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EURONEXT CASH MARKETS – OPTIQ OEG MDG KINEMATICS

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PREFACE

PURPOSE

The purpose of this document is to describe Cash Market Kinematics for Optiq Order Entry Gateway (OEG) and Market Data Gateway (MDG).

TARGET AUDIENCE

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

SCOPE

The scope of this document is listed below (✓ In scope, ✗ Out of scope):

OPTIQ SEGMENT	SEGMENT VALUE	IN/OUT OF SCOPE
Euronext Cash Market		
Equities EQ	1	✓
Funds FND	2	✓
Fixed Income FXI	3	✓
Warrants and Certificates SP	4	✓
Block BLK	14	✓
Forex FOREX	15	✗
Irish Bonds and Funds IBF	16	✗
Euronext Derivatives Market		
Commodity Derivatives CMO	8	✓
Index Derivatives IDD	11	✓
Equity Derivatives EQD	12	✓
Euronext Indices		
Indices Indices	9	✓
Euronext Approved Publication Arrangement (APA) Facility		
Trade Reporting and Publication TRP	10	✗
Other Markets		
Luxembourg Stock Exchange BDL	5	✓

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WHAT'S NEW?

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

VERSION NO.	CHANGE DESCRIPTION
5.31.0	The following changes have been made to this version of the document: ■ Section 2.3.1 Incoming Dark Sweep Order Partially Matched with Dark Not Sweep Order and moving to Lit Book – title updated. Kinematic updated to reflect the new behaviour expected for Dark Pool, as well as the Kinematic scenario description.

ASSOCIATED DOCUMENTS

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

- Euronext Cash and Derivatives Markets - Optiq OEG SBE Messages - Interface Specification
- Euronext Cash and Derivatives Markets - Optiq OEG FIX 5.0 Messages - Interface Specification
- Euronext Cash and Derivatives Markets – Optiq OEG TCS Error List – Technical Specification (.csv)
- Euronext Cash and Derivatives Markets - Optiq MDG Messages - Interface Specification
- Euronext Cash and Derivatives Markets – Optiq Files - Interface Specification

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). 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, trades executed, market events, updated limits, 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.

1.2 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.

- 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**
10	Quote Request	**AG**
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**
28	Price Input	**UI**
32	Liquidity Provider Command	**UZ**
33	Ask For Quote	**UL**
34	Request For Execution	**UM**
35	RFQ Notification	**U35**
36	RFQ Matching Status	**U36**
39	User Notification	**CB**
40	Declaration Entry	**AE**
41	Declaration Entry Ack	**AR**
42	Declaration Notice	**AR**
43	Declaration Cancel and Refusal	**AE**

SBE Bin Message Code	SBE Bin Message Name	FIX Message Code
44	Fund Price Input	**U44**
45	Fund Price Input Ack	**U45**
46	Declaration Entry Rejection	**AR**
50	Instrument Synchronization List	**U50**
51	Synchronization Time	**U51**
72	RFQ Audit	**U72**
73	Wave For Liquidity	**6**
74	Wave For Liquidity Notification	**U73**
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
1002	Order Update
1003	Price Update
1004	Full Trade Information
1005	Market Status Change
1006	Timetable
1007	Standing Data
1008	Real Time Index
1009	Statistics
1011	Index Summary

1012	Strategy Standing Data
1013	Contract Standing Data
1014	Outright Standing Data
1015	Long Order Update
1101	Start Of Day
1102	End Of Day
1103	Health Status
1104	Trade Retransmission Start
1105	Trade Retransmission End
2101	Start Of Snapshot
2102	End Of Snapshot

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 Broker:

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

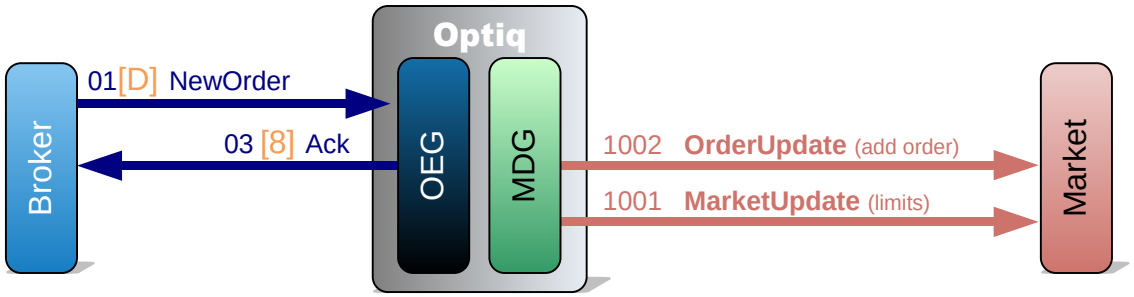
Note: for readability purposes the field names in the graphs are abbreviated, e.g. *Order Quantity* is referred to as *OrderQty*, etc.

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:



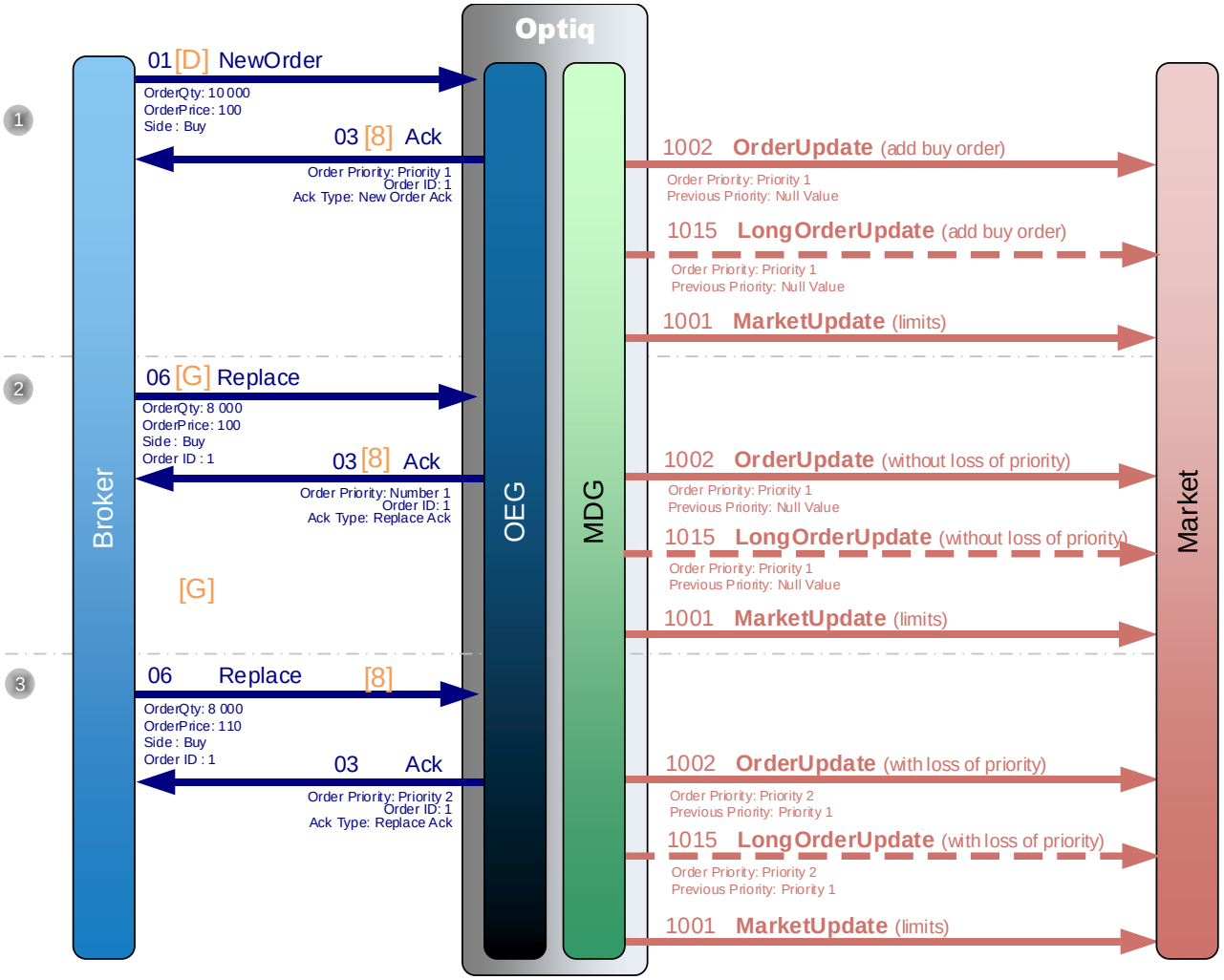
When required diagrams may include division into steps of the scenarios displayed, that are delineated by dotted lines, and are denoted by the number of the step. Numbers denoting the steps in the diagram correspond to the numbers used in the explanation below the diagram.

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 Private and Public feed reconciliation

The following diagram explains how the members can reconcile their orders across the Private and Public data feed using the field named *Order Priority*. Please review the note on *Order Priority* field at the end of this section.



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new buy order with a quantity of 10,000 and a price at 100.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order. This message provides the value of the *Order Priority* that is used in the market data feed as the order identifier.

   The order enters the order book without matching, a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market by MDG, to add the order identified by its *Order Priority*, followed by another **MarketUpdate** (1001) message to update the limits.

2) The same Broker sends a private **Replace** (06) (FIX G) (message to reduce the quantity of its order to 8,000.

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

   A public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market by MDG, to update the order quantity, identified by its *Order Priority*, and another public **MarketUpdate** (1001) message to update the limits.

3) Then the same Broker sends another private **Replace** (06) (FIX G) message to change the price of its order to 110.

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

   A public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to update the order price, identified by its *Previous Priority* and its new *Order Priority*, and another public **MarketUpdate** (1001) message to update the limits.

Note: *Order Priority* is a numeric value, representing the priority of the order. The order with the lowest value of *Order Priority* has the highest priority. *Order Priority* is unique per Symbol Index and EMM.

Order Priority is used as the order unique identifier for the market data feed. *Previous Priority* is populated only when there is an update with loss of priority and for deletion of orders.

Hence in case of update with loss of priority, clients should remove from their market sheet the order identified in the *Previous Priority* and add a new order with the *Order Priority* newly provided.

1.2.5.2 Trade, Collars and Full Trade Information generation

A public message **FullTradeInformation** (1004) is sent in a dedicated Post-Trade 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.

And every time there is change in the reference price, dynamic collars are disseminated in the **MarketUpdate** (1001) message with the trade. But for readability purposes it is not shown on the kinematics diagrams.

Example:

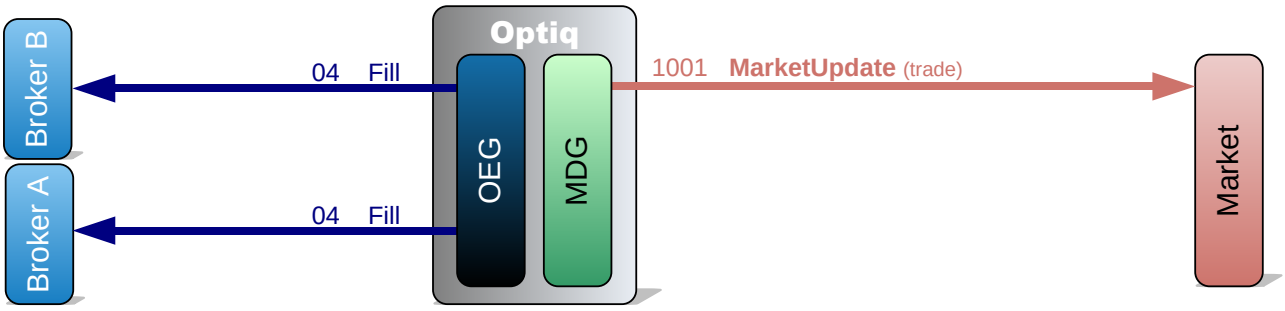
The Last Traded Price of an instrument was 100, low dynamic collar was 95, and high dynamic collar was 105.

If a trade occurs and modifies the LTP to 101 (low dynamic collar is updated to 96, and high dynamic collar is updated to 106) then the following sequence of public messages will be sent by MDG:

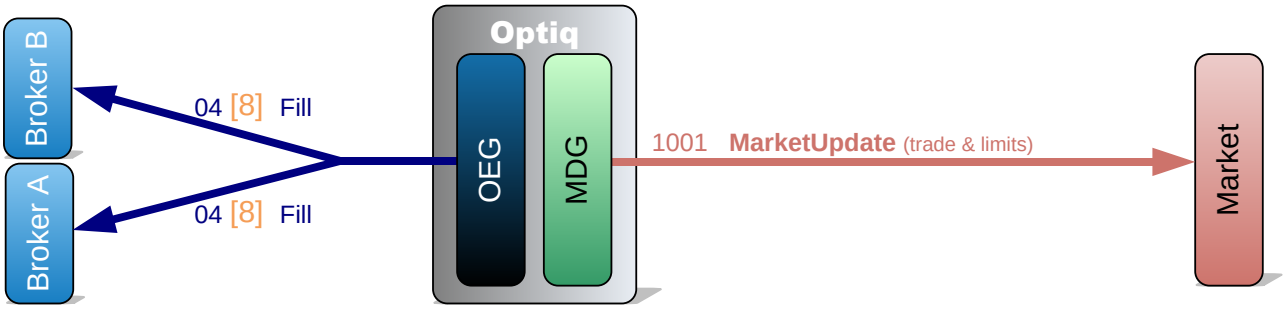
However, to improve readability, in cases whenever trades occur and cause an update of the dynamic collars only the following message will be represented in the diagrams:

1.2.5.3 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. In reality such messages are sent at the same moment to the different brokers:



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

1.2.5.4 Market Update and (Long) Order Update generation

All kinematics described in this document are common across Regulated Markets and Warrants Markets unless specified in brackets (as it is the case for Warrants kinematics). The following conventions have been adopted:

- For all Cash Equities, Bonds, and ETF Regulated Markets (excluding Best Of Book [BOB], as well as the Warrant & Certificates on the new Market Models) Optiq MDG will provide **OrderUpdate** and **LongOrderUpdate** (Fixed Income segment, non-anonymous only) messages and **MarketUpdate** messages (containing only BBOs and not the depth of the order book).

- **MarketUpdate** message for Execution Summary is the first message sent after an execution but for readability purposes this message is not displayed in kinematics.

  The **MarketUpdate** message always follows an **OrderUpdate** message and a **LongOrderUpdate** message (Fixed Income segment, non-anonymous only) when notifying a limit (BBO). In case of a trade a **MarketUpdate** message is disseminated for the trade, followed by an **OrderUpdate** message to update the book and another **MarketUpdate** message for the update of the limits (BBO).

- For BOB available within the Cash Markets, Optiq MDG will **not** provide **OrderUpdate** messages at all: it will only provide **MarketUpdate** messages, with the full depth of the order book (no BBO).

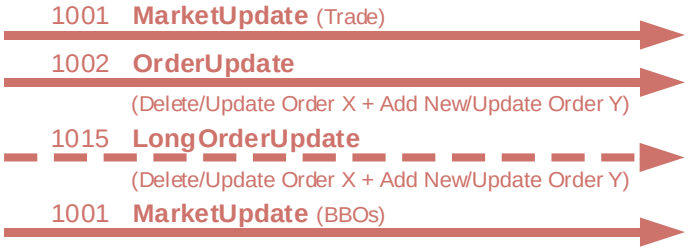
- For the Warrant & Certificates on the new Market Model, Optiq MDG will **not** provide **OrderUpdate** messages at all: it will only provide **MarketUpdate** messages for BBOs and for the full depth of the order book.

Example:

After a trade takes place, the following MDG messages are displayed in the kinematics diagrams:

This scenario is different for the kinematics of the Regulated Market and Warrant & Certificates on the New Market Models:

- For Regulated Market (except BOB), it should be read as followed:



Note: There is **no** dissemination of the **market depth** in the MDG **MarketUpdate** (1001) message.

- For BOB, available within the Cash Markets, the scenario is as follows:

Note: There is **no** MDG **OrderUpdate** (1002) message dissemination for BOB.

- For the Warrant & Certificates on the New Market Model, the scenario is as follows:

Note: There is **no** MDG **OrderUpdate** (1002) message dissemination for Warrant & Certificates on the New Market Model.

2. COMMON KINEMATICS

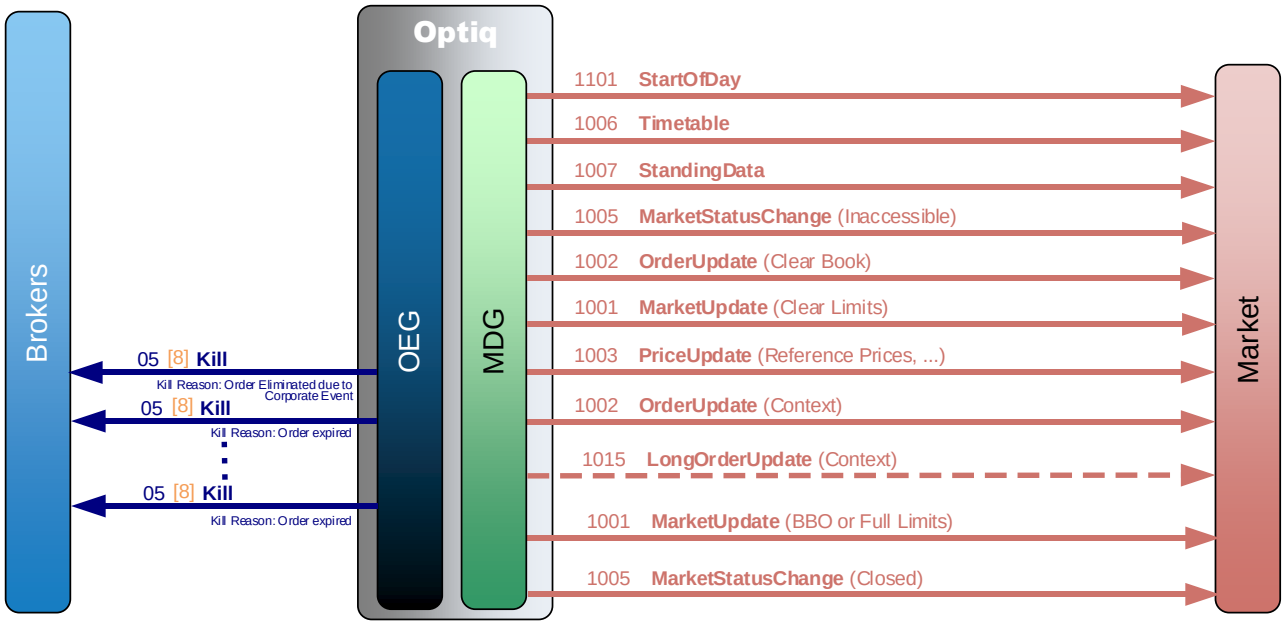
The following public messages contain repeating sections:

- PriceUpdate;
- OrderUpdate;
- LongOrderUpdate (Fixed Income segment, non-anonymous only);
- MarketUpdate;
- MarketStatusChange.

Detailed information regarding repeating sections can be found in the documents **Euronext Cash and Derivatives Markets – Optiq MDG Messages – Interface Specification**.

2.1 TRADING SESSION MANAGEMENT

2.1.1 Initialisation of a New Trading Day



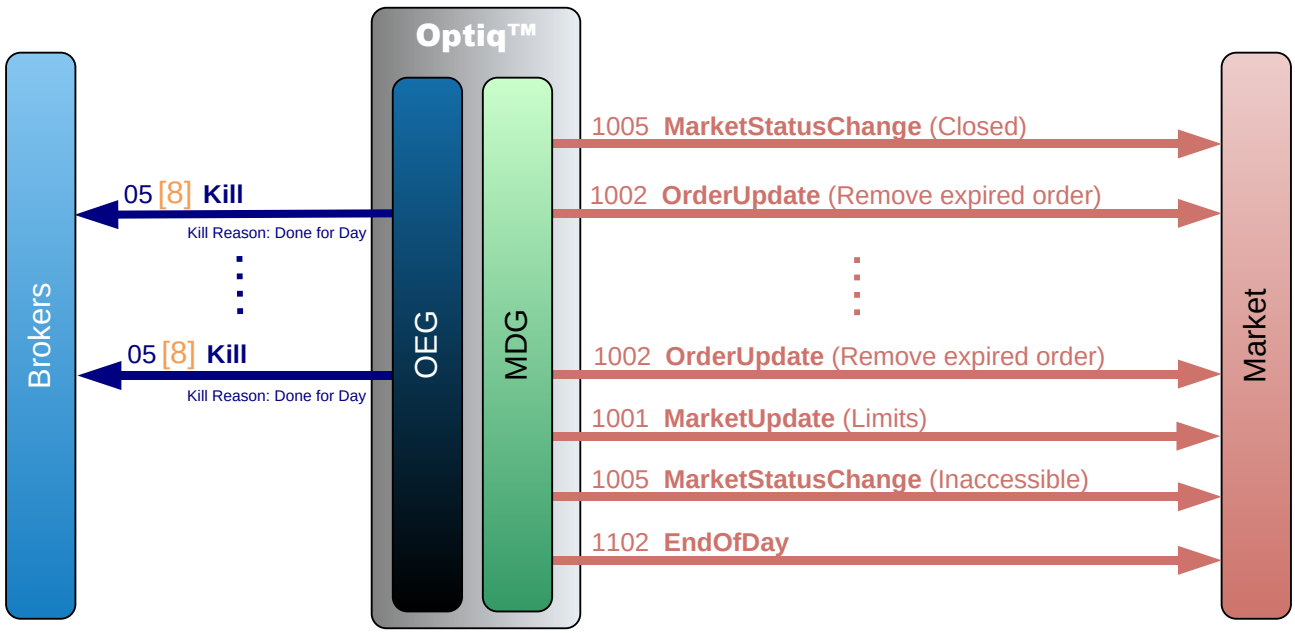
At the initialization of each new trading day the Exchange sends the following public messages (the generation sequence is guaranteed to always be the same):

- **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 instruments.
- **StandingData** (1007) message: For every single instrument it provides to the members all the necessary data for the trading day.
- **MarketStatusChange** (1005) message: For every single instrument it is sent with *Book State* set to 'Inaccessible', *Trading Period* set to 'Opening' and *Rebroadcast Indicator* set to '0'.

- **OrderUpdate** (1002) message: For every single instrument on order driven market, the order book is cleared at the beginning of the day.
- **MarketUpdate** (1001) message: For every single instrument the limits are cleared at the beginning of the day.
- **PriceUpdate** (1003) message: For every single instrument, it provides all updated reference prices complementary to the BBO for trading (Closing Prices, Uncrossing Price, Valuation Prices, Min/Max Out of Session Trade Prices, Net Asset value for eligible instruments).
- **OrderUpdate** (1002) and **LongOrderUpdate** (1015) (Fixed Income segment, non-anonymous only) messages: All the live orders are broadcasted at the beginning of each trading day for each eligible instrument, with *Rebroadcast Indicator* set to '1'. All the expired orders (GTD and GTC orders reaching expiry date) are removed from the scope of lives orders and not sent to the Market. Thus a private **Kill** (05) (FIX 8) message will be sent for each expired order.
- **MarketUpdate** (1001) message: For every single instrument it provides either the BBO for order-driven markets or all the limits for the other markets, with *Rebroadcast Indicator* set to '1'.
- If relevant, static, dynamic and order price control collars are also sent after the limits.
- **MarketStatusChange** (1005) message: For every single instrument a *Book State* set to 'Closed' is sent at the scheduled time.

On private messaging side, Changes due to previous trading day Corporate Events triggering cancellation of orders will be communicated as **Kill** (05) (FIX 8) messages at the start of day.

2.1.2 End Of Day



At the end of the trading day, when the instrument is in Closed State, expired orders (Day orders only) are killed, thus a private **Kill** (05) (FIX 8) message along with a public **OrderUpdate** (1002) message will be sent for each expired order, along with **MarketUpdate** (1001) for the limits.

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

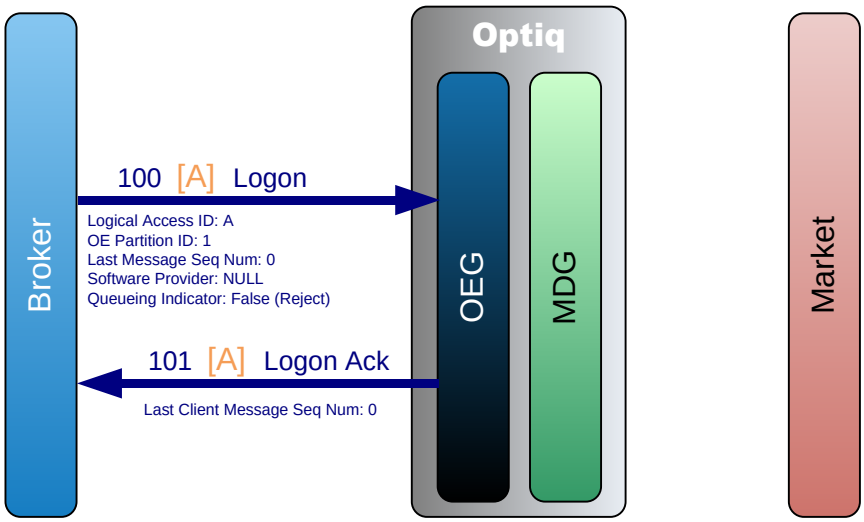
The public **EndOfDay** (1102) message is always the last message sent by the Exchange, it notifies that the platform and its network are now closed (members cannot send nor receive messages until the next trading day).

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

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 broker 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).

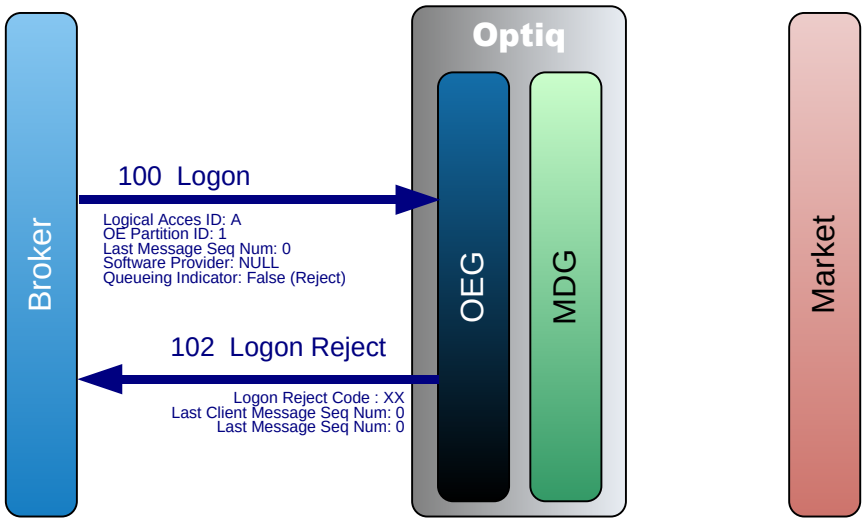
In FIX protocol, if the logon is successful the OEG sends back a **Logon** (A) message. While in SBE the sequence numbers start from 0, in FIX the sequence numbers start from 1.

No message is sent to the Market.

