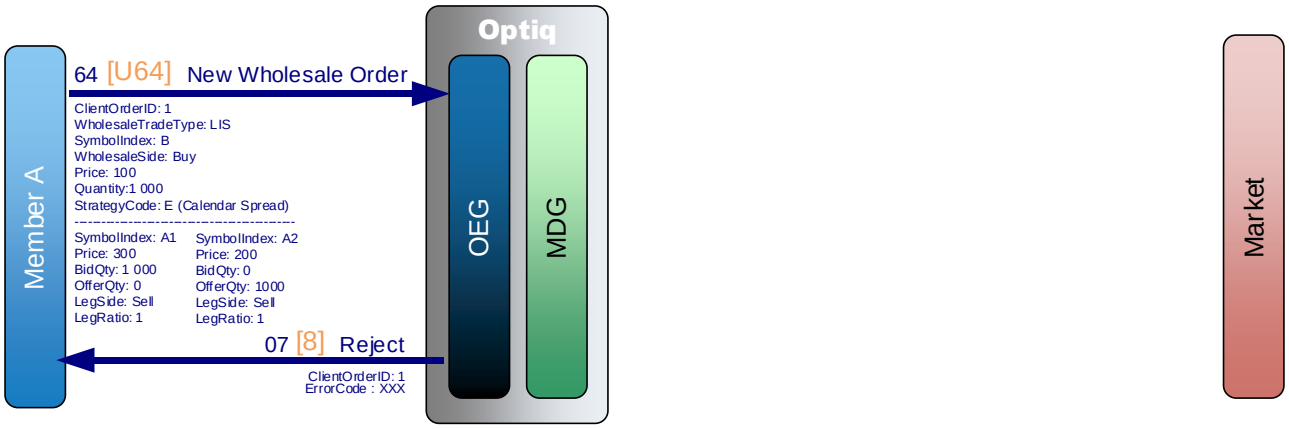
OEG sends back a private **WholesaleOrderAck** (65) (FIX U65) message to Member B to confirm the successful receipt and technical processing of the Wholesale Order.

The submission by Member B completes the transaction and results in immediate match for all the legs of the strategy.

OEG generates a private **Fill** (04) (FIX 8) message for each leg of the strategy.

A public **LIS Package Structure** (1016) message, associated to its **FullTradeInformation** (1004) message are sent to the market for the transaction for Contract A. This is followed by **Statistics** (1009) messages sent to update the statistics of the Cumulative Quantity, for each individual Outright leg of the Strategy.

8.5 REJECTION OF A NEW WHOLESALE ORDER



Member A sends a private **NewWholesaleOrder** (64) (FIX U64) message to initialize a new Wholesale transaction on a Calendar Spread strategy, providing the information to setup the strategy for the transaction, that does not match the expected structure of the strategy.

OEG sends back a private **Reject** (07) (FIX 8) message to reject the creation of the Wholesales transaction with an Error Code. The reason of the rejection can be found using the *Error Code* value within the *Euronext Markets - Optiq & TCS Error list* document.

No message is sent to the Market.

DOCUMENT HISTORY

REVISION NO.	DATE	CHANGE DESCRIPTION
1.0.0	30 April 2019	First release for migration of Derivatives onto Optiq
1.0.1	13 May 2019	Finalized Version for Opening of Optiq Derivatives Test Platform (EUA) and member conformance - Addition of the LIS Package Structure message in sections 8.3 and 8.4 - Correction on section 4.1.3 : no 'Uncrossing' flag is sent in case the IMP was still outside of collars, but a new reservation notification and the associated Indicative Matching Price