2.2.2 Logon Rejection

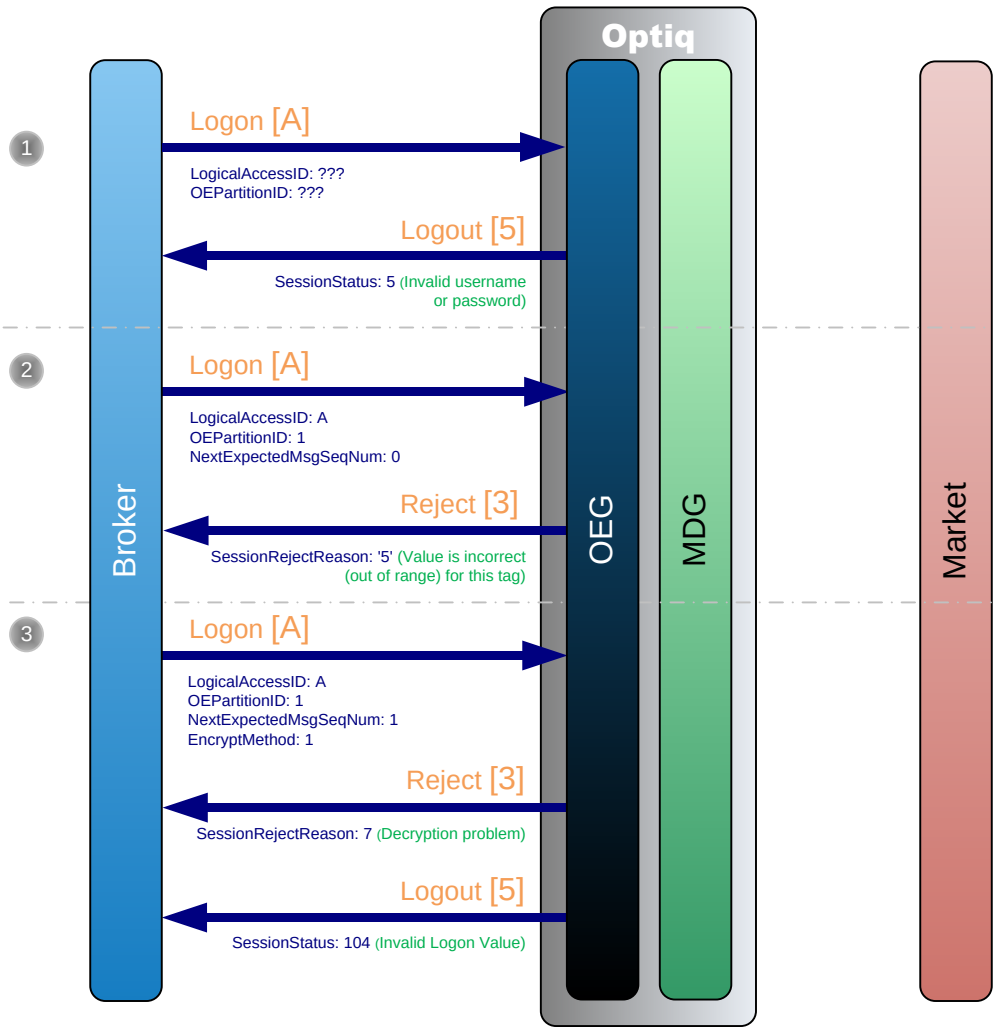
Logon rejection behaviour prescribed by the FIX protocol is different from that adopted for SBE, and for this case two different diagrams are provided, each one specific to the protocol. While at high level the behaviour might be different, the result of the Logon Rejection will be the same.

2.2.2.1 Logon Rejection in SBE



A broker 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 broker 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 broker 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 broker 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 broker 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 message is sent to the Market.

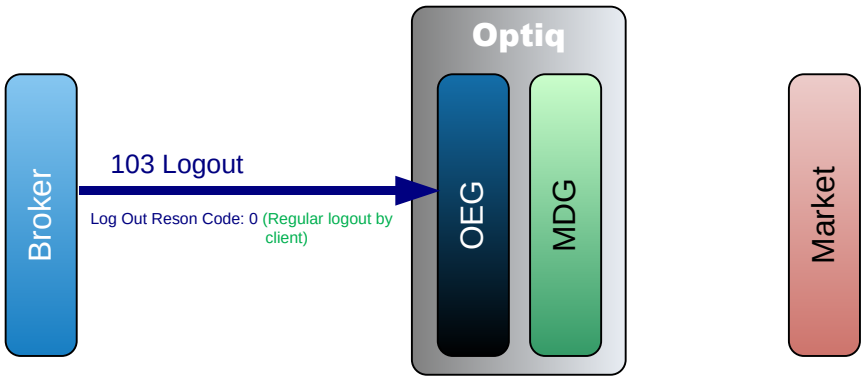
2.2.3 Logout

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.

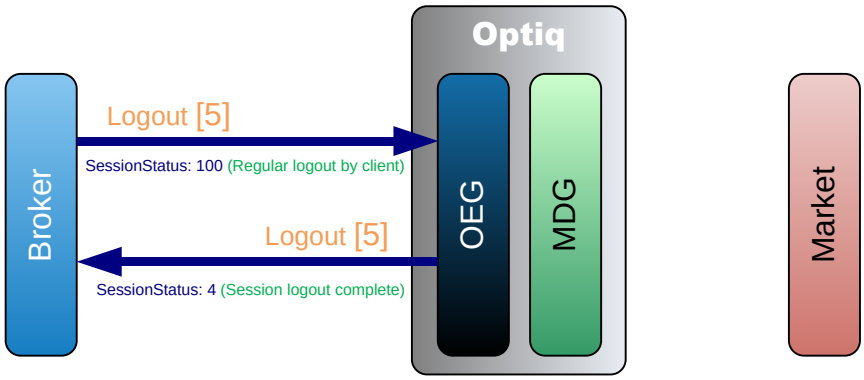
Note: This will trigger the Cancel on Disconnect mechanism (only on the specific orders on which it is enabled).

2.2.3.1 Logout in SBE



In order to log out the broker sends a **Logout** (103) message, OEG immediately closes the physical connection. No message is sent to the Market.

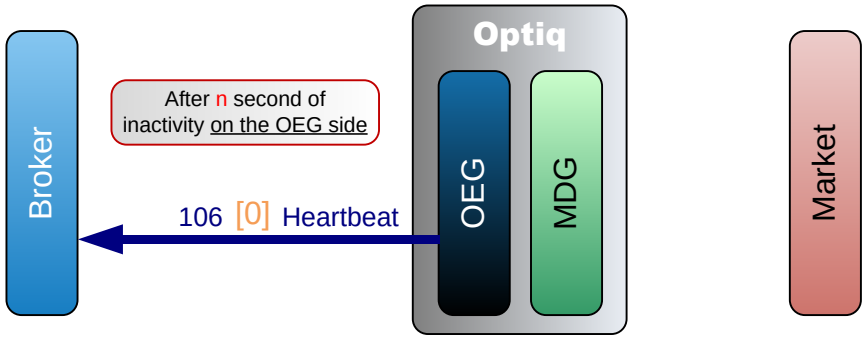
2.2.3.2 Logout in FIX



In order to log out the broker 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

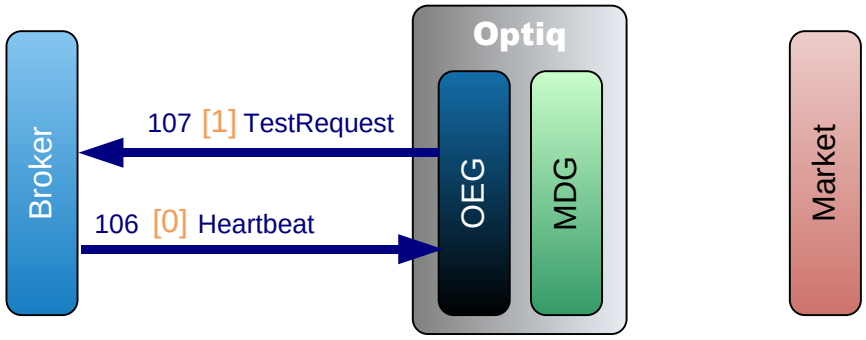


After *n* second(s) of inactivity on its side (ie. when the OEG has not sent any message since *n* second(s)) the OEG sends a **Heartbeat** (106) (FIX 0) message to the broker. The broker does not have to respond anything; it is only a notification from the OEG.

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

2.2.5 Test Request

2.2.5.1 Test Request from Exchange to Client



After *n* second(s) of inactivity on the broker 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 broker.

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

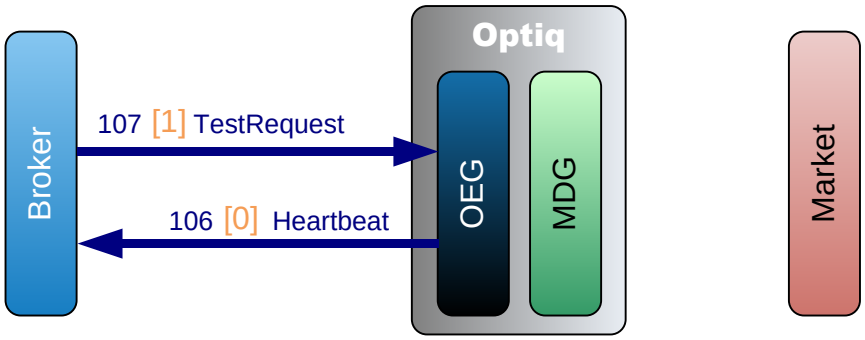
- For SBE:
  - If the broker issues a message in the following *n* second(s), the **TestRequest** (107) is ignored. Note the message issued by the member can be an **Heartbeat** (106) message or any other application message (such as **NewOrder** (01), **CancelReplace** (06).
  - If the broker does not 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:

Broker 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 broker 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 broker 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.)

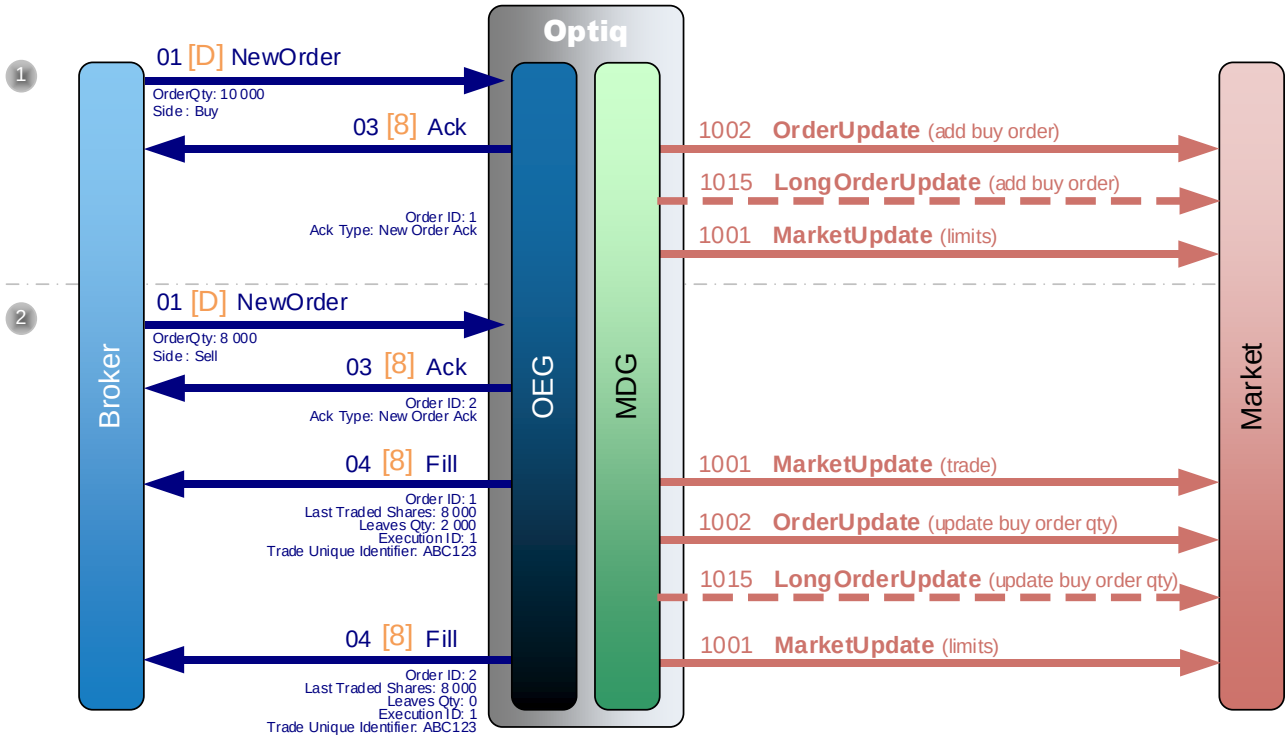
2.2.5.2 Test Request from Client to Exchange



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

2.3 ENTERING AN ORDER

2.3.1 Incoming Order Fully Matched



1) A Broker 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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

2) Another Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 8,000.

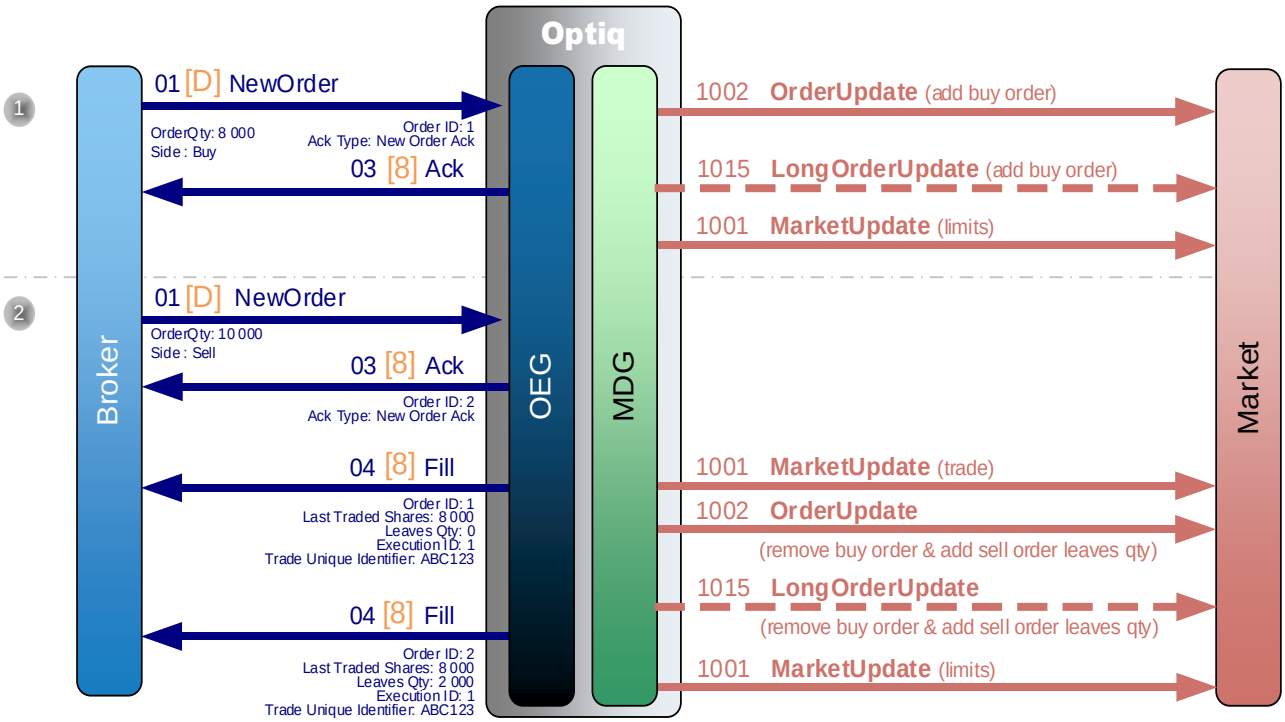
   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

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

   A public **MarketUpdate** (1001) message is sent to the market for the trade, along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to update the first order (Buy) with remaining quantity (2 000), followed by another **MarketUpdate** (1001) message to update the limits.

Note: There is no removal of the sell order in the last public **OrderUpdate** (1002) message as it is immediately matched and thus never enters the book.

2.3.2 Incoming Order Partially Matched



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 8,000.

   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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

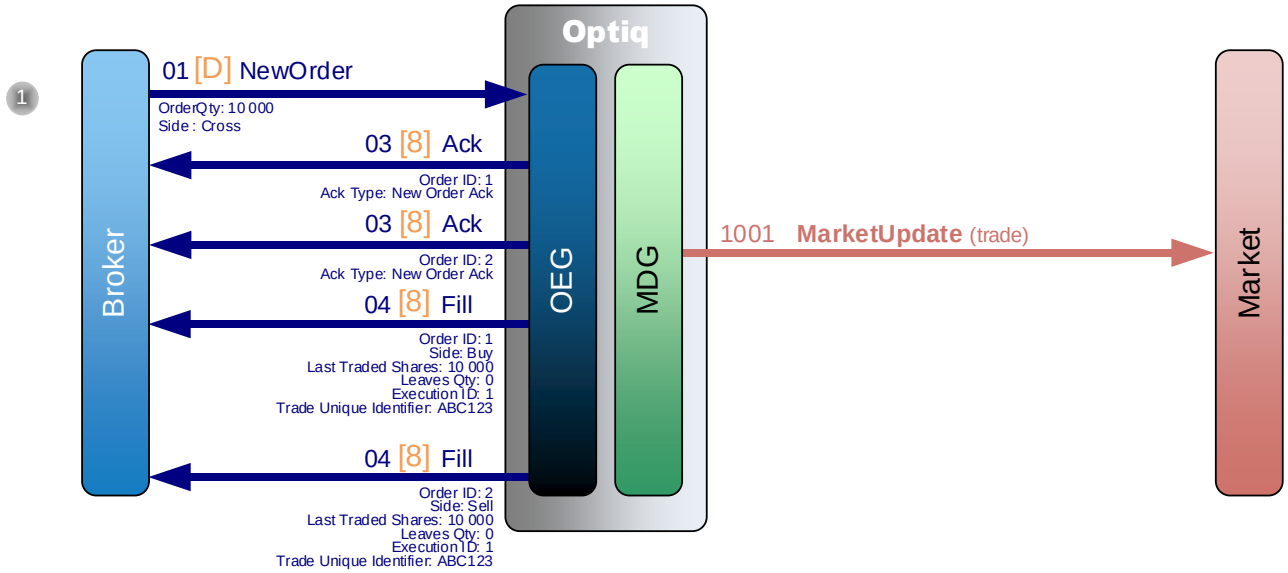
2) Another Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 10,000.

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

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

   A public **MarketUpdate** (1001) message is sent to the market for the trade along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to remove the Buy order and add the Sell order with its leaves quantity (2 000), followed by another **MarketUpdate** (1001) message to update the limits.

2.3.3 Cross Order (New Order with a Cross side)



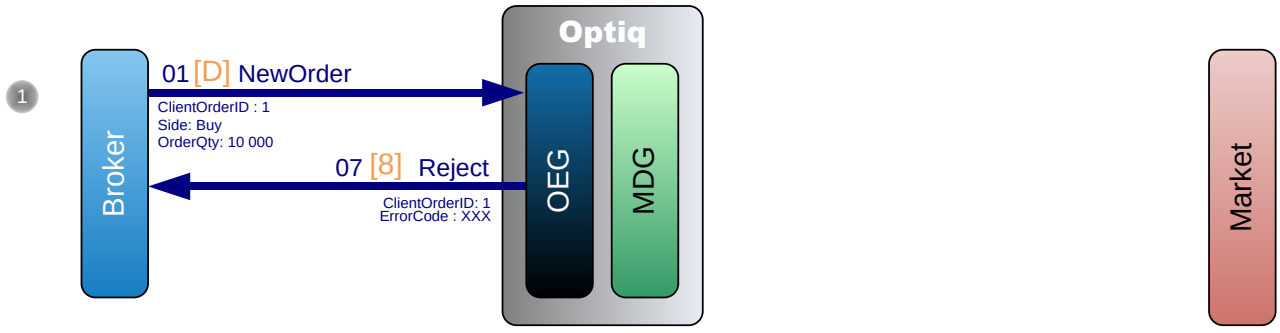
1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new order with a quantity of 10,000 and a Cross side.

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

   The entering Cross order is immediately filled for its total quantity of 10,000 and OEG sends back two private **Fill** (04) (FIX 8) messages to the broker to notify the trade full execution.

   A public **MarketUpdate** (1001) message is sent to the market for the trade.

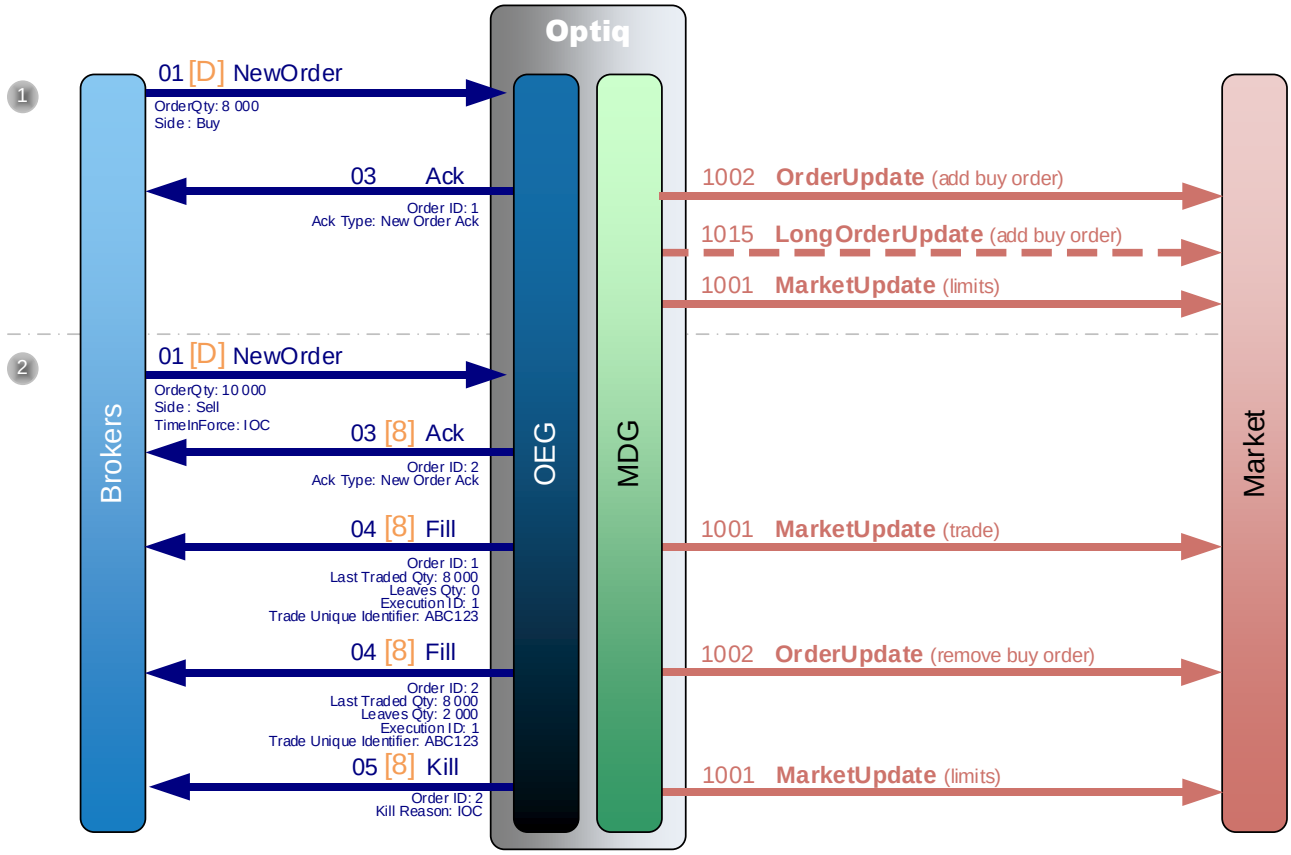
2.3.4 New Order Rejected



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new buy order with a quantity of 10,000.

   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 within the *Error list document*. No message is sent to the Market.

2.3.5 Immediate Or Cancel Order Partially Filled



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 8,000.

   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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a **MarketUpdate** (1001) message to update the limit.

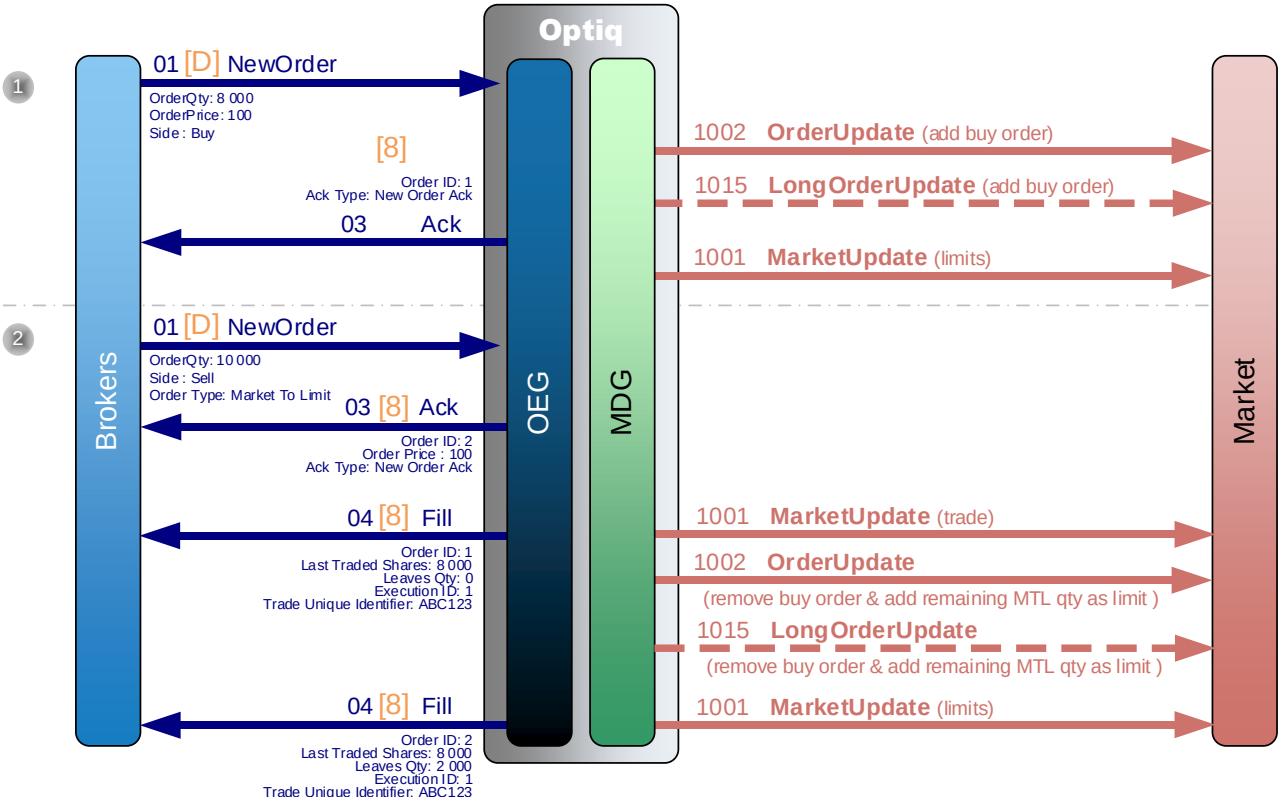
2) Another Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 10,000 and a validity condition of Immediate or Cancel (IOC).

   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 8,000 and OEG sends back a private **Fill** (04) (FIX 8) message to each broker to notify the trade execution. As the remaining quantity cannot be immediately filled, OEG sends back to the second Broker a **Kill** (05) (FIX 8) message to cancel it.

   A public **MarketUpdate** (1001) message is sent to the market for the trade along with a public **OrderUpdate** (1002) message to remove the first order (Buy), followed by another **MarketUpdate** (1001) message to update the limits.

2.3.6 Market to Limit Order Partially Filled



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 8,000 a price of 100.

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

   The order enters the order book without matching, a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a public **MarketUpdate** (1001) message to update the limit.

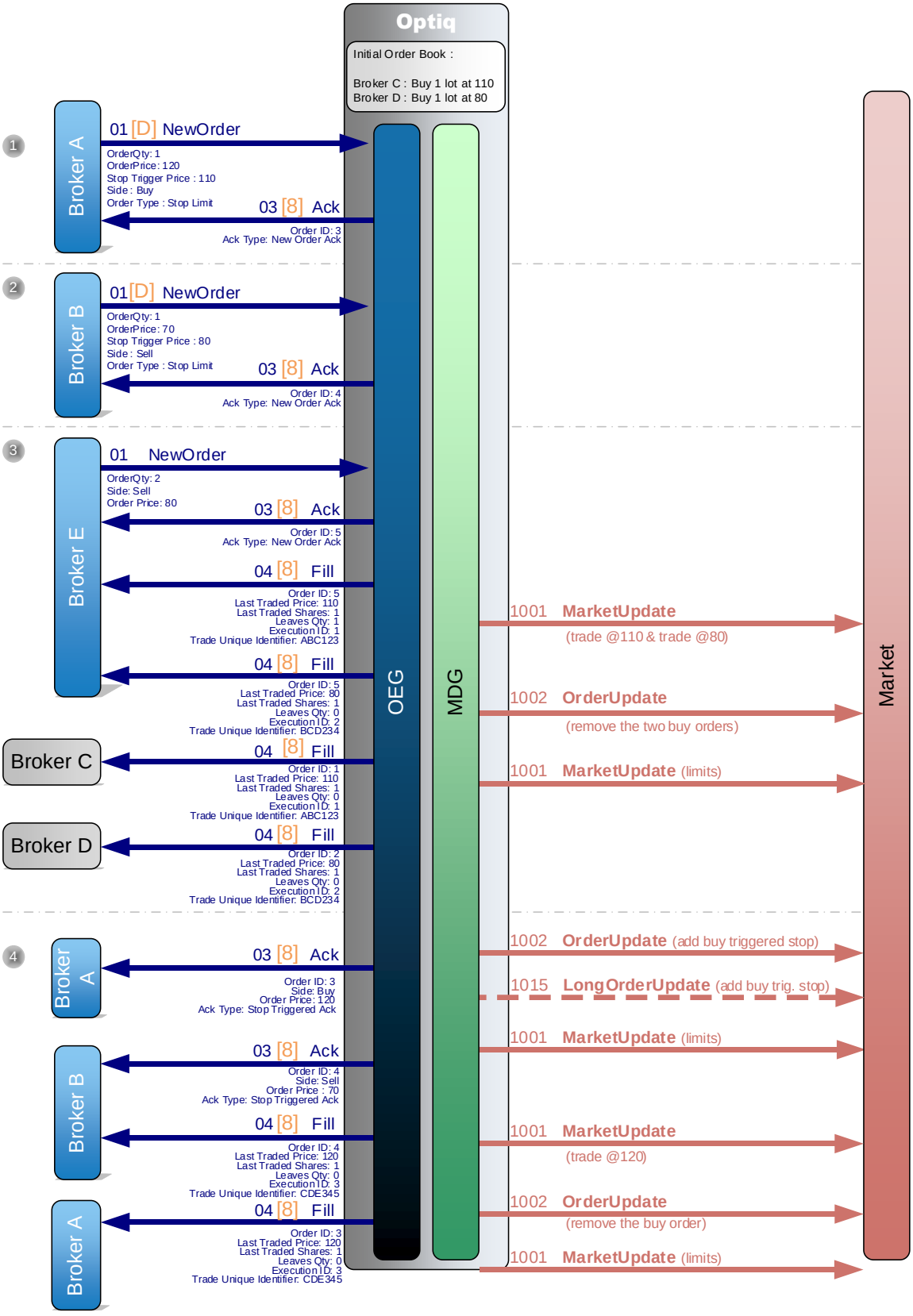
2) Another Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 10,000 and a Market To Limit (MTL) order type.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order, with *Ack Type*=New Order Ack, *Order Price*=100.

   The entering order immediately matches the first order for a quantity of 8,000 and OEG sends back a private **Fill** (04) (FIX 8) message to each broker to notify the trade execution.

   A public **MarketUpdate** (1001) message is sent to the market for the trade along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to remove the first order (Buy) and add the remaining quantity of the MTL (sell) order transformed into a Limit order at the price of 100, followed by another **MarketUpdate** (1001) message to update the limits.

2.3.7 Triggered Stop Orders



There are already two limit orders in the order book, one buy at price=110 and quantity=1 and another buy at price=80 and quantity=1.

1) **Broker A** sends a private **NewOrder** (01) (FIX D) message to enter a new Stop Limit Buy order with Trigger=110 and Price=120.

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

   No public message is generated.

2) **Broker B** sends a private **NewOrder** (01) (FIX D) message to enter a new Stop Limit Sell order with Trigger=80 and Price=70.

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

   No public message is generated.

3) **Broker E** sends a private **NewOrder** (01) (FIX D) message to enter a new Sell Limit order with a quantity of 2 and a price of 80.

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

   This order matches the two Buy orders that are in the order book (price=110 and price=80), so OEG generates four private **Fill** (04) (FIX 8) messages, two for the Buy orders and two for the Sell order. And this triggers the two Stop Limit Orders.

   A public **MarketUpdate** (1001) message is sent to the market for the two trades (at 110 and 80) and the updated limits, along with a public **OrderUpdate** (1002) message to remove the first two orders (Buy).

4) OEG sends a private **Ack** (03) (FIX 8) message to **Broker A** to confirm the trigger of the Stop Limit Buy order.

   The triggered Stop Limit Buy order enters the order book without matching and a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the buy order (price=120).

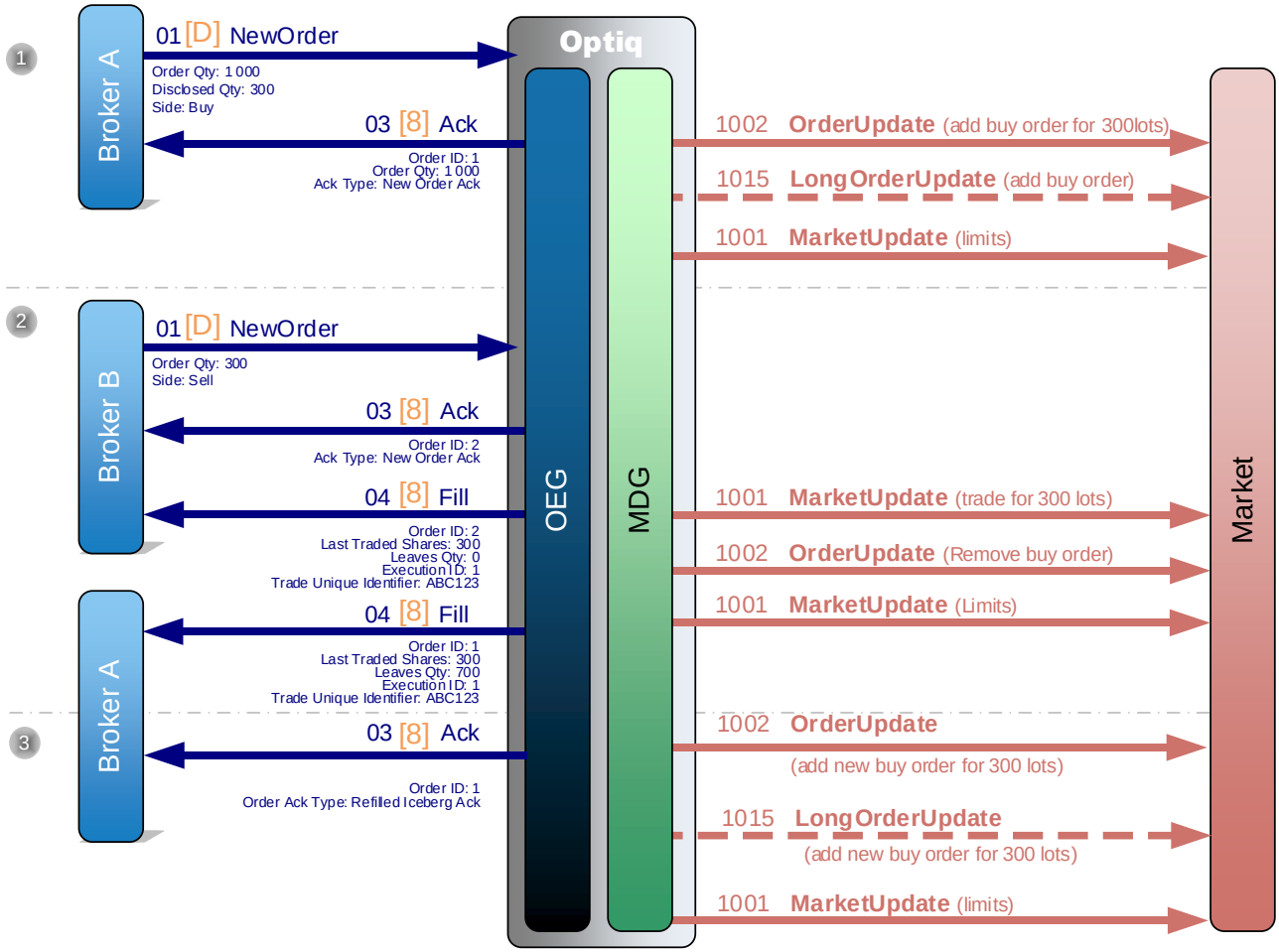
   OEG sends a private **Ack** (03) (FIX 8) message to **Broker B** to confirm the trigger of the Stop Limit Sell order.

   The entering order immediately matches the first order and OEG sends back a private **Fill** (04) (FIX 8) message to each broker ('A' & 'B') to notify the trade execution at price=120.

   A public **MarketUpdate** (1001) message is sent to the market for the trade (at 120) and the updated limits, along with a public **OrderUpdate** (1002) message to remove the first order (Buy).

Note: The first Ack (for the new Stop order) and the second Ack (for the triggered Stop order) are differentiated by the *Ack Type*.

2.3.8 Iceberg Order Refilled



1) **Broker A** sends a private **NewOrder** (01) (FIX D) message to enter a new Buy Iceberg order with a quantity of 1,000 and a Disclosed Quantity of 300.

   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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order for 300 lots and a public **MarketUpdate** (1001) message to update the limit.

2) **Broker B** sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 300.

   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 broker to notify the trade execution for a quantity of 300.

A public **MarketUpdate** (1001) message is sent to the market for the trade of 300 lots along with a public **OrderUpdate** (1002) message to remove the first order (Buy) , followed by another **MarketUpdate** (1001) message to update the limits.

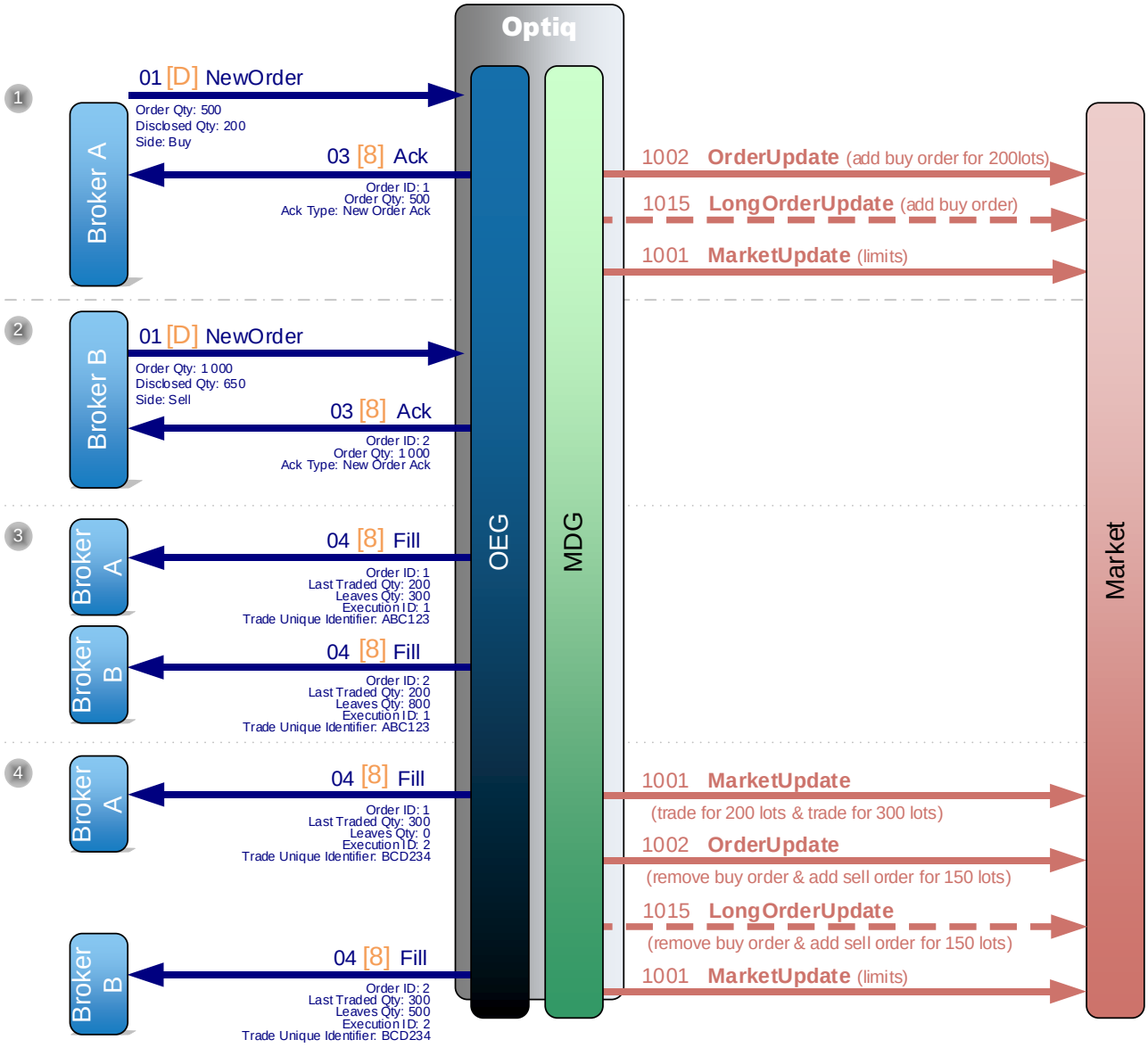
3) Then OEG sends a private **Ack** (03) (FIX 8) message to **Broker A** to notify the refill to the broker (Refilled Iceberg Ack) and provides the *Order Priority* of the order which allows to reconcile the order in private and public messages.

A public **OrderUpdate** (1002) message and a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add a new buy order of 300 lots along with a public **MarketUpdate** (1001) message to update the limit.

Note: In the case of the randomisation for the displayed quantity of the Iceberg order, the member must reconcile its order in the market data feed (by using the *Order Priority*) to know exactly the disclosed quantity of the order. Please note that the randomly refilled disclosed quantity can never be smaller than the original disclosed quantity.

Any Iceberg order that is entered into the book below the iceberg minimum amount, or has its total amount updated to be below this amount, will be automatically converted to a Limit order. This conversion will be indicated to the clients in the **Ack** (03) message, by the *Ack Type* = Iceberg Transformed to Limit due to Minimum size.

2.3.9 Iceberg Order Partially Filled



1) **Broker A** sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a total quantity of 500 and a disclosed quantity of 200.

   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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order (qty=200) and a public **MarketUpdate** (1001) message to update the limit.

2) **Broker B** sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a total quantity of 1,000 and a disclosed quantity of 650.

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

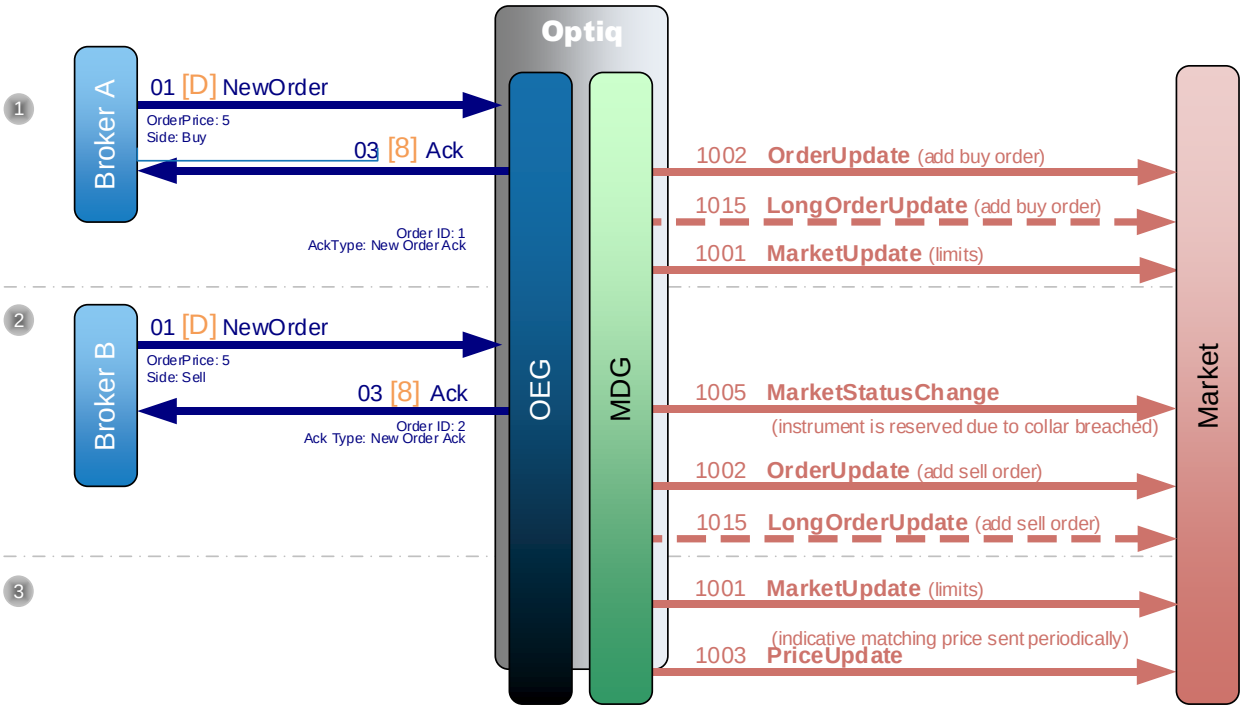
3) The entering order immediately matches the first order for an initial quantity of 200 (Buy order disclosed quantity) and OEG sends back a private **Fill** (04) (FIX 8) message to each broker to notify the trade execution according to disclosed quantity.

4) The two orders then match for 300 (the remaining quantity of the Buy order) and OEG sends a private **Fill (04) (FIX 8)** message to each broker to notify the trade execution.

   A public **MarketUpdate** (1001) message is sent to the market for a trade of 200 lots, a trade of 300 lots along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to remove the first order (Buy) and add the Sell order for a disclosed quantity of 150 lots, followed by another **MarketUpdate** (1001) message to update the limits.

Note: Partially traded Iceberg orders are not subject to the checks of minimum quantity.

2.3.10 Breaching a Collar with Reservation



1) **Broker A** sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with price=5, which is lower than the low static collar.

   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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a public **MarketUpdate** (1001) message to update the limit.

2) **Broker B** sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with price=5.

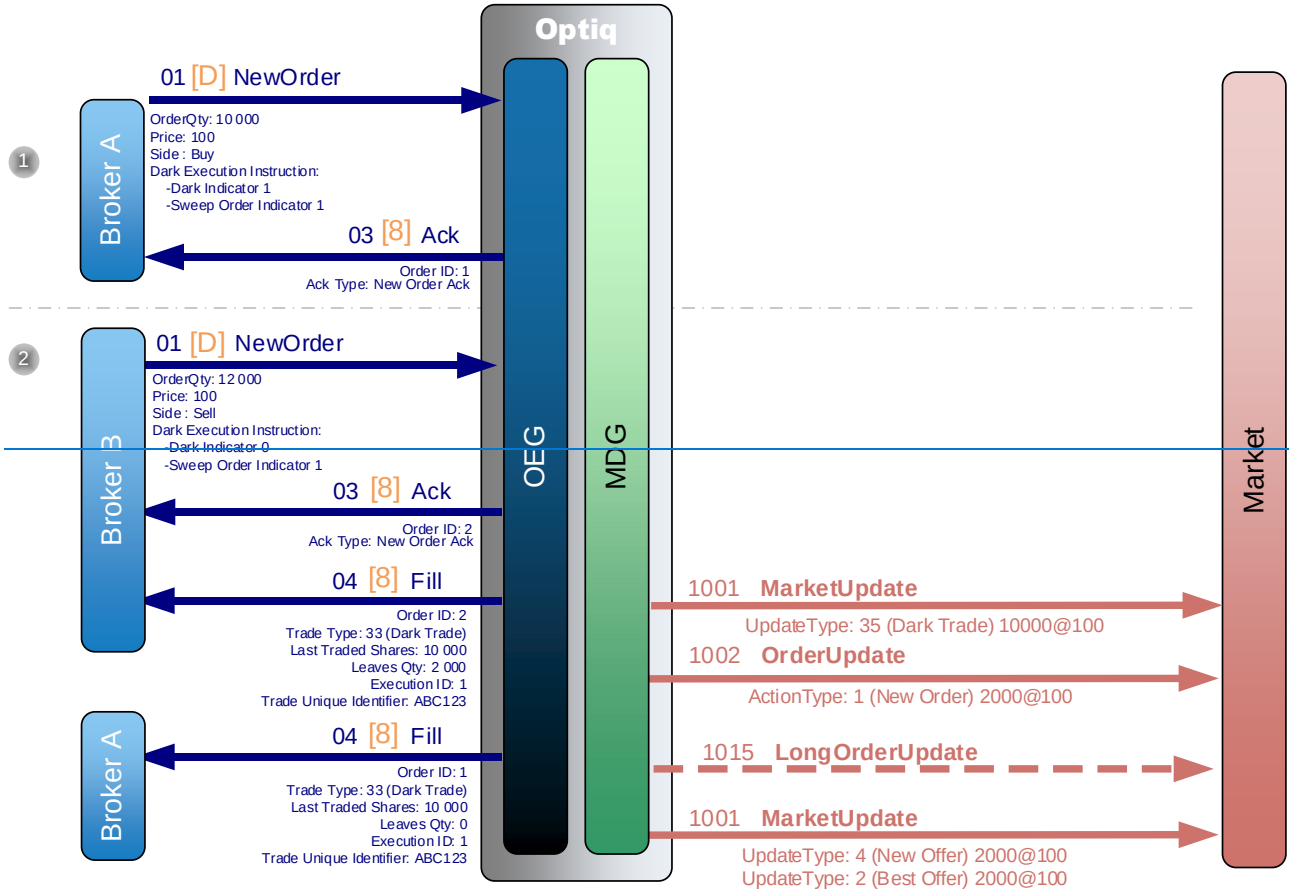
OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

The instrument is automatically Reserved because of a potential trade outside of the collars. A public **MarketStatusChange** (1005) message is sent to the market.

A public **OrderUpdate** (02) (FIX D) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order (Sell) in the order book and a public **MarketUpdate** (1001) message to update the limits.

3) Then a public **PriceUpdate** (1003) message is sent periodically to broadcast the Indicative Matching Price (IMP), as the instrument is suspended.

2.3.11 Incoming Dark Sweep Order Partially Matched with Dark Not Sweep Order and moving to Lit Book



1) Broker A sends a private **NewOrder** (01) (FIX D) message to enter a new Dark Sweep Buy order with a quantity of 10 000 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 without publication to the market.

2) Broker B sends a private **NewOrder** (01) (FIX D) message to enter a new LIT Sweep Sell order with a quantity of 12 000 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.

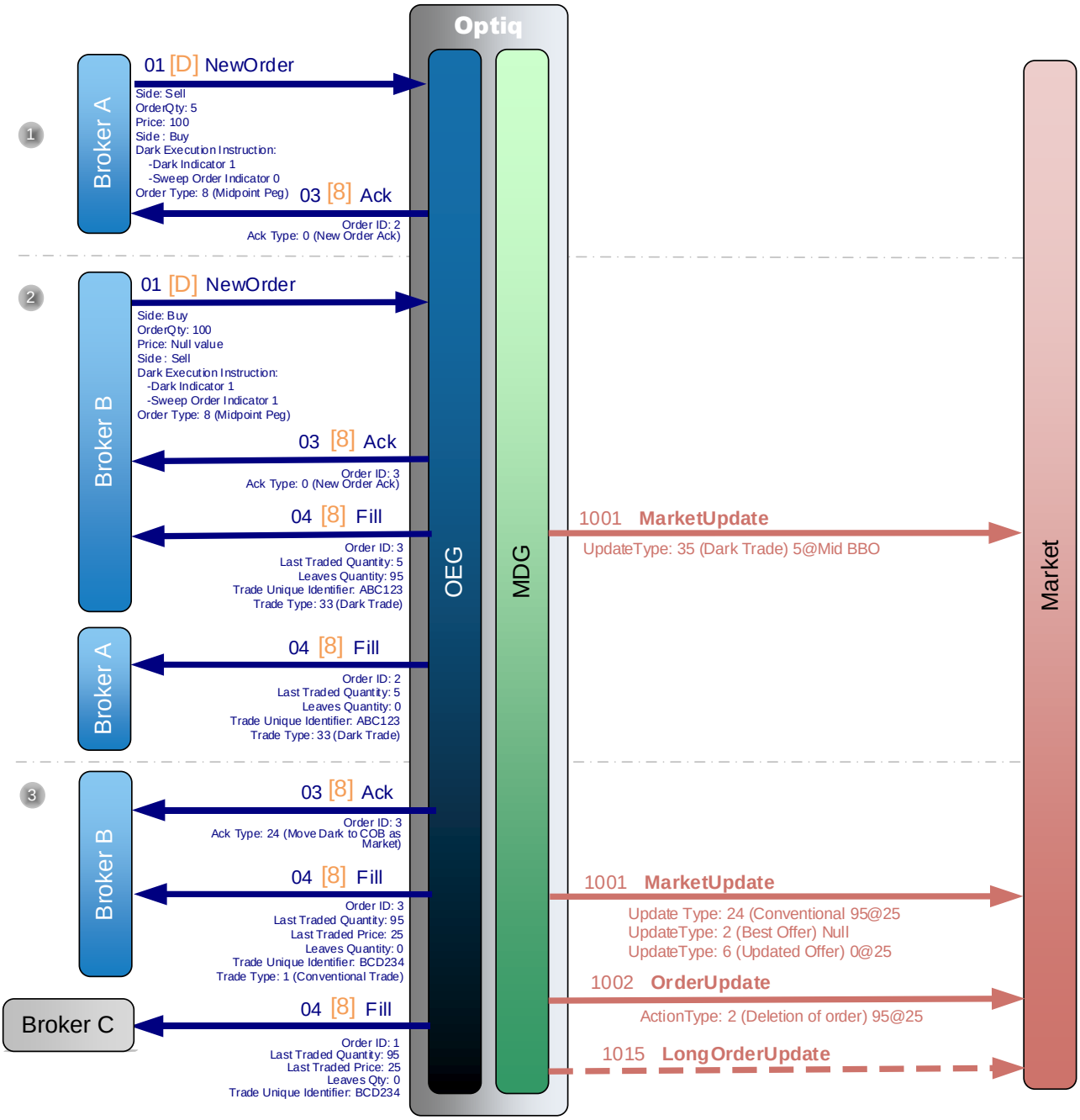
   The entering LIT Sweep Order immediately matches the Dark Sweep Order that is in the order book at this time, and the OEG generates a private **Fill** (04) (FIX 8) message to Broker A and Broker B. All the Fill messages are sent simultaneously.

   A public **MarketUpdate** (1001) message is sent to the market for the trade.

   A public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the LIT Sweep Order and a public **MarketUpdate** (1001) message is sent to the market for the update of the limit.

~~**Note:** A public **FullTradeInformation** (1004) message is sent to the market for the Dark trade executed and we assume that the amount of the trades is not sufficient to benefit from the Deferred Publication.~~

~~Limit Dark Orders remain in the order book at the beginning of the Trading at Last phase.~~



There is already one limit orders in the order book, a sell order at price=25 and quantity=95.

1) Broker A sends a private **NewOrder** (01) (FIX D) message to enter a new Dark Not Sweep Sell order with a quantity of 5 for mid-point (and a limit order 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 dark order book without matching and without publication to the market.

2) Broker B sends a private **NewOrder** (01) (FIX D) message to enter a new Dark Sweep Sell order with a quantity of 100 for mid-point.

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

   The entering Dark Sweep Order immediately matches the Dark Not Sweep Order that is in the Dark Order book at this time, and the OEG generates a private **Fill** (04) (FIX 8) message to Broker A and Broker B. All the Fill messages are sent simultaneously.

   A public **MarketUpdate** (1001) message is sent to the market for the trade, with Trade Type set as '35' (Dark).

3) The Dark Sweep Order, upon not finding any additional counterpart in the Dark Order Book, is entered into the Central Order Book, where it becomes a Lit Not Sweep Market Order.

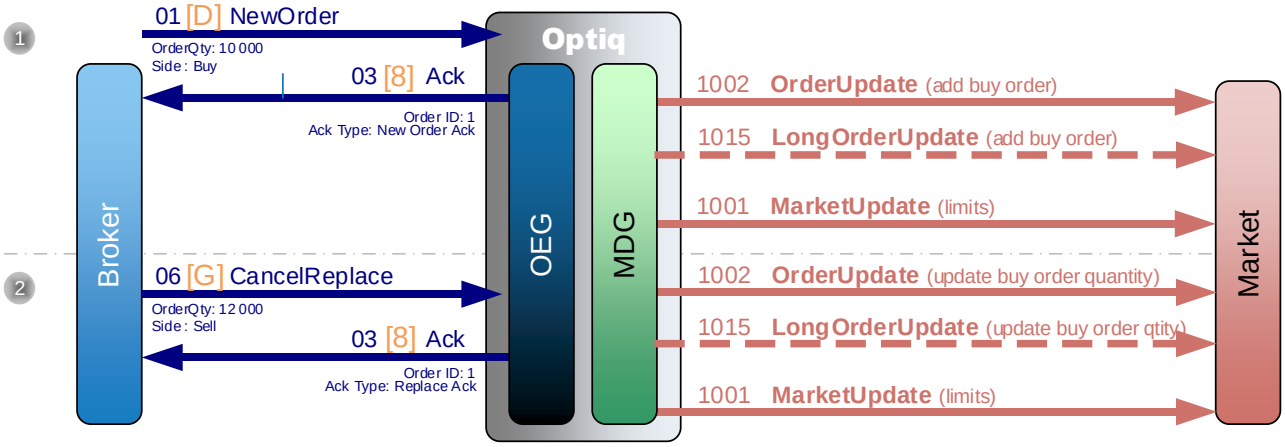
   The entering order immediately matches the order that was already in the Central Order Book and OEG sends back a private **Fill** (04) (FIX 8) message to each broker to publish the trade execution.

   A public **MarketUpdate** (1001) message is sent to the market for the trade, along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message to delete the existing order (Buy).

Note: A public **FullTradeInformation** (1004) message is sent to the market for the Dark trade executed and we assume that the amount of the trades is not sufficient to benefit from the Deferred Publication.

2.4 MODIFYING AN ORDER

2.4.1 Modifying an Unmatched Order



1) A Broker 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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a public **MarketUpdate** (1001) message to update the limit.

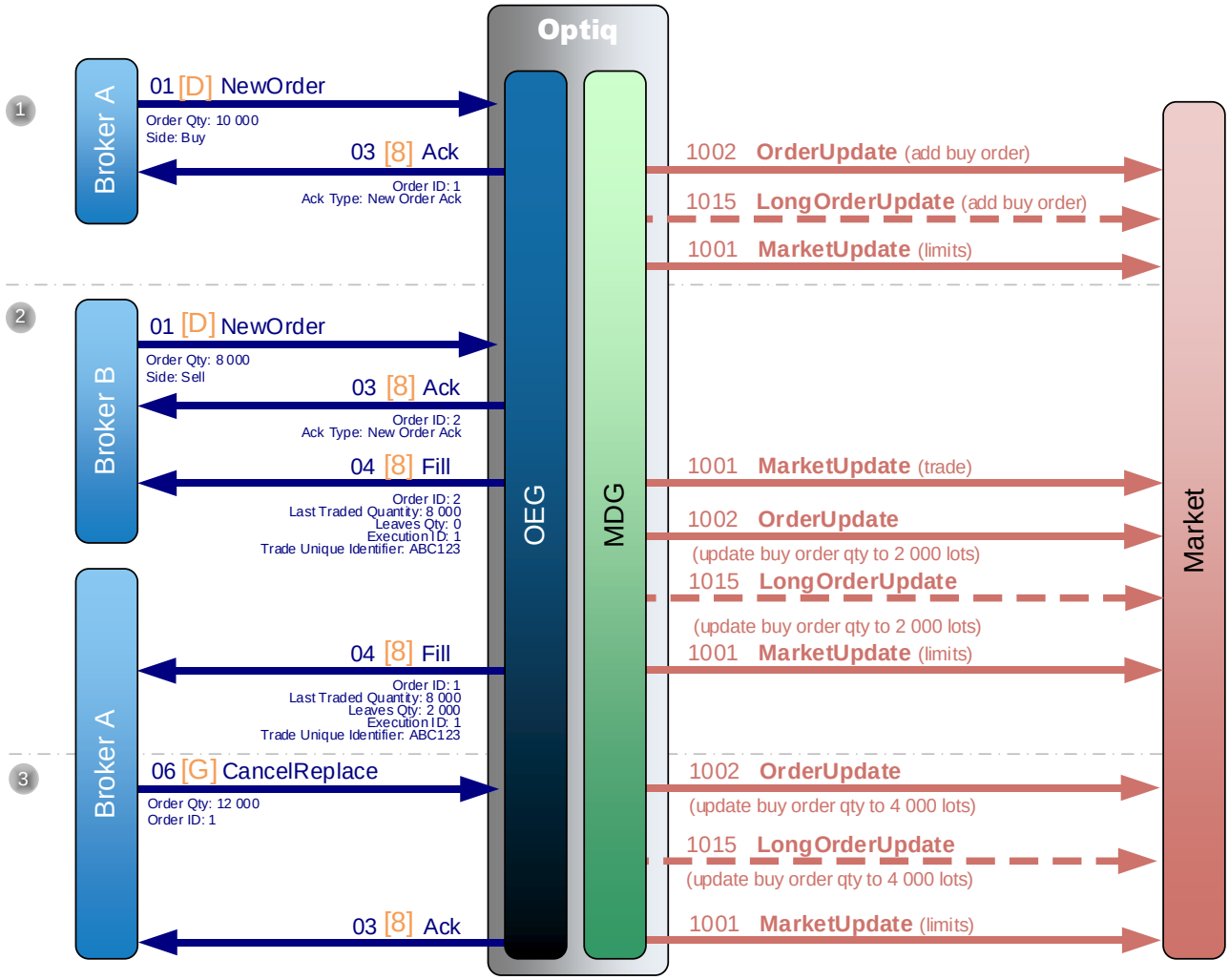
2) The same Broker sends a private **CancelReplace** (06) (FIX G) message to modify the order by increasing the quantity up to 12,000.

   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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to the market to update the quantity of the previously entered order, followed by another **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) is sent from another OE Session, it will follows the same kinematic (no message is sent to the previous owner of the order).

2.4.2 Modifying a partially matched order



1) **Broker A** 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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1002) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a public **MarketUpdate** (1001) message to update the limit.

2) **Broker B** sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 8 000.

   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 broker to notify the trade execution.

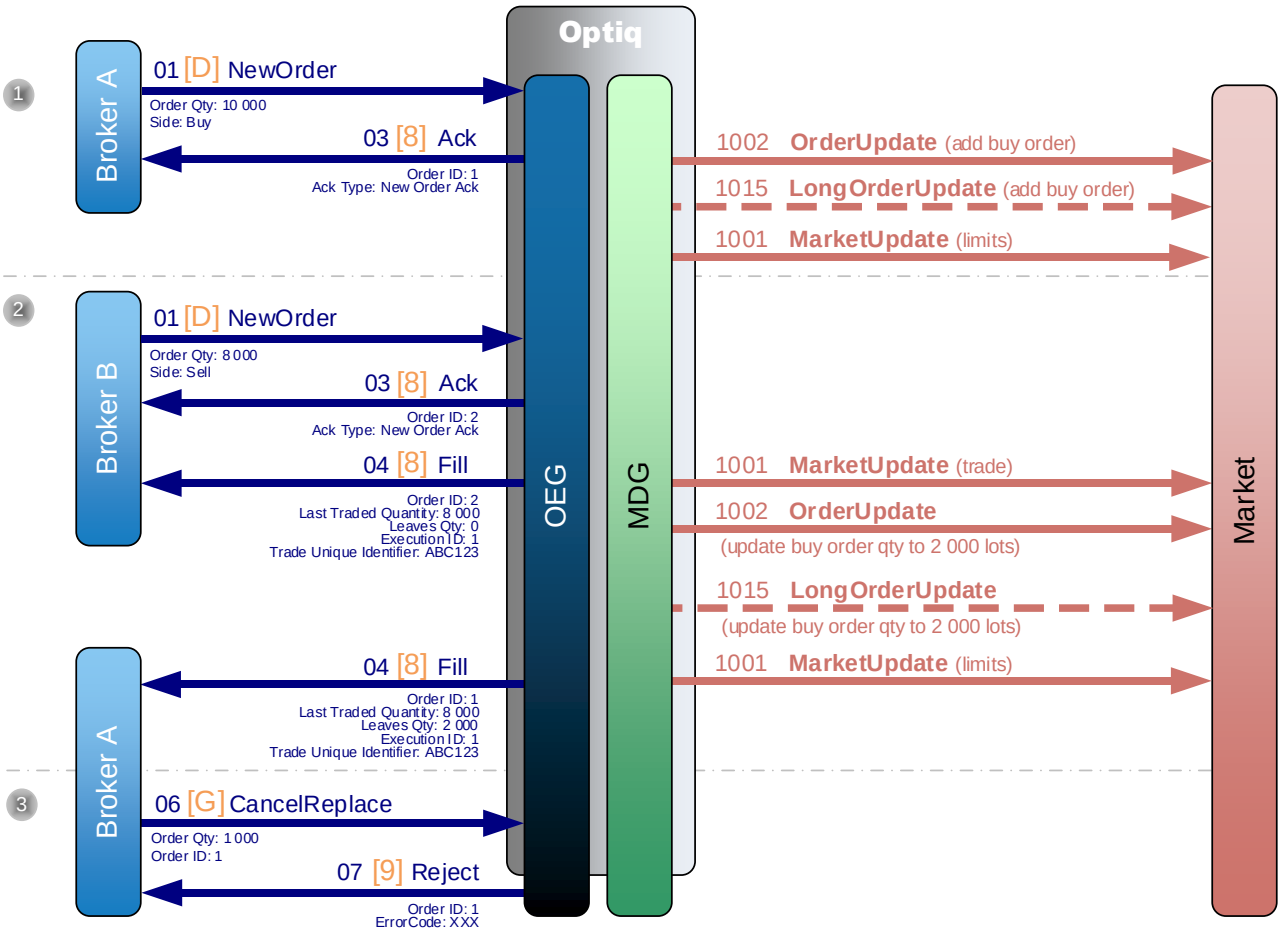
A public **MarketUpdate** (1001) message is sent to the market for a trade along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1002) message (Fixed Income segment, non-anonymous only) to update the first order (Buy) quantity to 2 000, followed by another **MarketUpdate** (1001) message to update the limits.

3) Later, **Broker A** sends a private **CancelReplace** (06) (FIX G) message to modify the quantity of his Buy order. As he wants the leaves quantity to be equal to 4 000 after the modification, the broker indicates a quantity of 12,000 (as 8,000 have already matched).

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

A public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1002) message (Fixed Income segment, non-anonymous only) are sent to the market to update the order quantity to 4 000 lots and a public **MarketUpdate** (1001) message to update the limit.

2.4.3 Rejected Modification



1) **Broker A** 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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1002) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a public **MarketUpdate** (1001) message to update the limit.

2) **Broker B** sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 8 000.

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 broker to notify the trade execution.

A public **MarketUpdate** (1001) message is sent to the market for a trade along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1002) message (Fixed Income segment, non-anonymous only) to update the first order (Buy) quantity to 2 000, followed by another **MarketUpdate** (1001) message to update the limits.

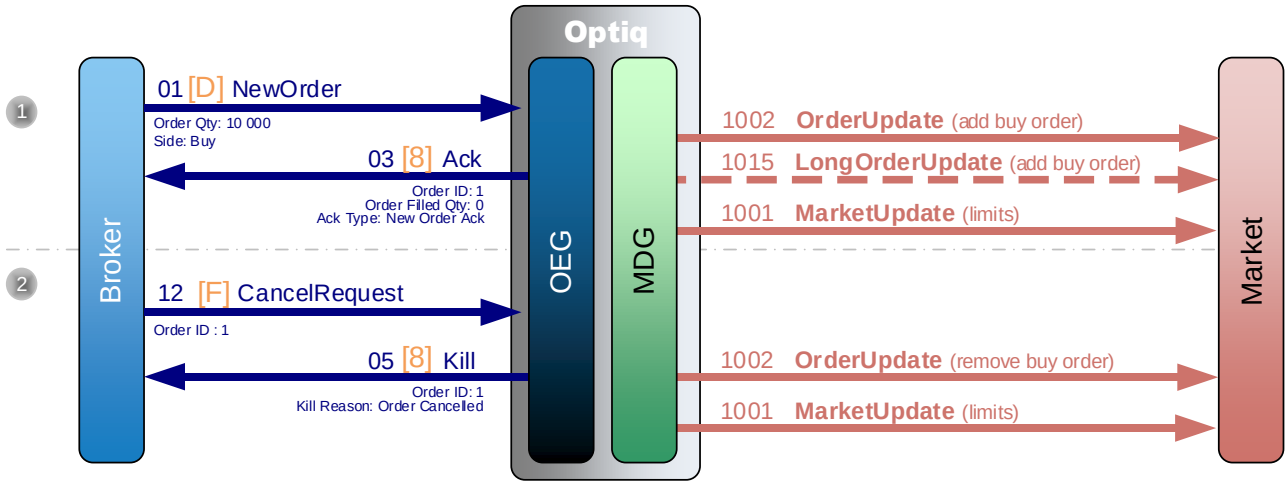
3) Later, **Broker A** sends a private **CancelReplace** (06) (FIX G) message to modify the quantity of his Buy order. The broker indicates a quantity of 1 000.

OEG sends back a private **Reject** (07) (FIX 9) message to reject the replace operation as the quantity to be modified is no longer available. So the remaining quantity of 2 000 stays in the order book.

Note: If the broker 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 8 000 will be rejected, a new quantity of 8 001 will be accepted.

2.5 CANCELLING AN ORDER

2.5.1 Cancelling an Unmatched Order



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 10 000 lots.

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

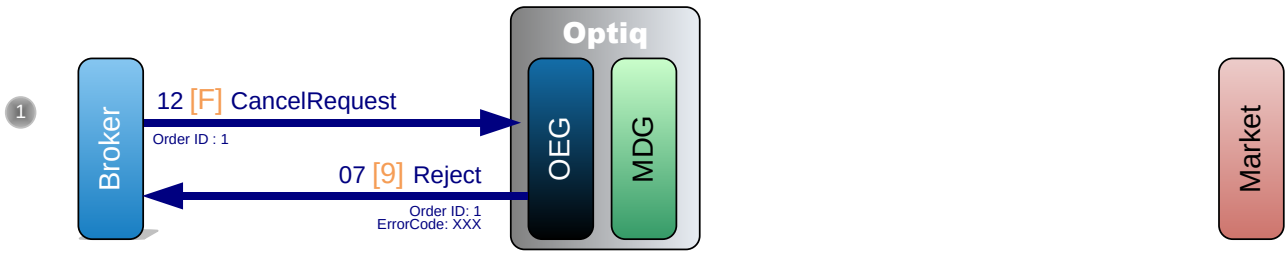
The order enters the order book without matching and a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1002) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a public **MarketUpdate** (1001) message to update the limit.

2) Later the same Broker 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 **OrderUpdate** (1002) message is sent to the market to remove the Buy, followed by another **MarketUpdate** (1001) message to update the limits.

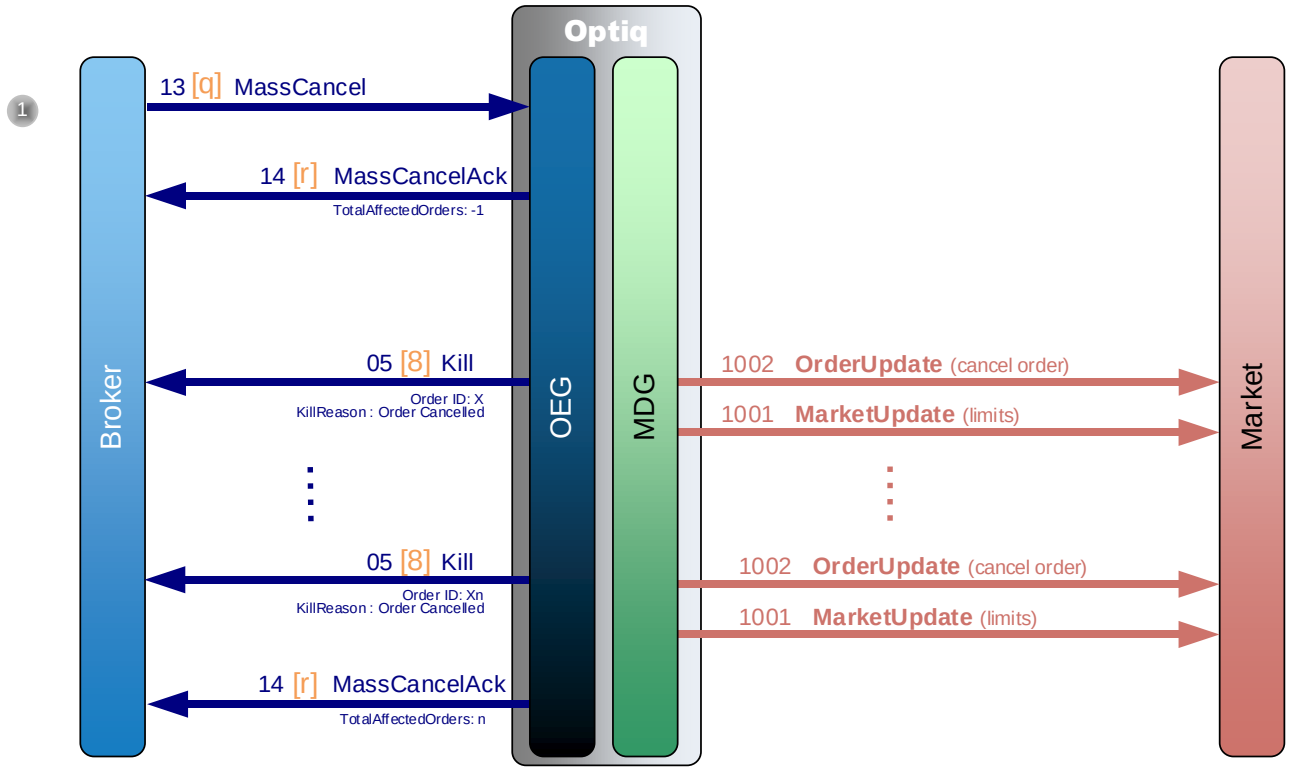
2.5.2 Rejected Order Cancellation



1) A Broker 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.

2.5.3 Mass Cancellation



1) A Broker sends a private **MassCancel** (13) (FIX q) message to cancel some of his orders matching specific criterions.

   OEG sends back a private **MassCancelAck** (14) (FIX r) message followed by a private **Kill** (05) (FIX 8) message for each affected order detailing the killed orders; the mass cancellation process is ended by a new private **MassCancelAck** (14) (FIX r) message notifying the total affected orders.

   A public **OrderUpdate** (1002) message is sent to the market to remove the killed orders along with a public **MarketUpdate** (1001) message to update the limits; both messages are sent for each affected instrument.

Important Note on Mass Cancellation Processing

From the Matching Engine perspective, the **Mass Order Cancellation Request** is processed differently:

- **On Cash segments**, the inbound message queues are handled at the instrument book level; if the request concerns a trading group or an instrument, it is pushed asynchronously to the inbound queue of each book of the specified instrument or instruments belonging to the specified group.

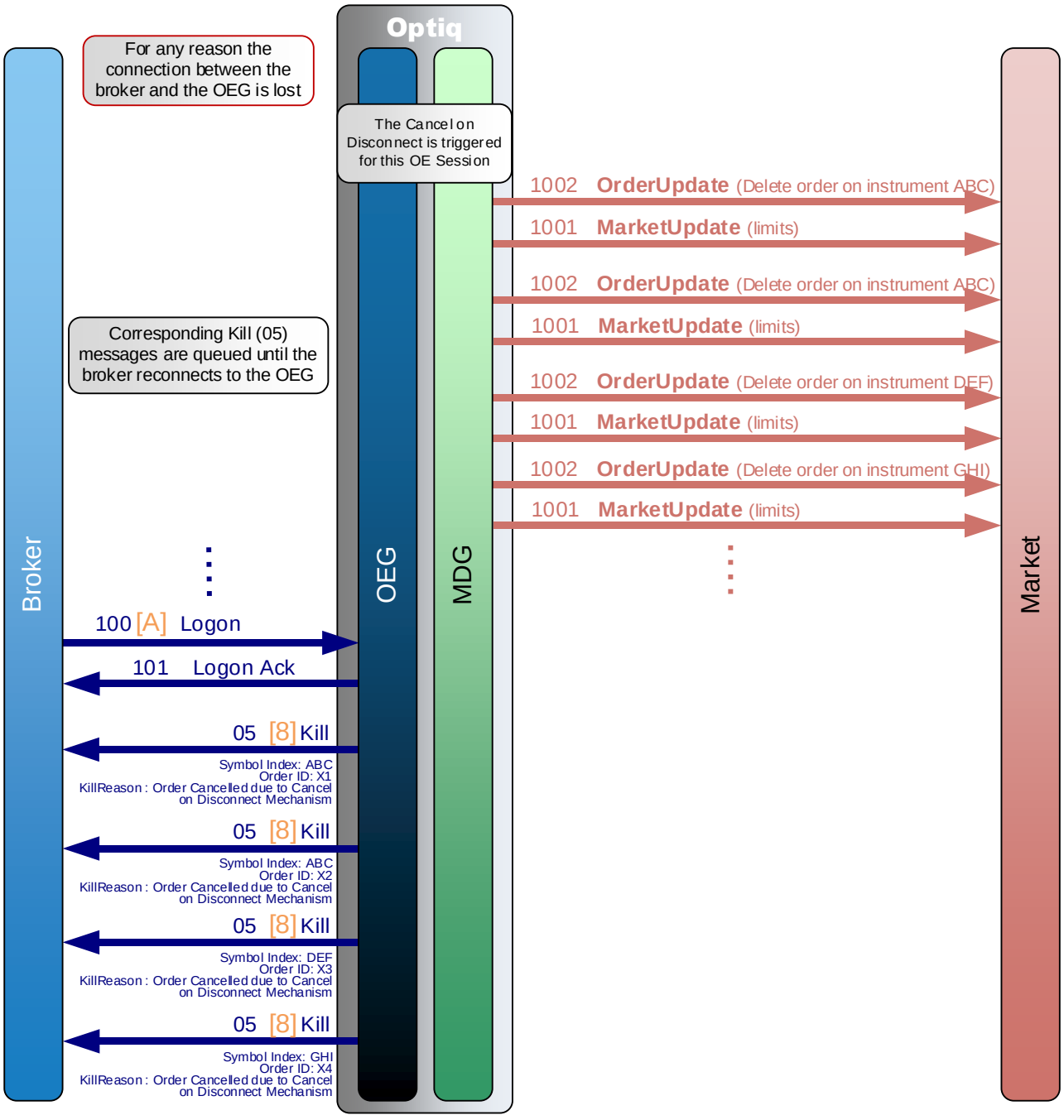
  As a consequence, a counterpart order can be sent to one of these books *after* the mass cancel request at group level but *before* the cancellation request is queued for the book; in this situation, it is possible for an order to be cancelled to match against the entering counterpart order *before* being actually cancelled.
- **On Derivative segments**, the inbound message queues are handled at the contract level; whether the request concerns a contract or an instrument, the request is queued directly into the contract's inbound queue.

  As a consequence, it is not possible for a counterpart order sent on an instrument belonging to the contract *after* the mass cancellation request to match an order to be cancelled, as the counterpart order is queued and processed *after* the mass cancellation request completion.

From the Client perspective, the OEG introduces a mechanism that makes mass cancellation requests to be processed synchronously on both the Cash and Derivatives markets. This means that any request sent by an OE session having started a **Mass Cancellation Request** processing will be processed *after* the completion of the mass cancellation processing, whatever the segment considered.

If needed, an OEG session dedicated to mass cancellations may be used to avoid blocking any other operations during the processing of such mass cancellations.

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 broker 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 **OrderUpdate** (1002) message is sent to the market to remove the order and a public **MarketUpdate** (1001) message to update the limits.

For each cancelled order a **Kill** (05) (FIX 8) message is generated and queued until the client reconnects.

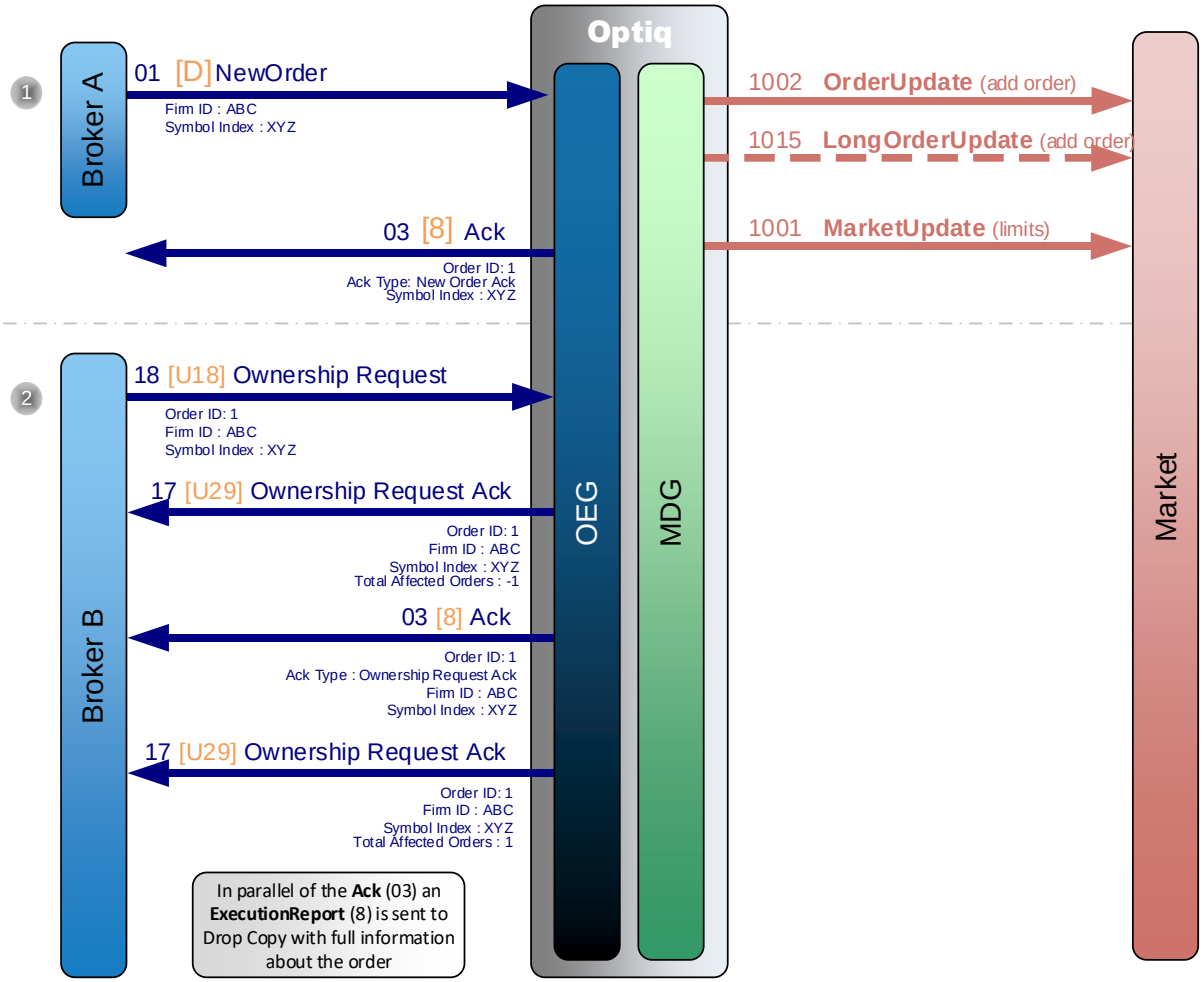
When the Broker reconnects with a **Logon** (100) (FIX A) message, if the logon is successful the OEG sends back a **LogonAck** (101) (FIX A) message.

Once the connection is re-established, the Broker 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. 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) A Broker A 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 **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

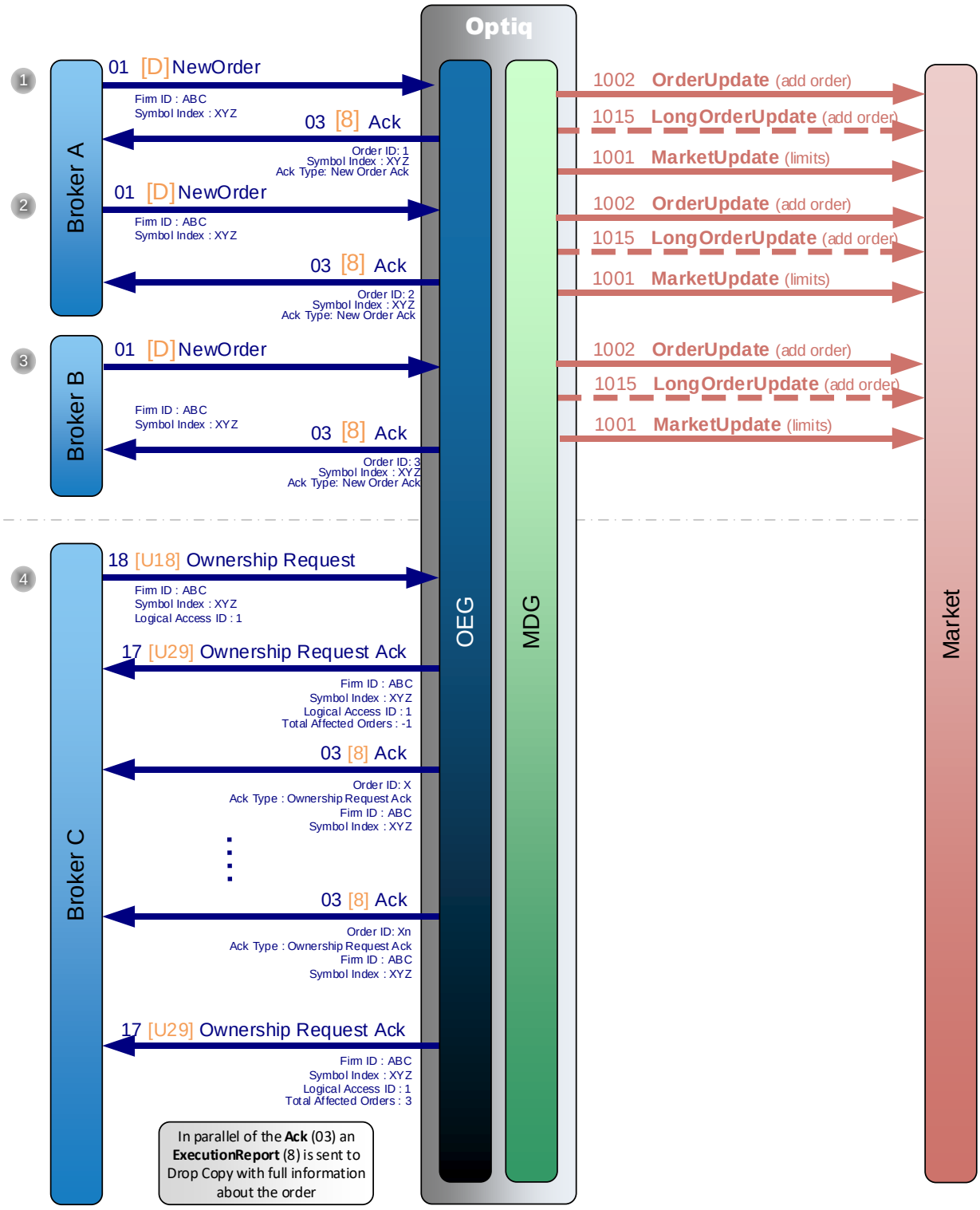
2) Another participant, Broker B sends an **Ownership Request** (18) (FIX U18) to request the ownership of the previous order (*Order ID* = 1) sent by Broker A.

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

OEG sends back an **Ack** (03) (FIX 8) message to Broker B, 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 Broker B, to confirm the successful change of ownership of the order (*Order ID* = 1) from Broker A's OE session to Broker B's OE session (*Total Affected Orders* = 1). Broker A does not receive any messages of this exchange and following the transfer of ownership all unsolicited messages for the affected order are sent to Broker B.

2.6.2 Ownership request for a Logical Access or OE Session



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

1) A Broker 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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

2) Broker 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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

3) Broker B 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 **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

4) Another participant, Broker C 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 Broker C, to confirm the reception of the request (with *Total Affected Orders* = -1).

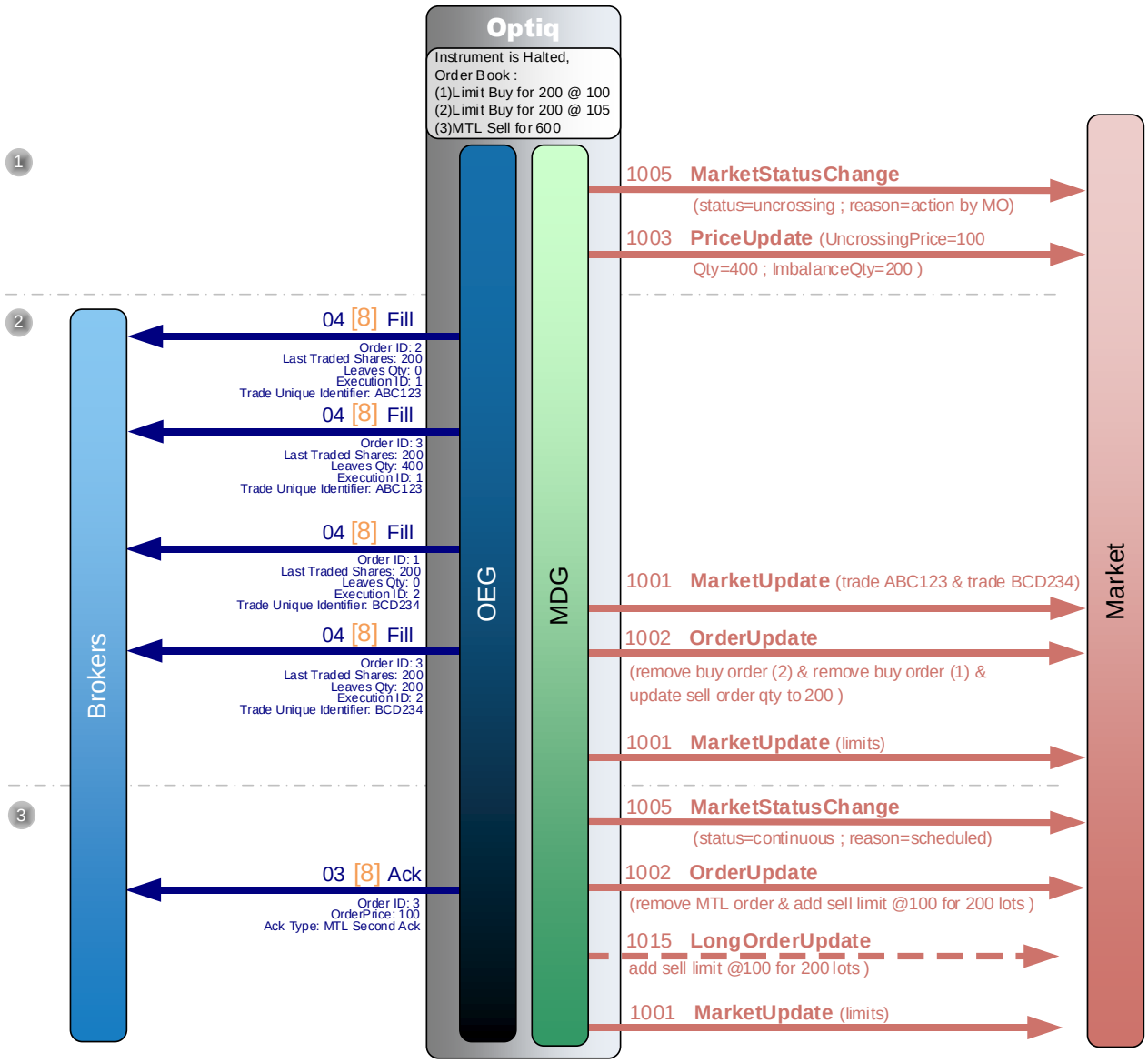
   OEG sends back an **Ack** (03) (FIX 8) message to Broker C for each order (*Order ID* = 1, 2 and 3) for the instrument XYZ that are owned by the Logical Access 1. In parallel of each **Ack** (03) (FIX 8) message an **ExecutionReport** (8) is sent to Drop Copy with full information about the order.

   OEG sends back another **Ownership Request Ack** (17) (FIX U29) message to Broker C 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 Broker A's OE session and *Order ID* = 3 from Broker B's OE session transfer to Broker C's OE session (*Total Affected Orders* = 3). Brokers A and B do not receive any messages of this exchange, and following the transfer of ownership all unsolicited messages for the affected orders are sent to Broker C.

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

2.7 OPENING/UNCROSSING

2.7.1 Market To Limit on Opening



There are already two Limit orders in the order book, one Buy at price=100 and quantity=200 and another Buy at price=105 and quantity=200. And there is also one Sell Market To Limit order with quantity=600. The last traded price is 100.

1) The instrument reopens (is unsuspended). A first public message **MarketStatusChange** (1005) message is sent to the market to notify the resumption of trading on the instrument along with a public **PriceUpdate** (1003) message to broadcast the Uncrossing Price.

2) The Sell order matches with the best Buy order (2) for 200 and OEG sends back a private **Fill** (04) (FIX 8) message to each broker to notify the trade execution. Then the Sell order matches with the Buy order (1) for 200 and OEG sends back a private **Fill** (04) (FIX 8) message to each broker to notify the trade execution.

A public **MarketUpdate** (1001) message is sent to the market for both trades along with a public **OrderUpdate** (1002) message to remove the Buy order (2) and the Buy order (1) and update the quantity of the Sell order to 200 lots.

At the end of the uncrossing processing MDG sends a **MarketUpdate** (1001) message to broadcast the updated values of each limit that has changed during the uncrossing, or only the BBO depending on the market.

3) A public **MarketStatusChange** (1005) message is sent to the market to indicate that the instrument is now in a continuous phase.

Directly after the change of phase, a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) are sent to the market to modify the Sell MTL order to a Sell Limit order at 100 for 200 lots. (when the instrument switches to a Continuous trading phase, all MTL orders partially or not executed always become Limit orders at the uncrossing price for their remaining quantity).

An **Ack** (03) message is sent to the broker with *Ack Type* = MTL Second Ack, for the transformation of the MTL order into a Limit order.

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

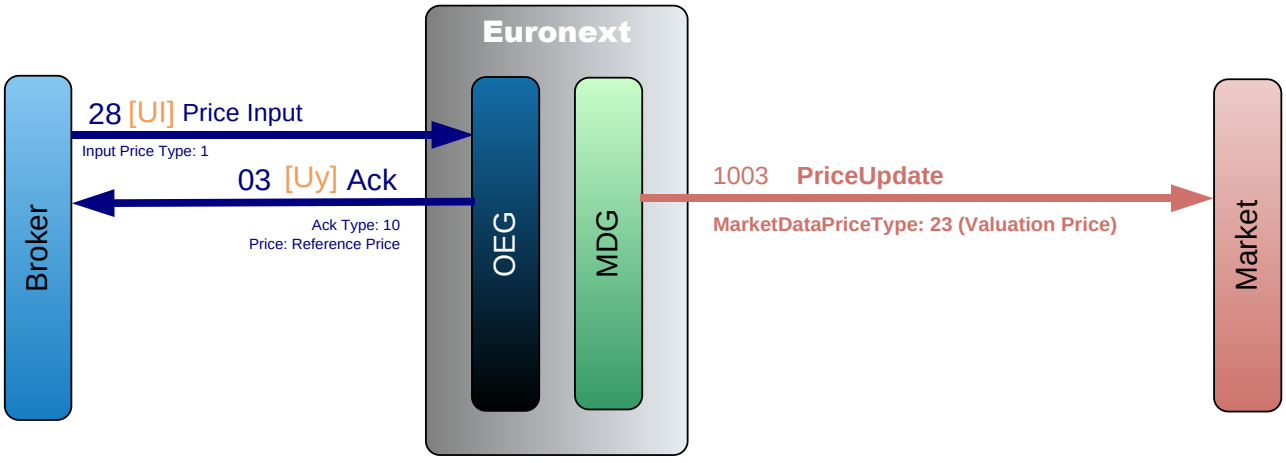
Note: At the beginning of each uncrossing processing a **PriceUpdate** (1003) message is sent to the market to broadcast the uncrossing price (even if it is equal to the last IMP broadcasted). During each uncrossing processing there is always only one public **MarketUpdate** (1001) message sent to the market to update the limits, which is sent at the very end of the processing.

2.8 INDICATIVE PRICE INPUTS

Indicative price inputs include:

- Valuation Price.
- Alternative Indicative Price.

2.8.1 Valuation Price by Liquidity Provider Price Input message



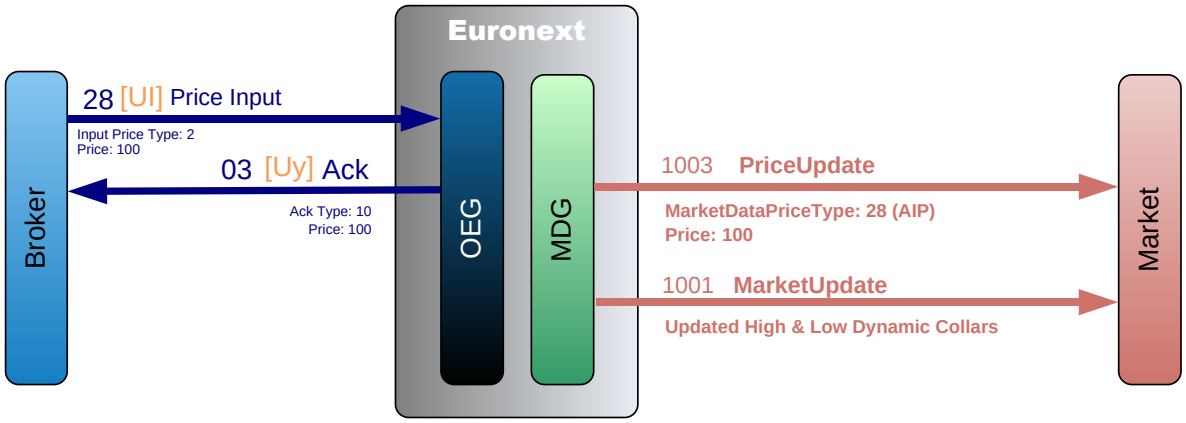
A price information message can be disseminated to Market Participants in order to valuate some illiquid bonds instruments through an Alternative Indicative Price (AIP).

The Liquidity Provider sends a private **Price Input** (28) (FIX UI) message with *Input Price Type = '1' (Valuation Trade)* without specifying any price.

The valuation price takes the value of the current reference price of the warrant instrument and a public **PriceUpdate** (1003) message is sent to the Market participants to disseminate it.

Note: No price is specified in the Valuation Price Input message.

2.8.2 AIP (Alternative Indicative Price) using Member Firm Price



A price information message can be disseminated to Market Participants in order to valuate some illiquid bonds instruments through an Alternative Indicative Price (AIP).

The Broker sends a specified price using a private **Price Input** (28) (FIX UI) message with *Input Price Type = '2' (Alternative Indicative Price).*

This price is then generated and disseminated to the Market participants through a public **PriceUpdate** (1003) message.

The Dynamic Collars of the Instrument are updated around the price specified in the **Price Input** (28) (FIX UI) message and a public **MarketUpdate** (1001) message is sent to the market to disseminate the new collars.

3. UNSOLLICITED 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.

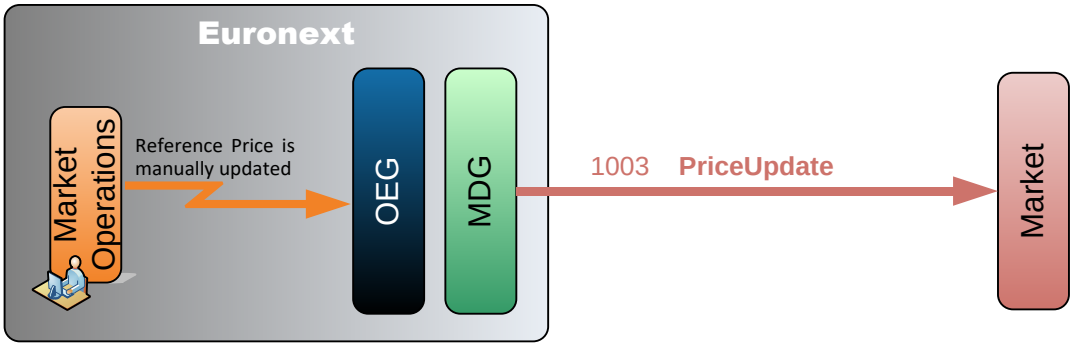
3.1.2 Automatic IMP Calculation

A public **PriceUpdate** (1003) message is sent periodically to the market when the instrument is in a Call or Suspended phase to broadcast the Indicative Matching Price (IMP).

Note: The IMP is broadcasted only if the IMP price or quantity have changed from the values previously sent.

3.2 ACTIONS PERFORMED BY MARKET OPERATIONS

3.2.1 Reference Price Update



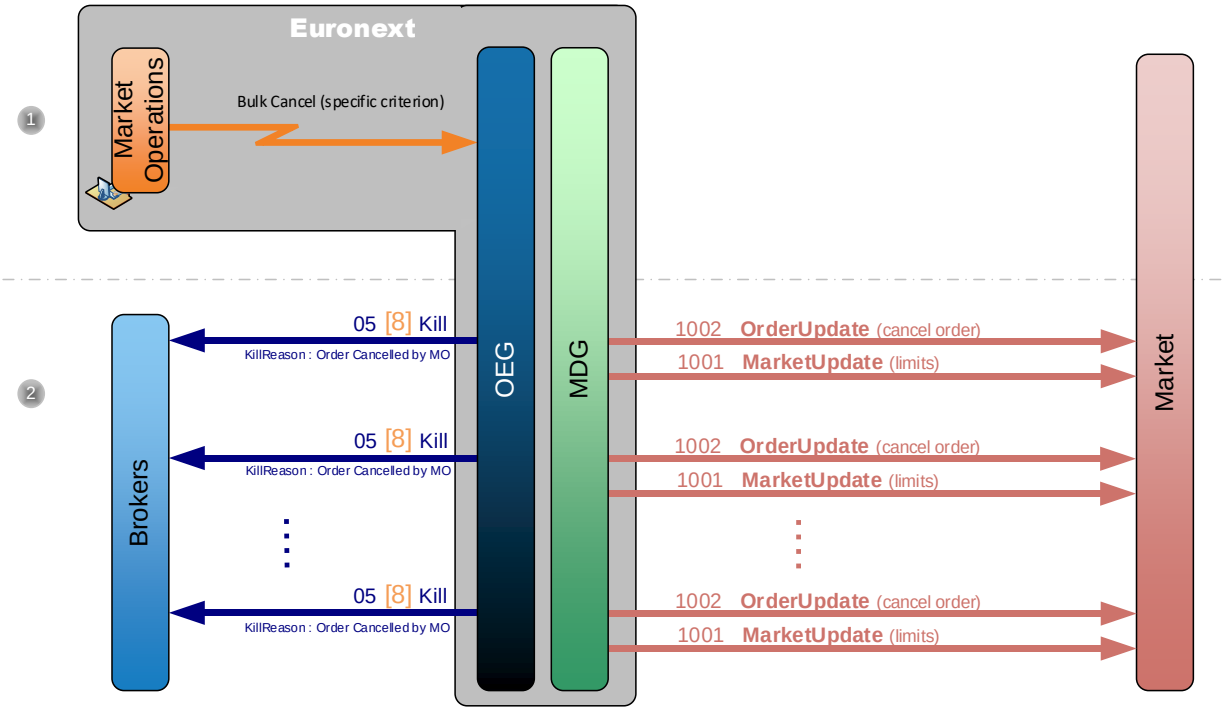
Market Operations send a private command to Optiq to update the reference price on the given instrument.

A manual update by Market Operations of the reference price on a given instrument covers:

- Dynamic Collar Reference Price modification by Market Operations,
- Static Collar Reference Price modification by Market Operations,
- Last Adjusted Closing Price modification by Market Operations,
- Last Traded Price modification by Market Operations command (if the Dynamic Collar Reference Source is not 'External').

Optiq sends a public **PriceUpdate** (1003) message to broadcast the new prices.

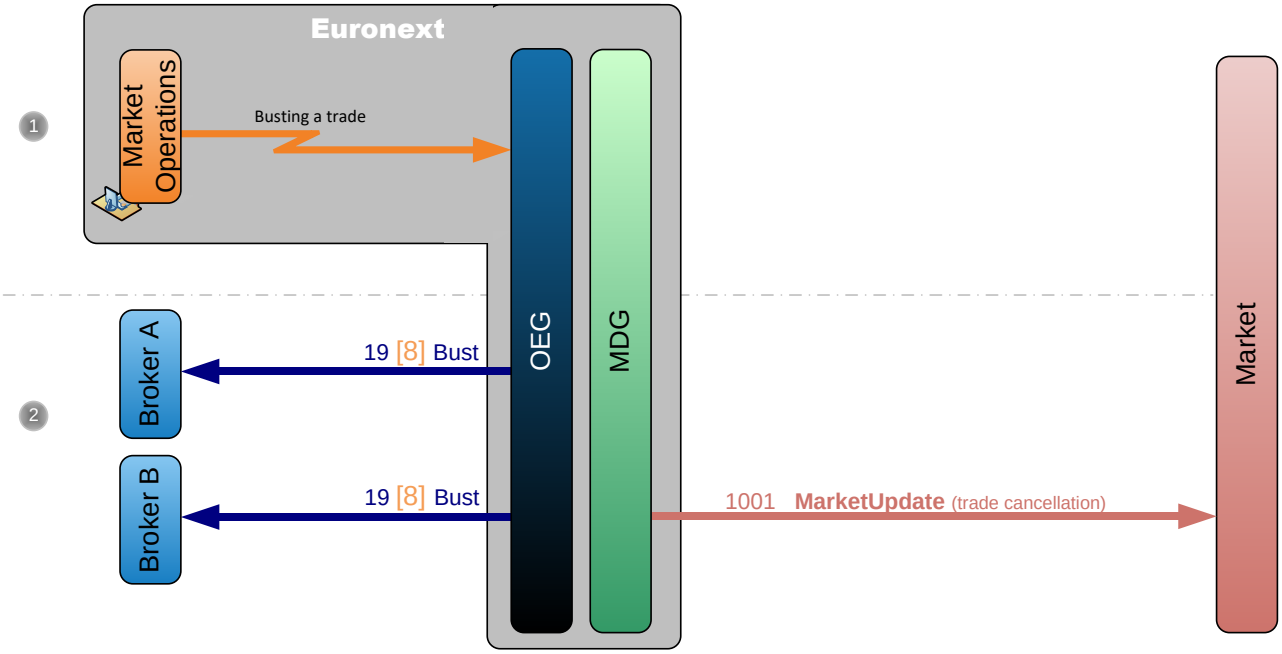
3.2.2 Bulk Order Cancellation



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 broker who entered the order, and as many public **OrderUpdate** (1002) and **MarketUpdate** (1001) messages per instrument to the market to respectively remove the cancelled orders and update the limits.

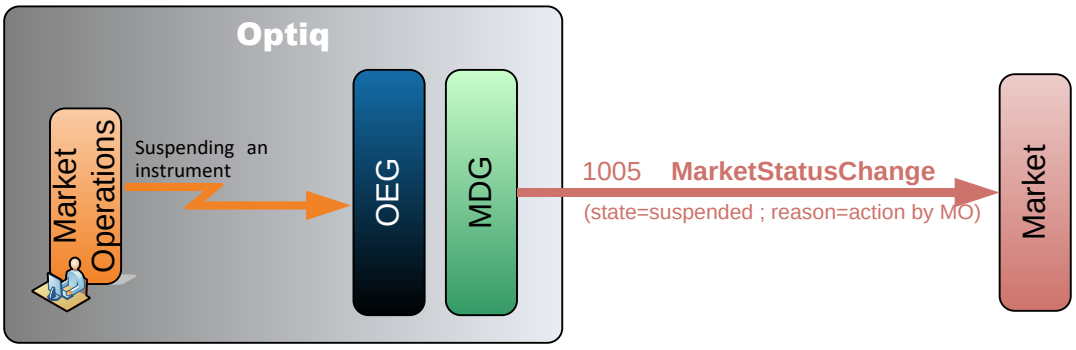
3.2.3 Trade Cancellation



1) Market Operations busts a trade on behalf of two brokers.

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

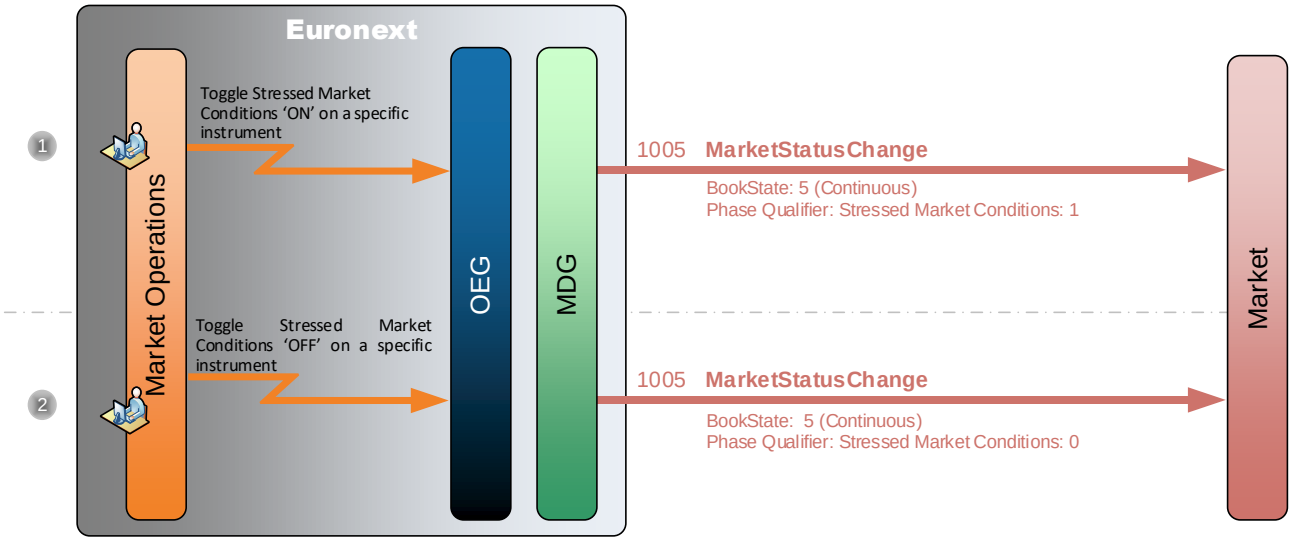
3.2.4 Suspending an Instrument



Market Operations suspends a specific instrument.

Optiq sends a public **MarketStatusChange** (1005) message to the market to indicate that the instrument has been suspended.

3.2.5 Triggering of Stressed Market Conditions (SMC)

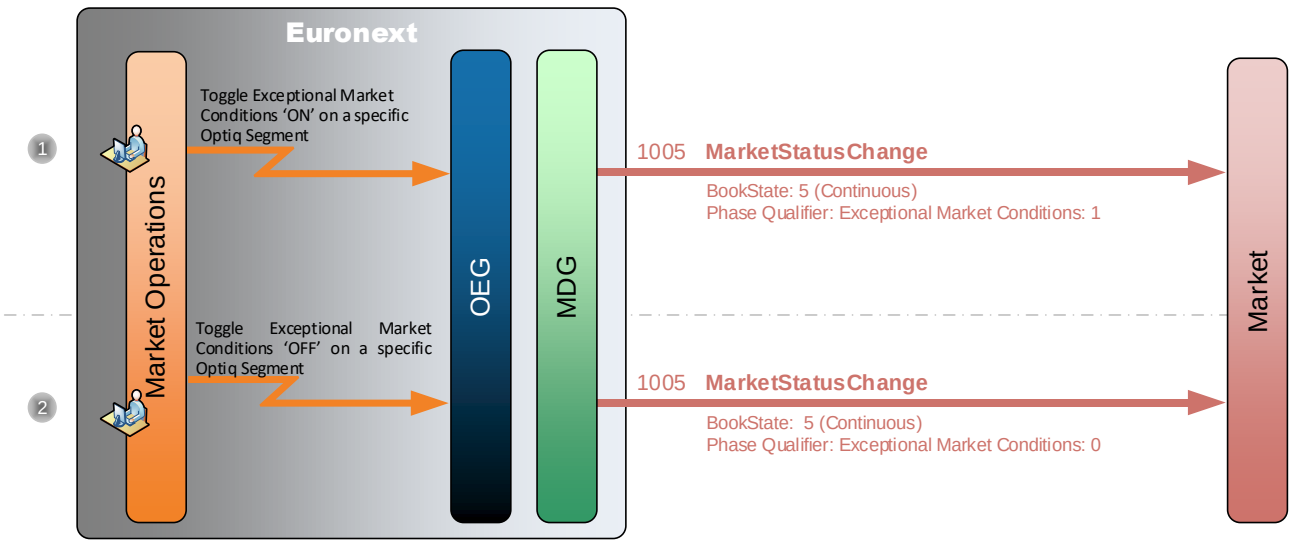


1) Under circumstances defined for MiFID II in RTS 8, Market Operations triggers the beginning of a Stressed Market Conditions period for an Instrument, it is notified to the market by a public **MarketStatusChange** (1005) message.

2) Market Operations triggers the end of the Stressed Market Conditions period for the instrument, it is notified to the market by a public **MarketStatusChange** (1005) message.

Note: SMC state is readable in the bitmap Phase Qualifier.

3.2.6 Triggering of Exceptional Market Conditions (EMC)



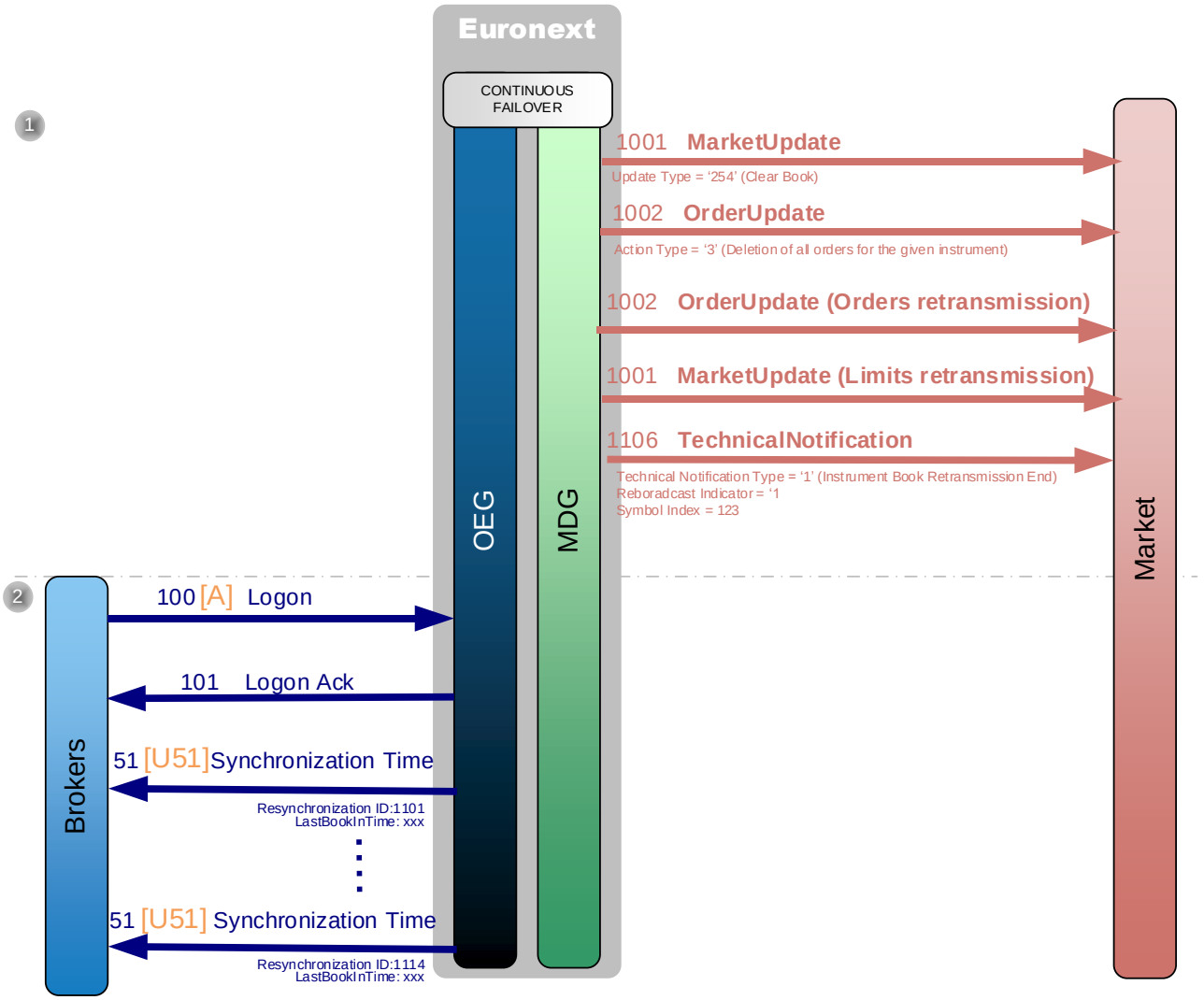
1) Under circumstances defined for MiFID II in RTS 8, Market Operations triggers the beginning of an Exceptional Market Conditions period for the whole Optiq Segment, it is notified to the market by a public **MarketStatusChange** (1005) message for each instrument belonging to the Optiq Segment.

2) Market Operations triggers the end of the Stressed Market Conditions period for the whole Optiq Segment, it is notified to the market by a public **MarketStatusChange** (1005) message for each instrument belonging the Optiq Segment.

Note: EMC state is readable in the bitmap Phase Qualifier.

3.2.7 Continuous Failover

After a Failover, we may have instrument Halted and others instruments in Continuous state. This kinematics details the case where an instrument is still in Continuous after the Failover.

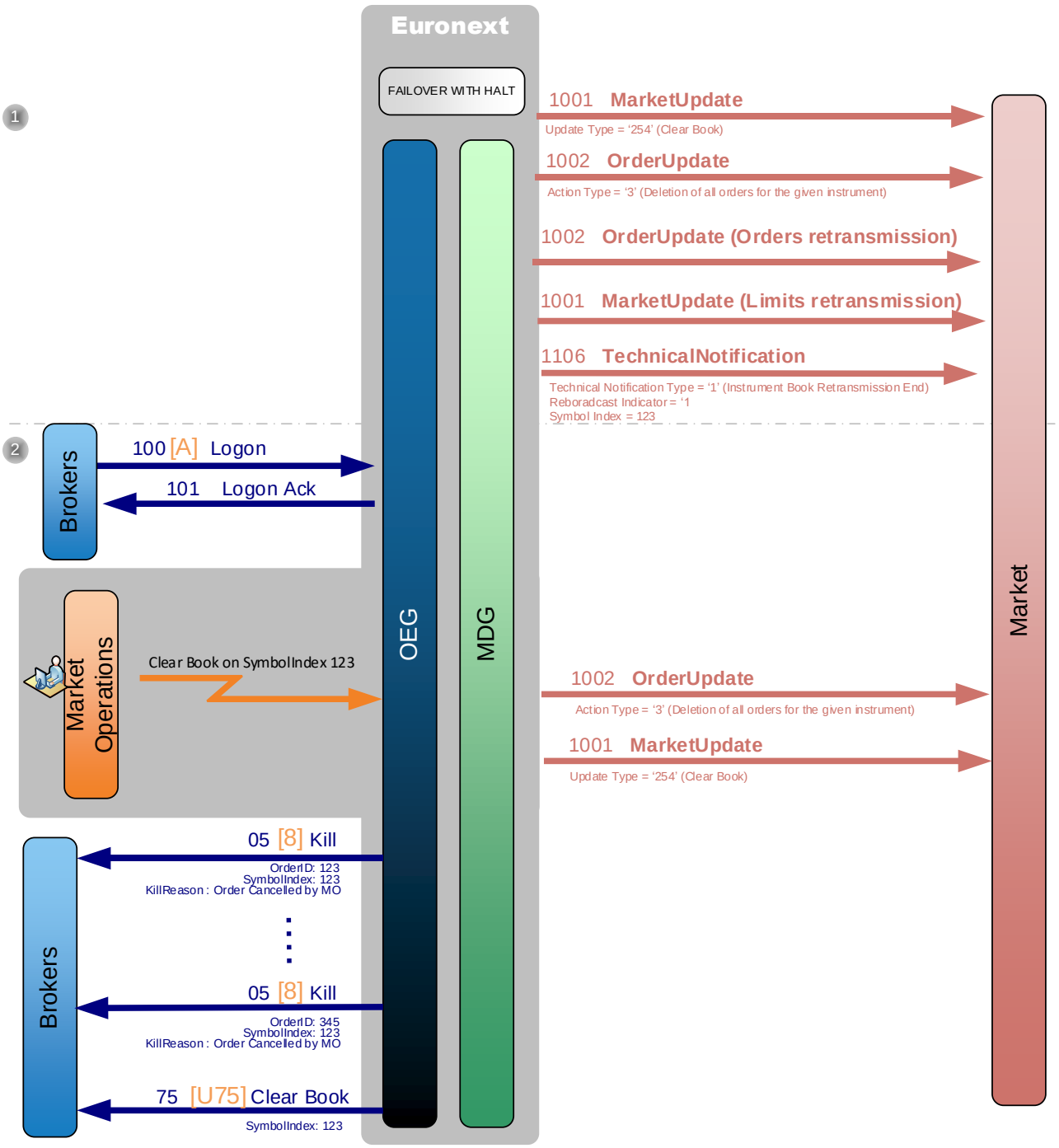


1) A Continuous Failover happens for a given instrument: **MarketUpdate** (1001) and **OrderUpdate** (1002) are sent to Members to clear the book. Then **OrderUpdate** (1002) and **MarketUpdate** (1001) are sent for the retransmission of Orders and Limits

2) The Broker reconnects with a **Logon** (100) (FIX A) message, if the logon is successful the OEG sends back a **LogonAck** (101) (FIX A) message. The Broker receives from Euronext **SynchronizationTime** (51) (FIX U51) message enabling to resynchronize the order book with the latest valid order.

3.2.8 Failover with Halt and Clear Book

After a Failover, we may have instrument Halted and others instruments in Continuous state. This kinematics details the case where an instrument is Halted after a Failover and Market Operations team decide to clear the book.



1) A Failover with Halt happens for a given instrument: **MarketUpdate** (1001) and **OrderUpdate** (1002) are sent to Members to clear the book. Then **OrderUpdate** (1002) and **MarketUpdate** (1001) are sent for the retransmission of Orders and Limits.

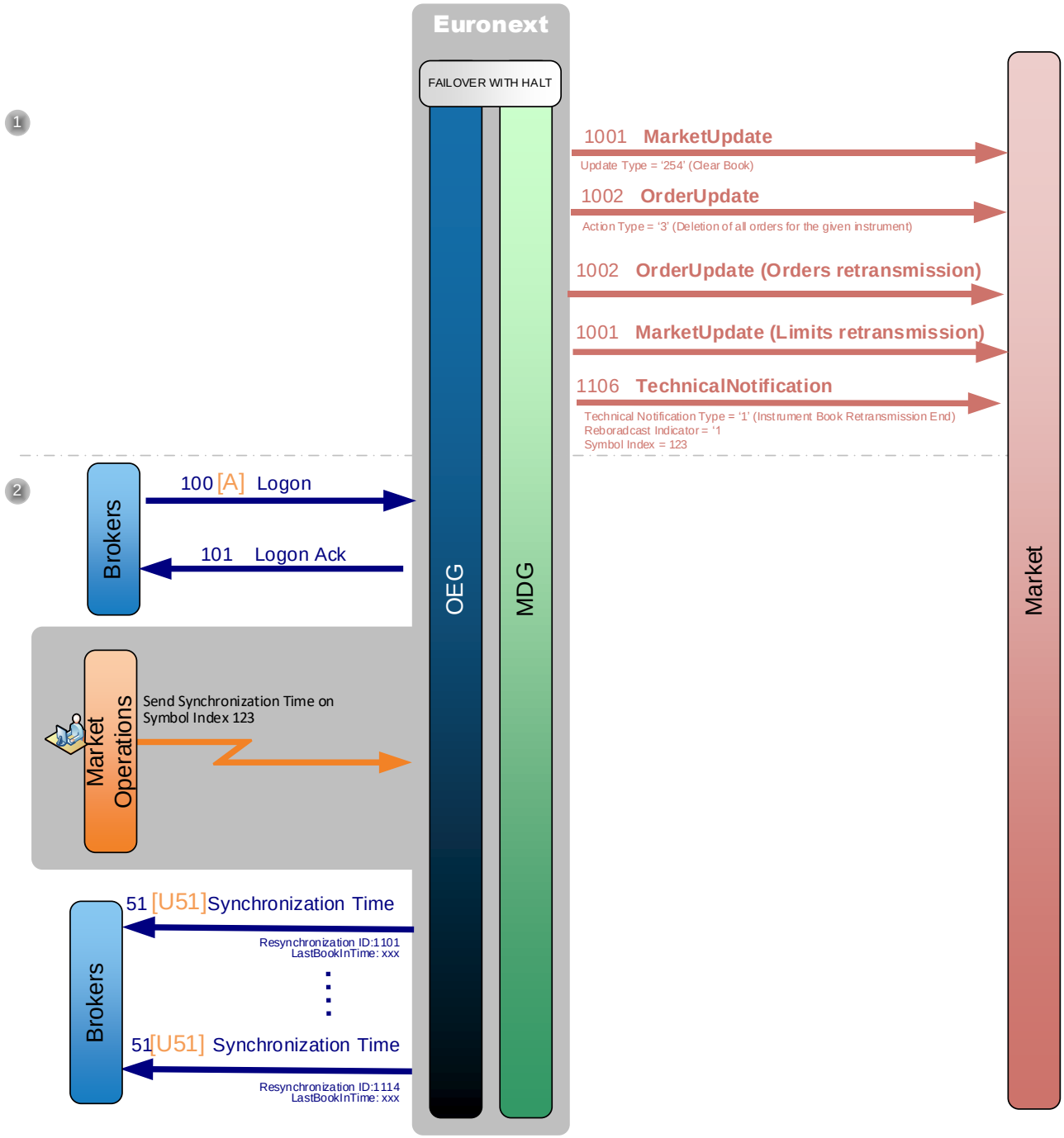
2) The Broker reconnects with a **Logon** (100) (FIX A) message, if the logon is successful the OEG sends back a **LogonAck** (101) (FIX A) message.

   Because too many orders/trades were lost during the Failover, Market Operations Team decide to clear the book. Optiq sends private **Kill** (05) (FIX 8) messages to cancel each order of the Broker followed by a **Clear Book** (75) (FIX U75) message to confirm the book has been successfully cleared. A public **OrderUpdate** (1002) message and a public **MarketUpdate** (1001) message are sent to the Market to clear the book.

Note: Even if there was no order on the book when executing the Clear Book command, a **Clear Book** (75) (FIX U75) message will be sent to warn Brokers to clear the book.

3.2.9 Failover with Halt and Synchronization Time

After a Failover, we may have instrument Halted and others instruments in Continuous state. This kinematics details the case where an instrument is Halted and Market Operations team decide to resynchronized the order book.



1) A Failover with Halt happens for a given instrument: **MarketUpdate** (1001) and **OrderUpdate** (1002) are sent to Members to clear the book. Then **OrderUpdate** (1002) and **MarketUpdate** (1001) are sent for the retransmission of Orders and Limits.

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

Considering trading can resume without clearing the book, Market Operations Team decide to trigger the sending of synchronization time.

The Broker receives from Euronext **SynchronizationTime** (51) (FIX U51) message enabling to resynchronize the order book with the latest valid order.

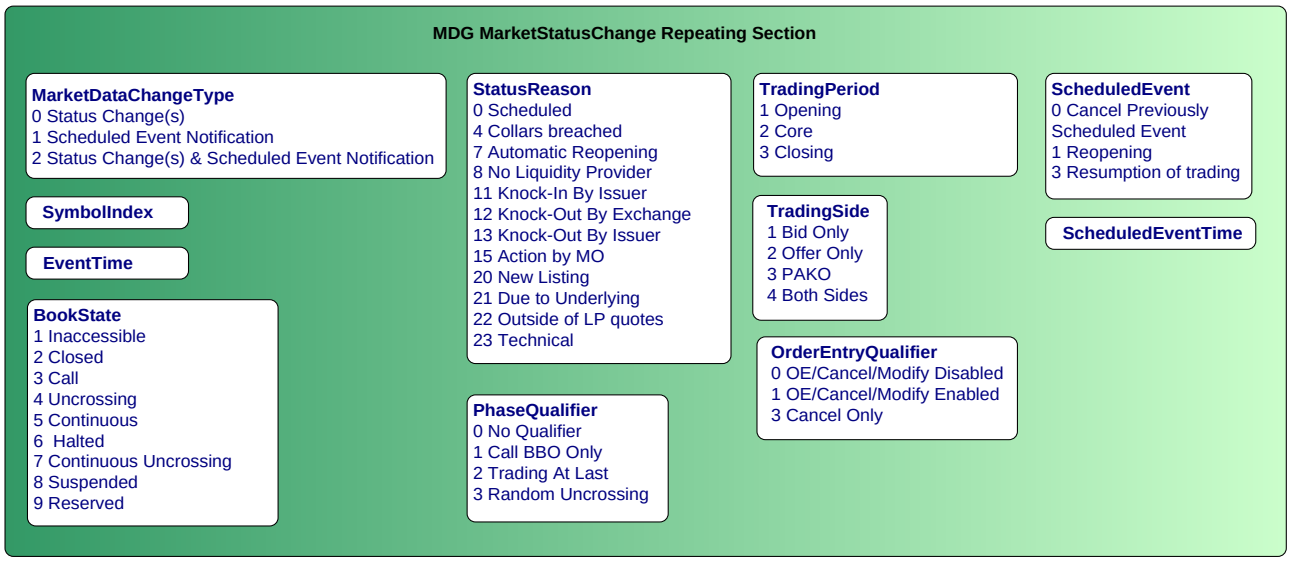
4. MARKET STATUS CHANGES

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

The Optiq MDG **MarketStatusChange** (1005) is common across all Euronext Markets, including Cash, Warrants and off-book data publication. For all markets, the Market Status of an instrument can be determined using the following fields:

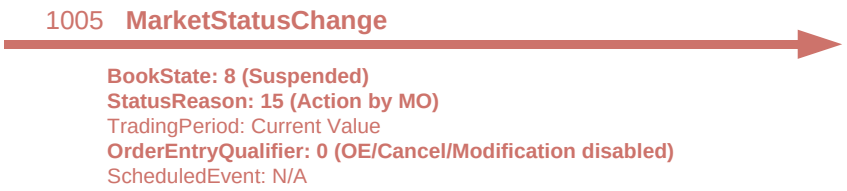
- **Instrument State**: Market State of the Instrument
- **Status Reason**: Instrument State origin
- **Trading Mode**: Specifics during a trading phase that do not impact the Instrument State
- **Trading Period**: indicates the trading period
- **Trading Side**: indicates the side of a One-Side Only period for LP Quote Driven Warrant Market Model
- **Order Entry Qualifier**: Describes whether order entry is allowed for the instrument, and depends on Instrument State, Trading Mode and global availability
- **Scheduled Event**: Market Event notification
- **Scheduled Time**: Scheduled Event associated time if required

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



One of the main improvements of this message is that it always provides the full state of the instrument. The updated instrument state values will appear accordingly in the updated fields, and the unchanged values from the previous state will persist. Using this method, no interpretation as all required information is provided each time the message is sent.

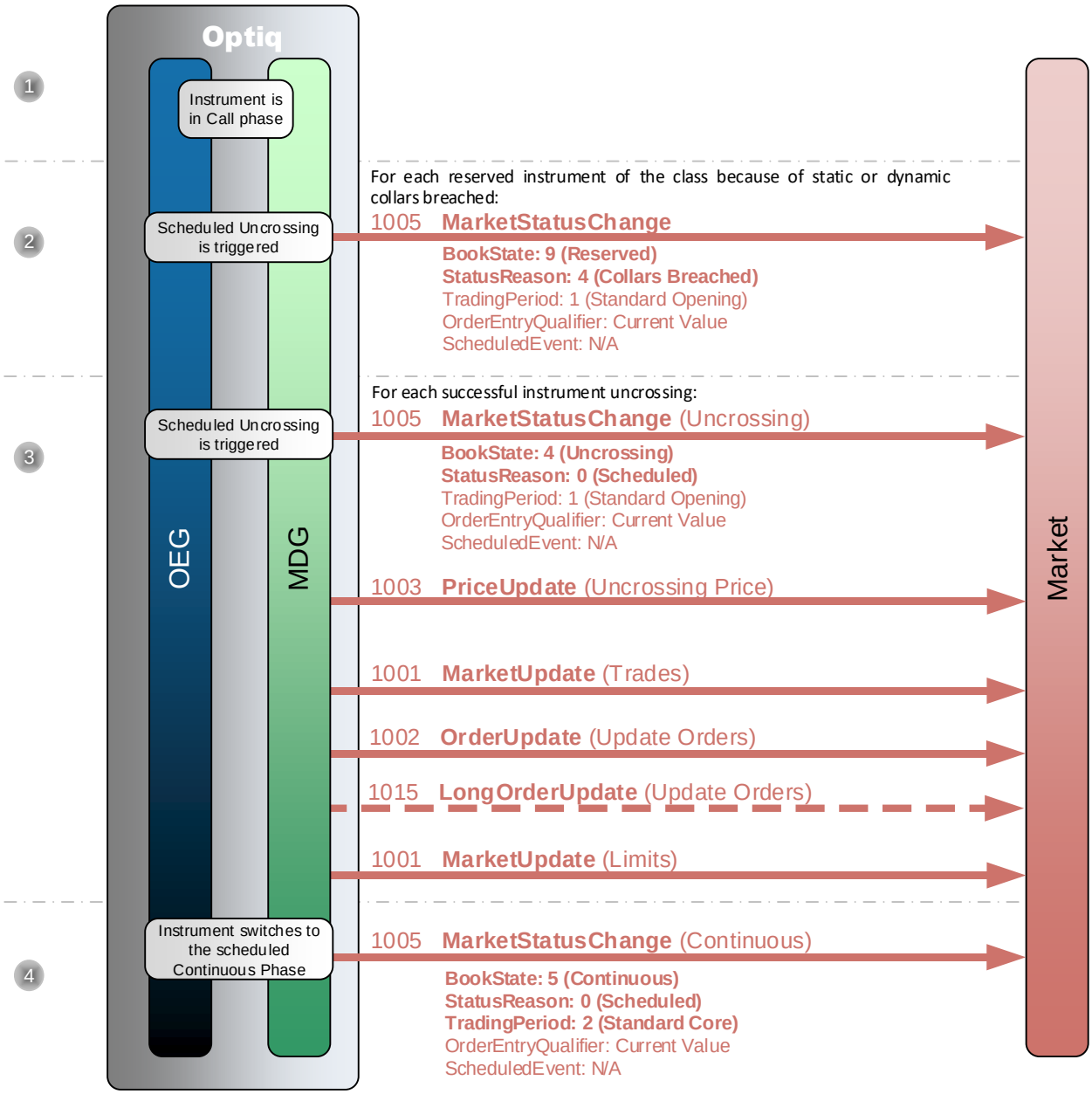
In the following Market Status change example, an instrument is manually suspended by Market Operations with Order entry disabled:



In the following diagrams 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. In fact the value will be populated in the message, here they are set to 'Current Value' to highlight that previous values that are still valid are populated even if they have not changed.

4.1 AUTOMATIC MARKET STATUS CHANGES

4.1.1 Scheduled Uncrossing



1) The instrument is in a Call trading phase as defined in the **TimeTable** and by the pattern associated to this instrument. (Please note that all the scheduled state changes are notified and described in the pattern of the instrument.)

2) When the Uncrossing is triggered if the uncrossing price is outside of the collars (the uncrossing price is greater than the High Collar for example) the instrument is automatically Reserved and a **MarketStatusChange** (1005) message is disseminated to the market.

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

Note: In the case of a Blue Chip uncrossing, the *Trading Mode* value is '2' (Random Uncrossing).

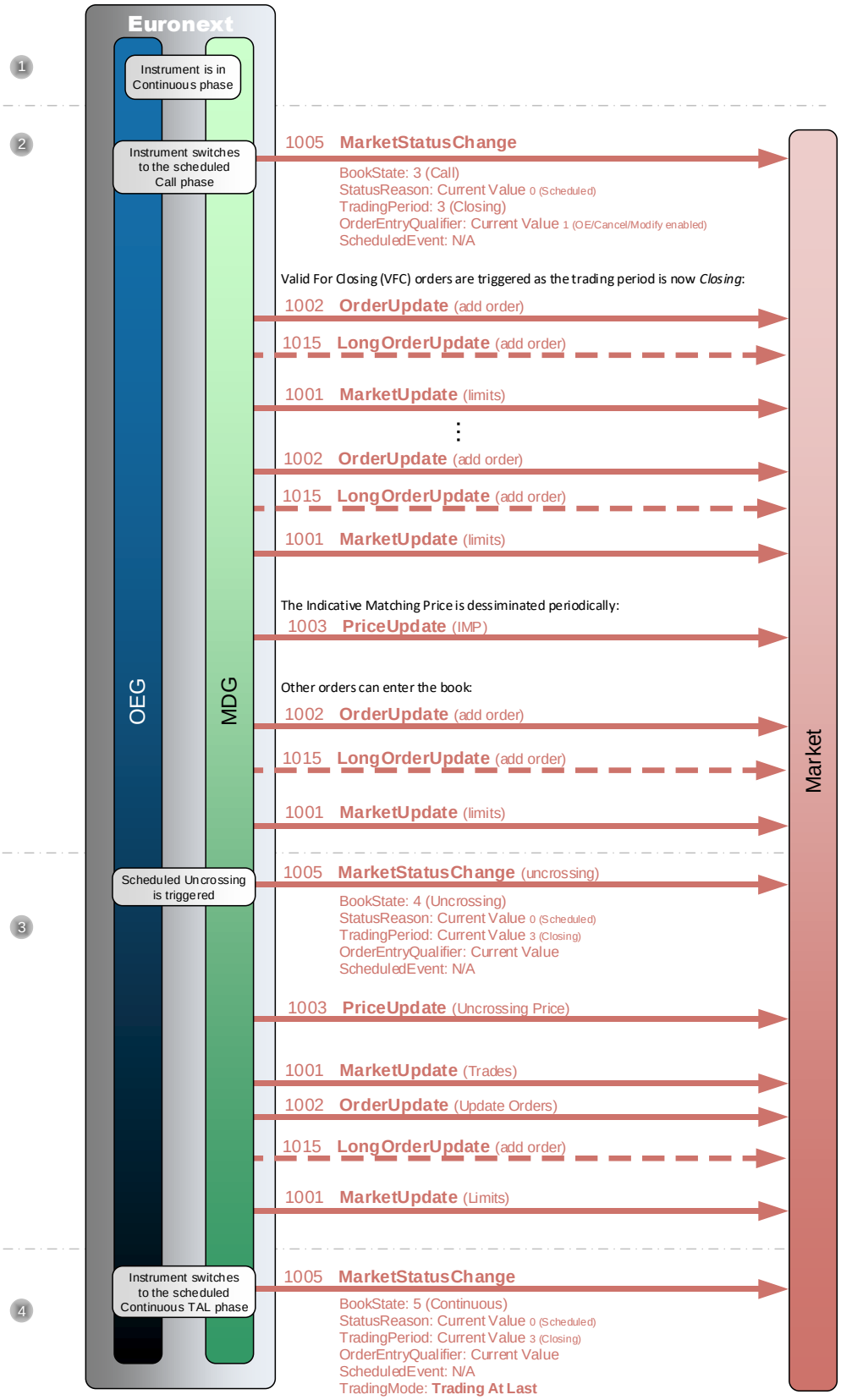
Right after the status change a public **PriceUpdate** (1003) message is sent to the market with the uncrossing price and the quantity at which the uncrossing is performed.

For each trade generated a public **MarketUpdate** (1001) is sent for the trade along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to update the corresponding orders.

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

4) A public **MarketStatusChange** (1005) message is sent to the market to indicate that the instrument is now in a continuous phase.

4.1.2 Scheduled Continuous TAL



1) The instrument is in a Continuous trading phase as defined in the **TimeTable** and by the pattern associated to this instrument. (Please note that all the scheduled state changes are notified and described in the pattern of the instrument.)

2) When the instrument switches to the Call trading phase a public **MarketStatusChange** (1005) message is disseminated to the market.

   As the trading period is now *Standard* ***Closing*** the VFC and VFU orders are triggered and enter the order book. For each order entering the book a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to add the order are sent to the market along with a public **MarketUpdate** (1001) message for the limits.

   During the Call phase the IMP is disseminated periodically with a public **PriceUpdate** (1003) message.

   During the Call phase orders can be entered, modified and cancelled. It will affect the value of the IMP.

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

   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.

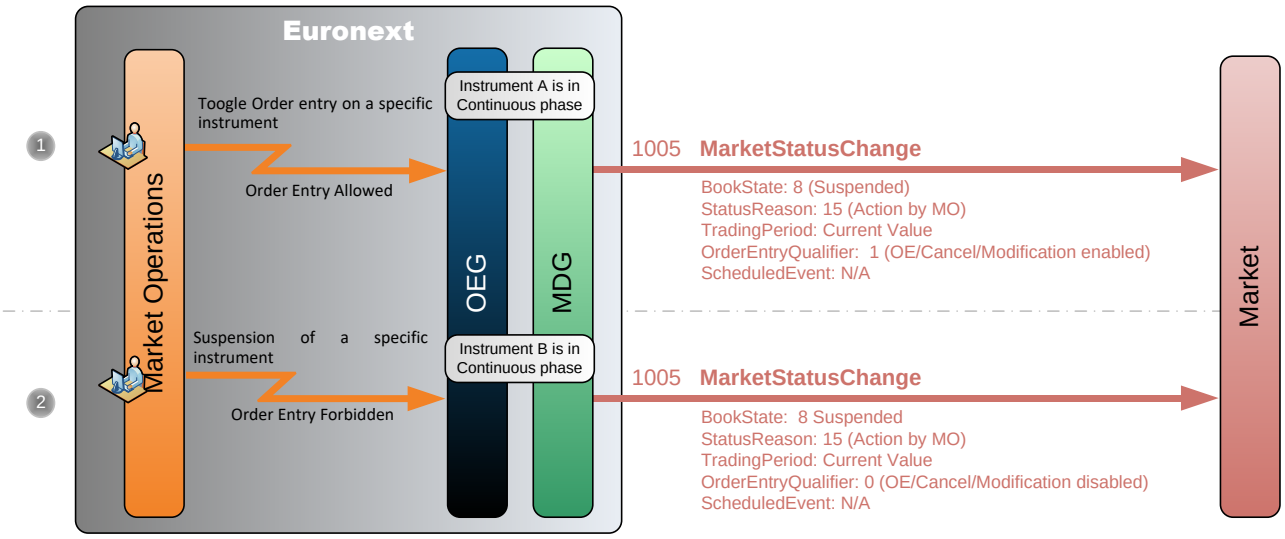
   For each trade generated a public **MarketUpdate** (1001) is sent for the trade along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to update the corresponding orders.

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

4) A public **MarketStatusChange** (1005) message is sent to the market to indicate that the instrument is now in a continuous Trading At Last (TAL) phase.

4.2 MARKET STATUS CHANGES DUE TO MANUAL INTERVENTION

4.2.1 Instrument Suspended by Market Operations



1) The instrument A is in a Continuous trading phase as defined in the **TimeTable** and by the pattern associated to this instrument.

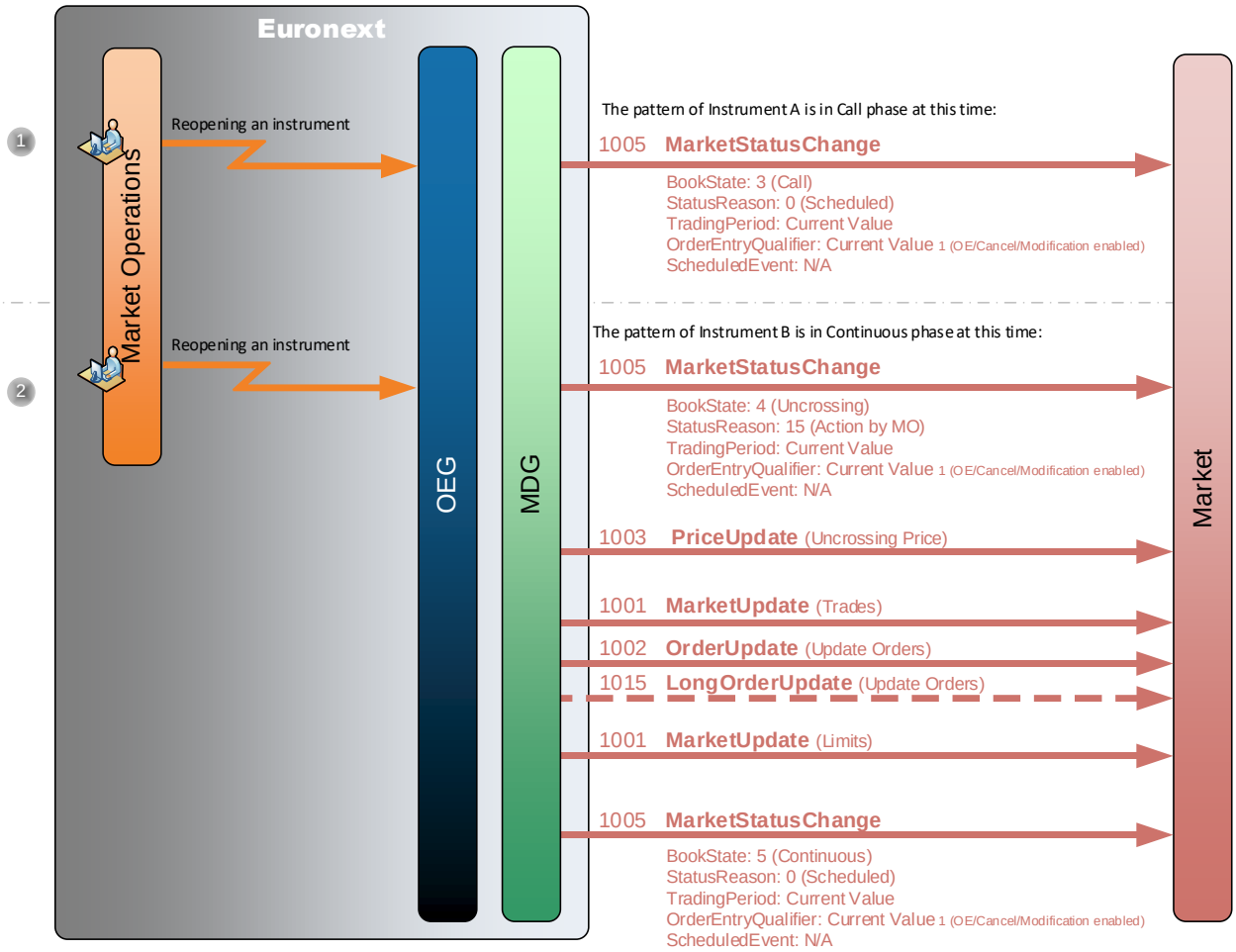
   Market Operations suspends the instrument and let the Order Entry enabled, it is notified to the market by a public **MarketStatusChange** (1005) message.

2) The instrument B is in a Continuous trading phase as defined in the **TimeTable** and by the pattern associated to this instrument.

   Market Operations suspends the instrument and disables the Order Entry, it is notified to the market by a public **MarketStatusChange** (1005) message.

Note: The IMP is no longer disseminated if the phase was a Call phase, and no trading is possible in Continuous phase.

4.2.2 Instrument Reopened by Market Operations



1) Market Operations reopens the instrument A, hence the instrument comes back to a Call trading phase as defined by its pattern at this time. It is notified to the market by a public **MarketStatusChange** (1005) message.

2) Market Operations reopens the instrument B, hence the instrument will come back to a Continuous trading phase as defined by its pattern at this time. Before coming back to Continuous an Uncrossing is performed.

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

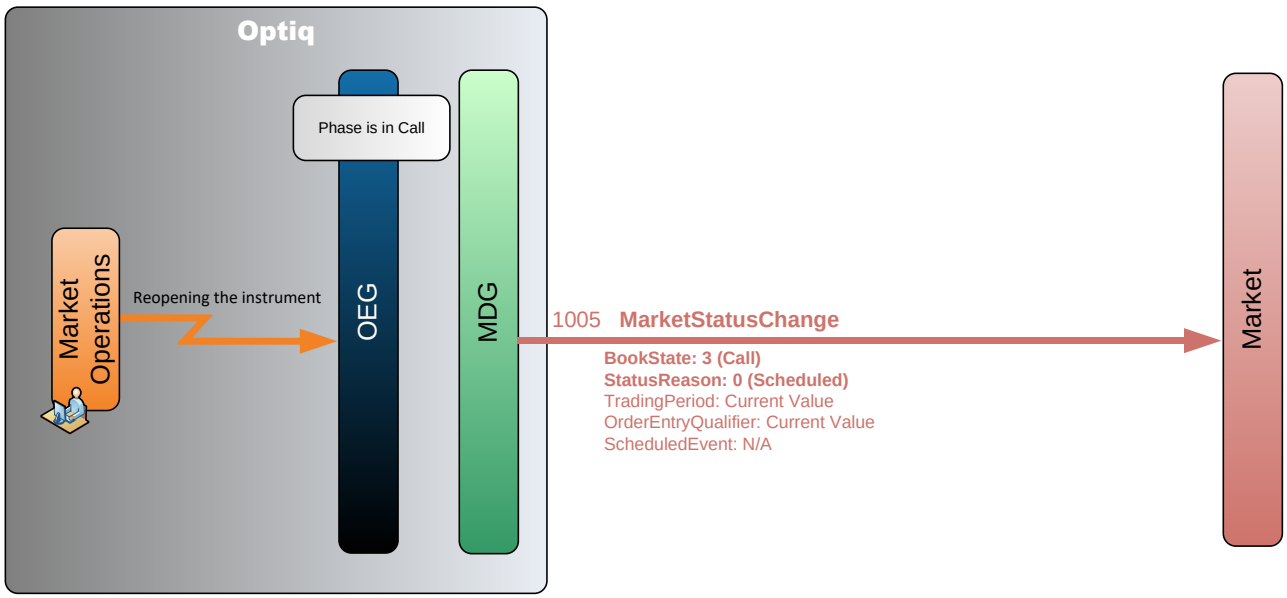
Right after the status change a public **PriceUpdate** (1003) message is sent to the market with the uncrossing price and the quantity at which the uncrossing is performed.

For each trade generated a public **MarketUpdate** (1001) is sent for the trade along with a public **OrderUpdate** (1002) message and a public **LongOrderUpdate** (1015) message (Fixed Income segment, non-anonymous only) to update the corresponding orders.

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 a Continuous trading phase. It is notified to the market by a public **MarketStatusChange** (1005) message.

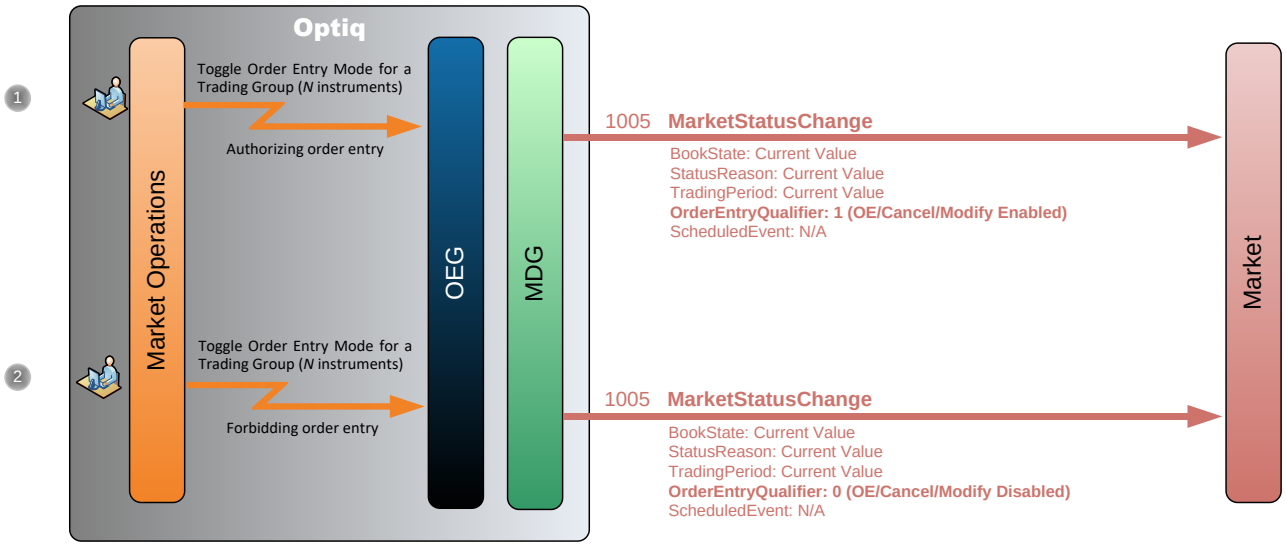
4.2.3 Instrument Reopened in Call phase



Market Operations reopens a specific instrument that was previously suspended.

Optiq sends a public **MarketStatusChange** (1005) message to the market to indicate that the instrument has resumed the original scheduled phase (Call in this case).

4.2.4 Market Operations Update Instrument Order Entry Mode for a Trading Group



1) Market Operations updates order entry authorization for a Trading Group.

   A public **MarketStatusChange** (1005) message is sent to the market for each instrument of the Trading Group to indicate that order entry is now authorized.

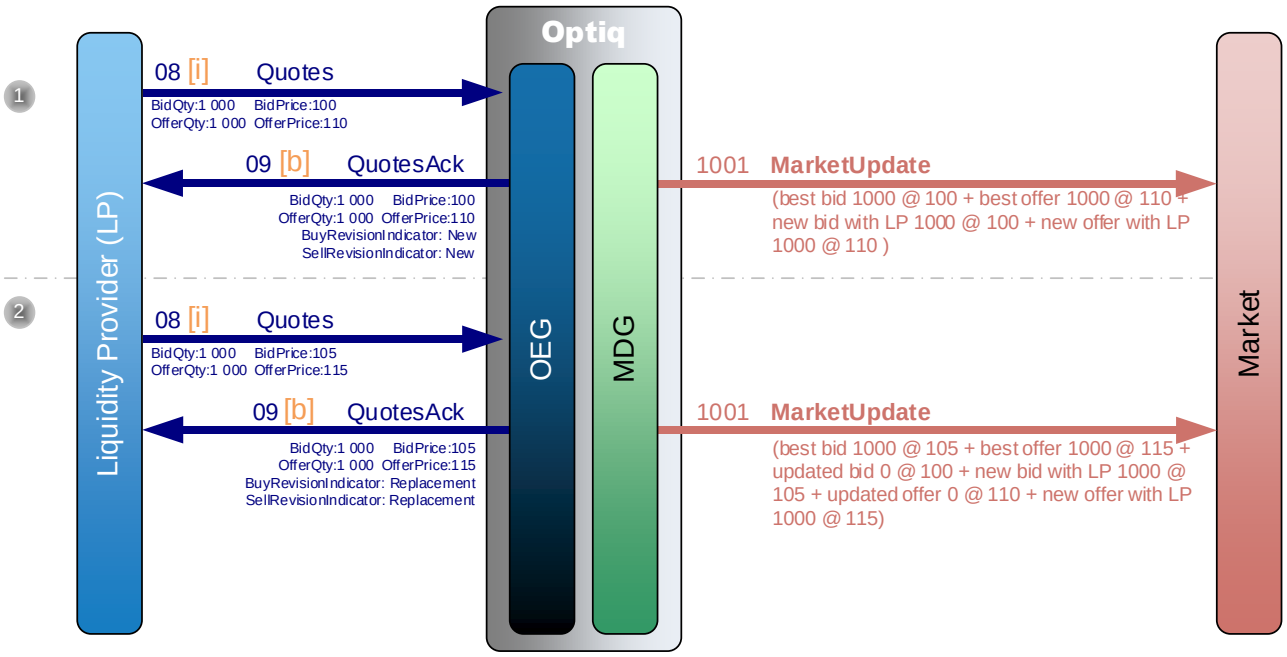
2) Market Operations updates order entry authorization for a Trading Group.

   A public **MarketStatusChange** (1005) message is sent to the market for each instrument of the Trading Group to indicate that order entry is now forbidden.

5. WARRANT SPECIFIC MESSAGES

5.1 WARRANT COMMON KINEMATICS

5.1.1 Quotes message



1) A LP sends a private **Quotes** (08) (FIX i) 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) (FIX b) message to confirm the successful receipt and technical processing of the quotes.

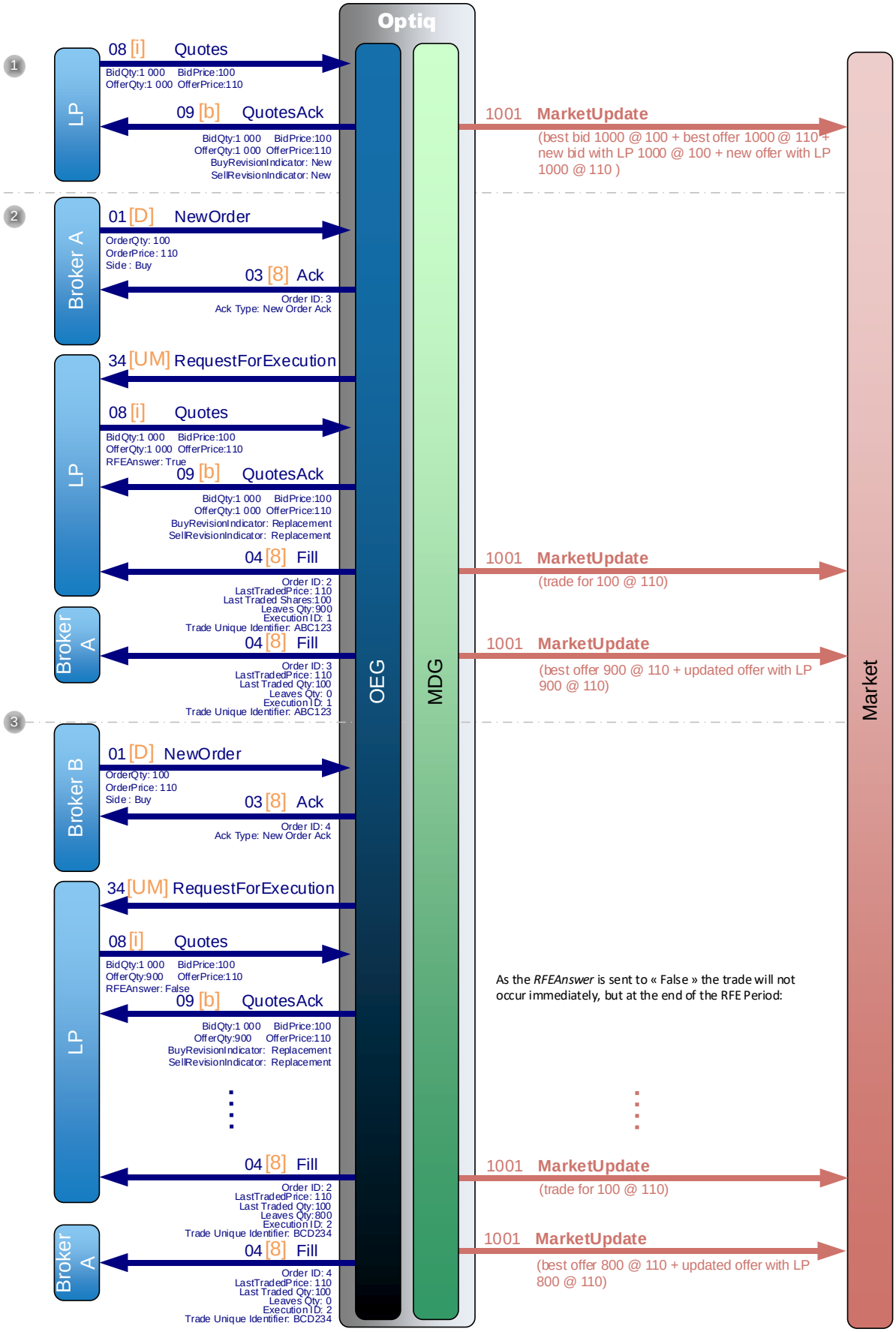
   The quotes enter the order book without matching and a public **MarketUpdate** (1001) message is sent to the market to update the limits and the BBO.

2) The same LP sends a private **Quotes** (08) (FIX i) message to revise his buy quote with a new price of 105 and his sell quote with a new price of 115.

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

5.1.2 Request For Execution



1) A LP sends a private **Quotes** (08) (FIX i) 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) (FIX b) 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 and the BBO.

2) Broker A sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 100 and a price of 110.

   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 and does not match, waiting for the end of the RFE period or the confirmation of the quotes by the LP. No public message is sent.

   OEG sends a private **RequestForExecution** (34) (FIX UM) message to the LP to let him the opportunity to confirm or modify the quote before completing the trade.

   The LP sends back a private **Quotes** (08) (FIX i) message to confirm his quotes; a Buy quote with a quantity of 1,000 and a price of 100 along with a Sell quote with a quantity of 1,000 and a price of 110 and the *RFE Indicator* set to 'True'.

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

   The quotes sent by the LP with the *RFE Answer* set to 'True' triggers the immediate execution of all the possible trades. The order immediately matches with the confirmed quotes and OEG sends back a private **Fill** (04) (FIX 8) message to the broker A and to the LP to publish the trade execution.

   A public **MarketUpdate** (1001) message is sent to the market for the trade followed by another **MarketUpdate** (1001) message to update the limits and the BBO.

3) Broker B sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 100 and a price of 110.

   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 and does not match, waiting for the end of the RFE period or the confirmation of the quotes by the LP. No public message is sent.

   OEG sends a private **RequestForExecution** (34) (FIX UM) message to the LP to let him the opportunity to confirm or modify the quote before completing the trade.

   The LP sends a private **Quotes** (08) (FIX i) message to confirm his quotes; a Buy quote with a quantity of 1,000 and a price of 100 along with a Sell quote with a quantity of 900 and a price of 110 and the *RFE Answer* set to 'False'.

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

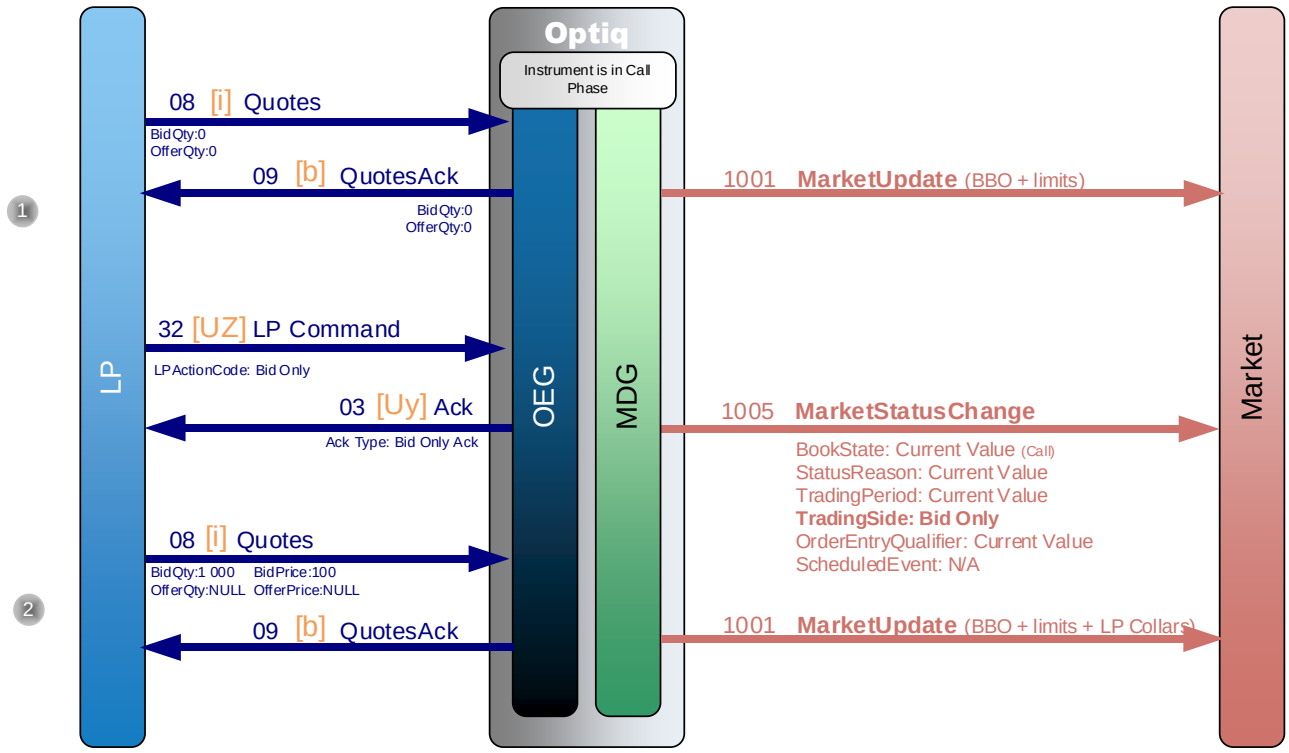
The quotes sent by the LP with the *RFE Answer* set to 'False' will not trigger the immediate execution of the possible trades. No public message is sent.

At the end of the RFE period the order matches with the confirmed quotes and OEG sends back a private **Fill** (04) (FIX 8) message to the broker A and to the LP to publish the trade execution.

A public **MarketUpdate** (1001) message is sent to the market for the trade followed by another **MarketUpdate** (1001) message to update the limits and the BBO.

5.2 WARRANT SPECIFIC MARKET STATUS CHANGE

5.2.1 Beginning of a Bid Only Situation



When a Liquidity Provider animating an instrument has no more instruments to sell, he moves to a Bid Only situation by entering the appropriate command. This command can be entered only if the Liquidity Provider has no more Quotes on the Instrument.

1) The Liquidity Provider cancels the quotes and receives an Ack. The market is notified.

   The Liquidity Provider submits a private **LiquidityProviderCommand** (32) (FIX UZ) message to change the instrument trading side from normal to Bid Only.

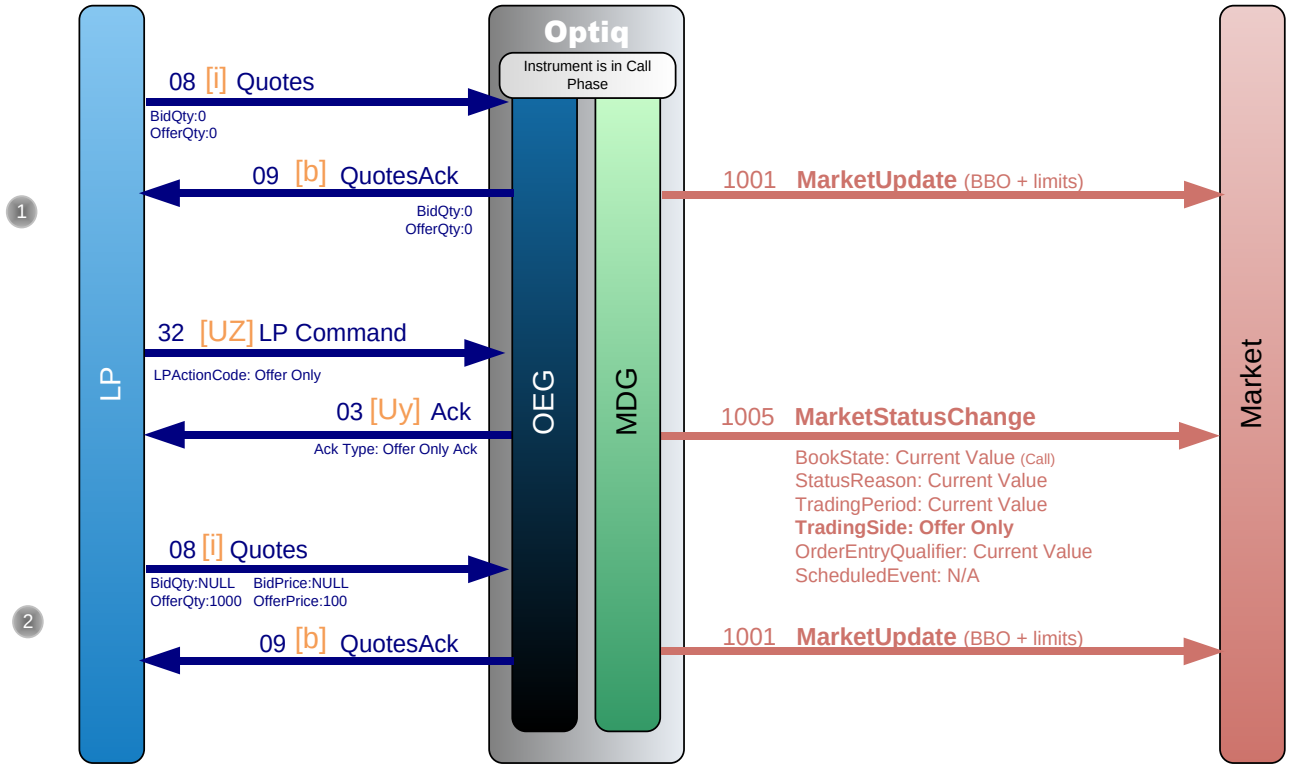
   OEG sends back a private **Ack** (03) (FIX Uy) message to confirm the successful receipt and technical processing of the command.

   A public **MarketStatusChange** (1005) message is sent to the market for the Bid Only trading period.

2) After sending the **LiquidityProviderCommand** (32) (FIX UZ) message, LP needs to send the **Quotes** (08) message with the offer side values set to 'Null'.

Note: LP collars are computed based on the bid quote and disseminated during Bid Only Situation.

5.2.2 Beginning of an Offer Only Situation



When a Liquidity Provider animating an instrument values his product at a bid price lower than one tick, he moves to an Offer Only situation by entering the appropriate command. This command can be entered only if the Liquidity Provider has no more Quotes on the Instrument.

1) The Liquidity Provider cancels the quotes and receives a **Quotes Ack** (09) (FIX b) message. The market is notified.

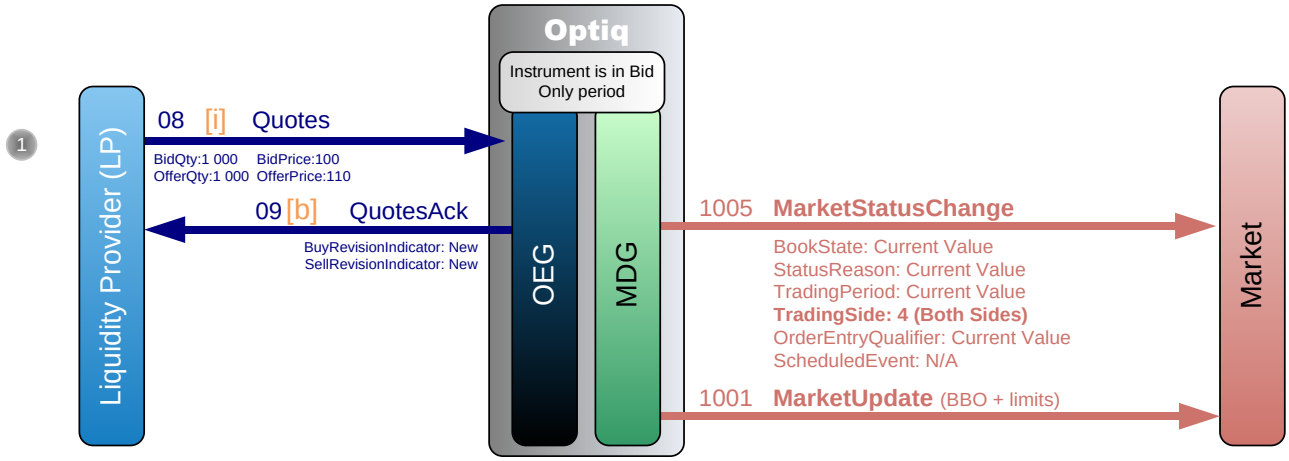
   The Liquidity Provider submits a private **LiquidityProviderCommand** (32) (FIX UZ) message to change the instrument trading side from normal to Offer Only.

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

   A public **MarketStatusChange** (1005) message is sent to the market for the Offer Only trading period.

2) After sending the **LiquidityProviderCommand** (32) (FIX UZ) message, LP needs to send the **Quotes** (08) (FIX i) message with the bid side values set to Null.

5.2.3 End of a One Side Only Situation (LP Quote Driven Warrant Market Model)



The instrument in in a Bid Only (or Offer Only) state.

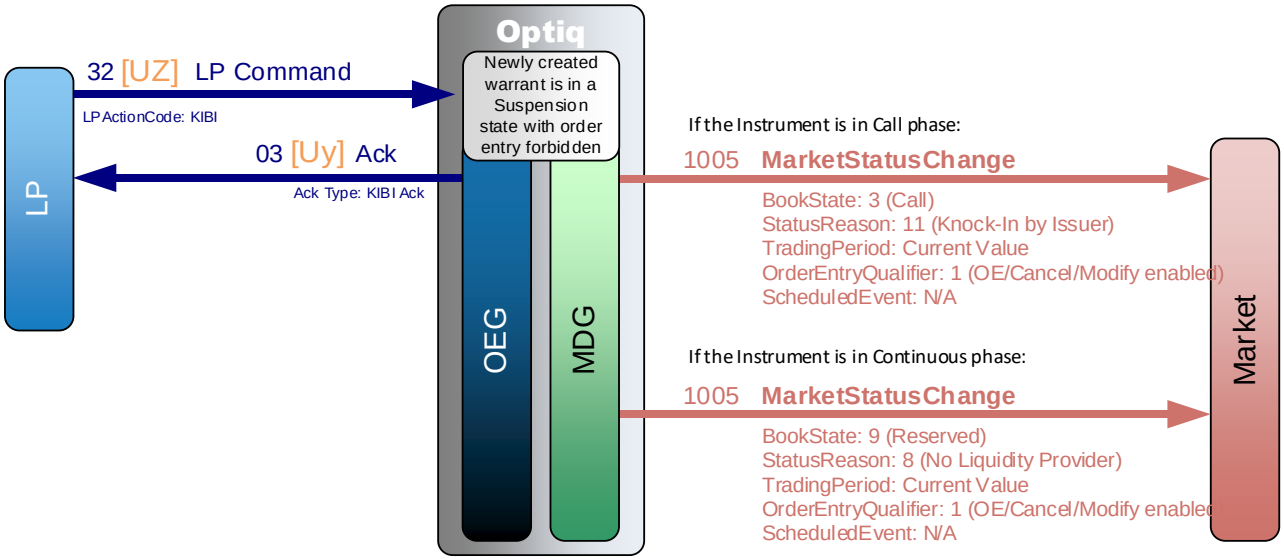
1) A LP sends a private **Quotes** (08) (FIX i) message to enter a new Buy quote with a quantity of 1,000 at a price of 100 along with another Sell quote with a quantity of 1,000 at a price of 110.

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

   The entry of a dual sided quote in a one side only period triggers the change of the Trading Side to the standard mode. Hence a public **MarketStatusChange** (1005) message is sent to notify the market the end of the Bid Only trading period.

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

5.2.4 Knock-In by Issuer



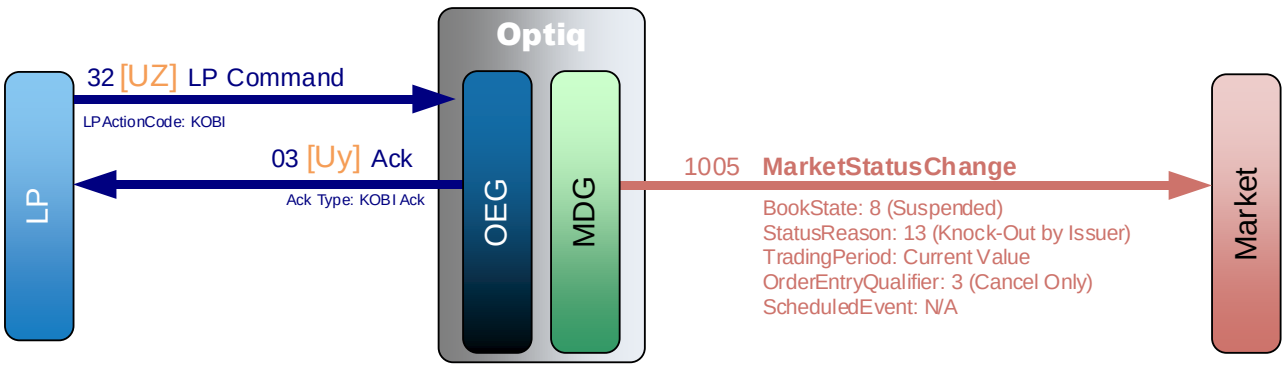
A Liquidity Provider has the ability to unsuspend a newly created warrant instrument by sending a private **LiquidityProviderCommand** (32) (FIX UZ) (Knock-In request). OEG sends back a private **Ack** (03) (FIX Uy) message to confirm the successful receipt and technical processing of the command.

If the command is sent during a Call phase, a public **MarketStatusChange** (1005) message is sent to inform the market that the warrant is unsuspended (with status reason 'Knock-In by Issuer').

If the command is sent during a Continuous phase, as the Liquidity Provider has not yet sent his quotes a public **MarketStatusChange** (1005) message is sent to the market as the warrant is unsuspended but reserved because there is no quote of the Liquidity Provider (status reason 'No Liquidity Provider').

Note: This functionality apply only to instruments that have not yet been opened to trading, otherwise the command is rejected.

5.2.5 Knock-Out by Issuer



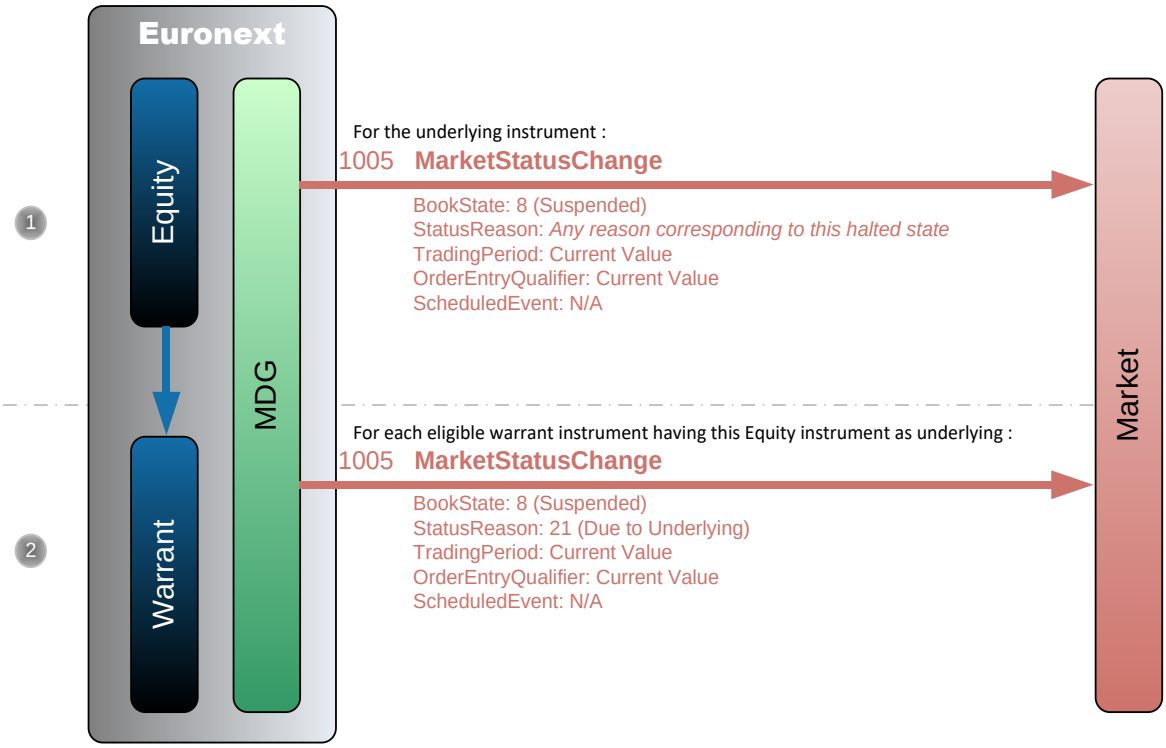
A Liquidity Provider has the ability to knock-out a warrant instrument.

Upon reception of a private **LiquidityProviderCommand** (32) (FIX UZ) (KOBI request), OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the command.

A public **MarketStatusChange** (1005) message is sent to inform the market that the warrant is suspended (with status reason 'Knock-Out by Issuer'). The order entry is set to Cancel Only (3) and LP quotes (if any) are automatically cancelled.

Note: The **LPCommand** (32) (FIX UZ) for KOBI requests only can be sent during the Closed trading phase.

5.2.6 Underlying Status Change



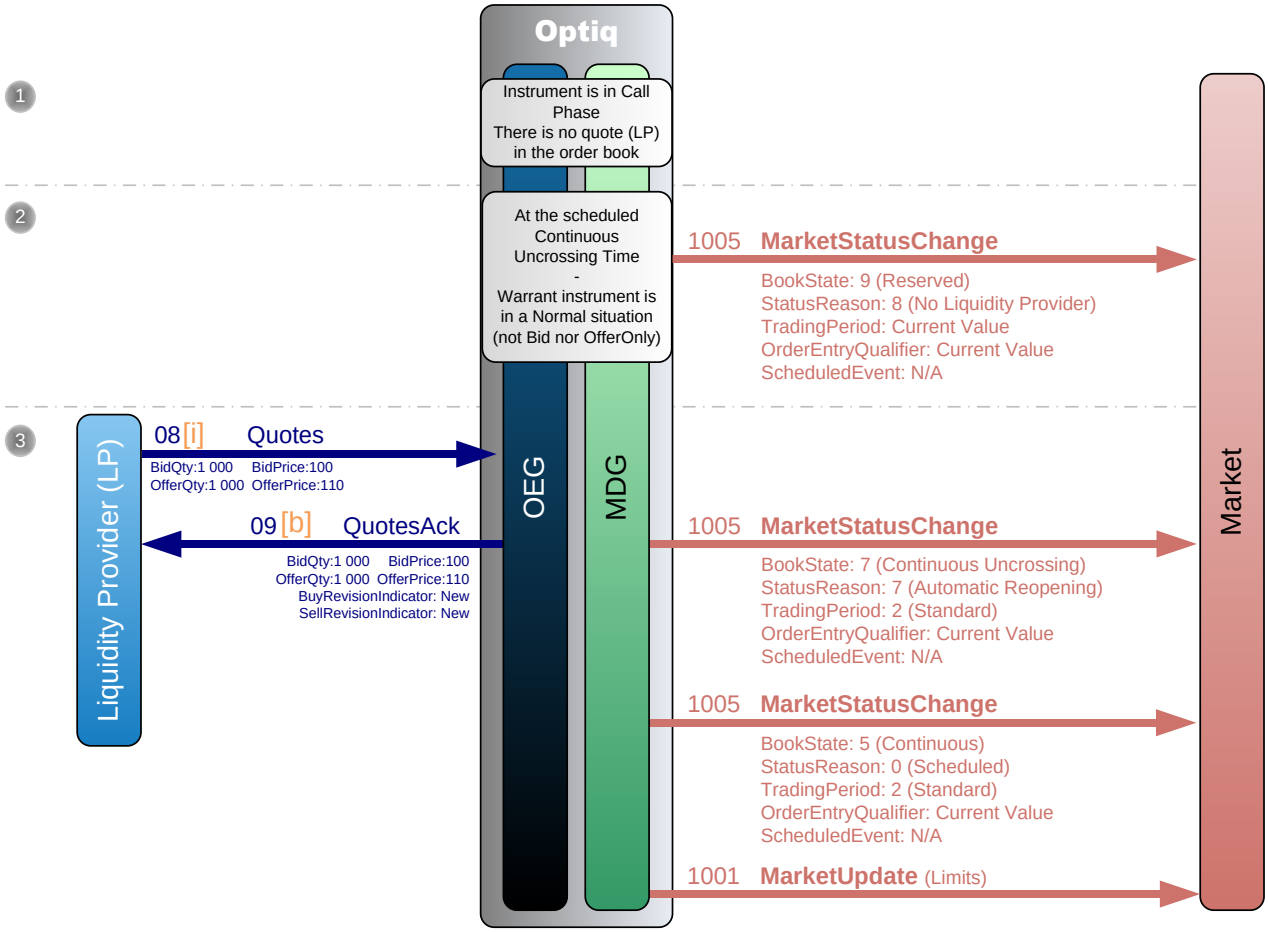
1) The underlying instrument of a warrant instrument is suspended (for any reason) or suspended by Market Operations. A public **MarketStatusChange** (1005) message is sent to notify the market that the instrument has been reserved or suspended.

2) Each configured eligible warrant having this instrument as underlying is accordingly suspended. A public **MarketStatusChange** (1005) message is sent for each instrument to notify the market that the instrument has been suspended.

Note: The Reopening underlying kinematic is similar to the suspension scenario: the status of the underlying affects the status of the warrant, i.e. Instrument State returns to its original scheduled phase and its Status Reason is 'Automatic Reopening'.

Exception to the reopening warrant kinematics: warrants that were suspended by Market Operations remain in that state.

5.2.7 Reserved No LP / LP is back



1) In Call phase a warrant instruments is not reserved even if there is no quote from the Liquidity Provider in the order book.

2) At the Continuous Uncrossing time as there is no quote from the LP in the order book, the instrument is reserved and a public **MarketStatusChange** (1005) message is sent to notify the market that the instrument has been reserved.

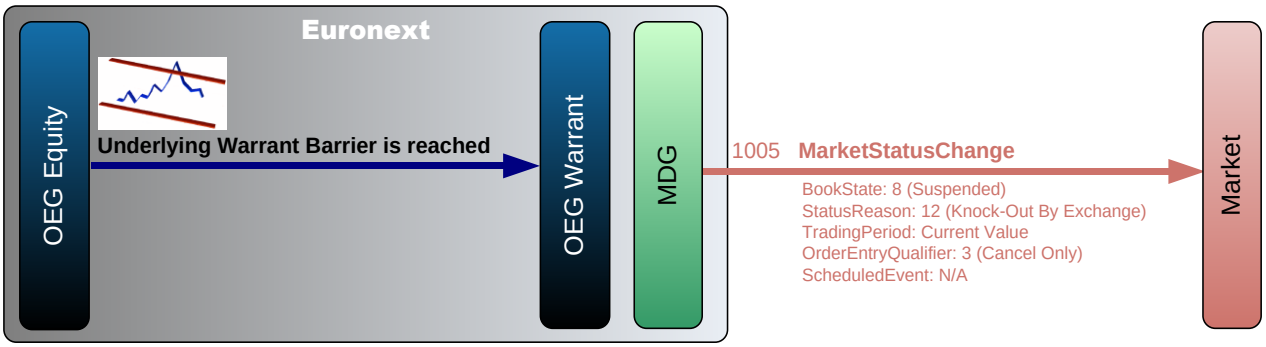
3) A LP sends a private **Quotes** (08) (FIX i) message to enter a new Buy quote with a quantity of 1,000 at a price of 100 along with another Sell quote with a quantity of 1,000 at a price of 110.

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

   As now there are quotes from the LP in the order book, the instrument is reopened and the book is uncrossed, a public **MarketStatusChange** (1005) message is sent for the reopening, and goes back to its scheduled phase. It is communicated to the market by a public **MarketStatusChange** (1005) message.

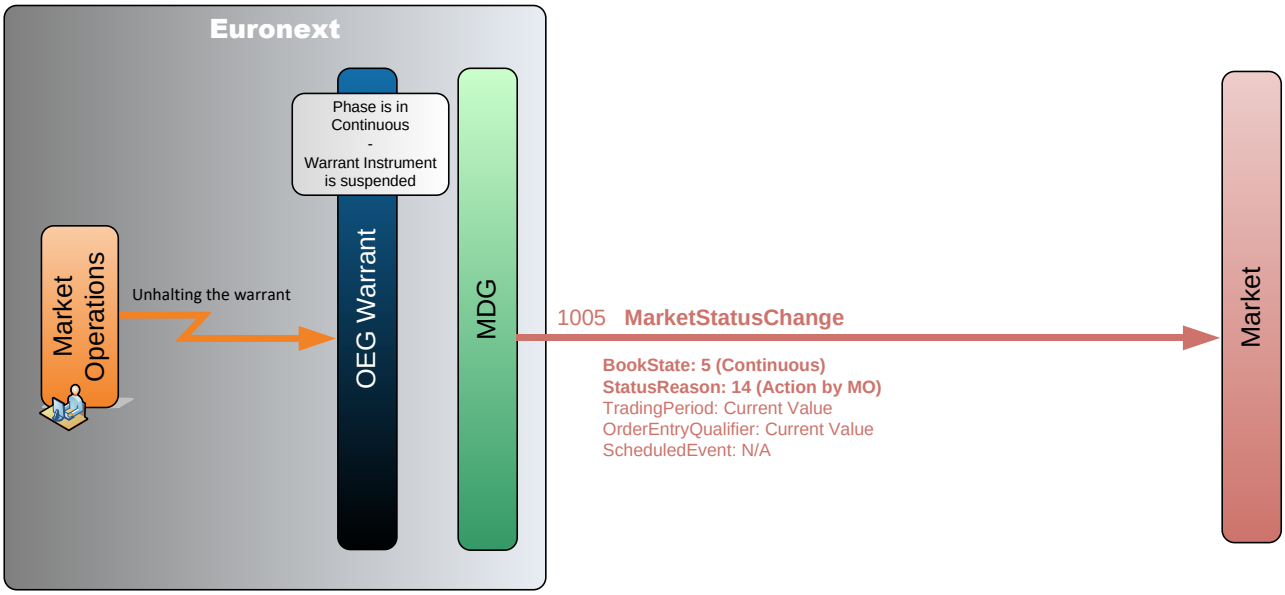
   Then **MarketUpdate** (1001) message is sent to the market to update the limits.

5.2.8 Automatic Knock-Out by Exchange



When the underlying price breaches the deactivation barrier of the warrant instrument, the warrant is automatically Knock-Out. A public **MarketStatusChange** (1005) message is sent to the market to communicate the suspension of the instrument (Status Reason 'Knock-Out by Exchange'). The order entry is set to Cancel Only and LP quotes (if any) are automatically cancelled.

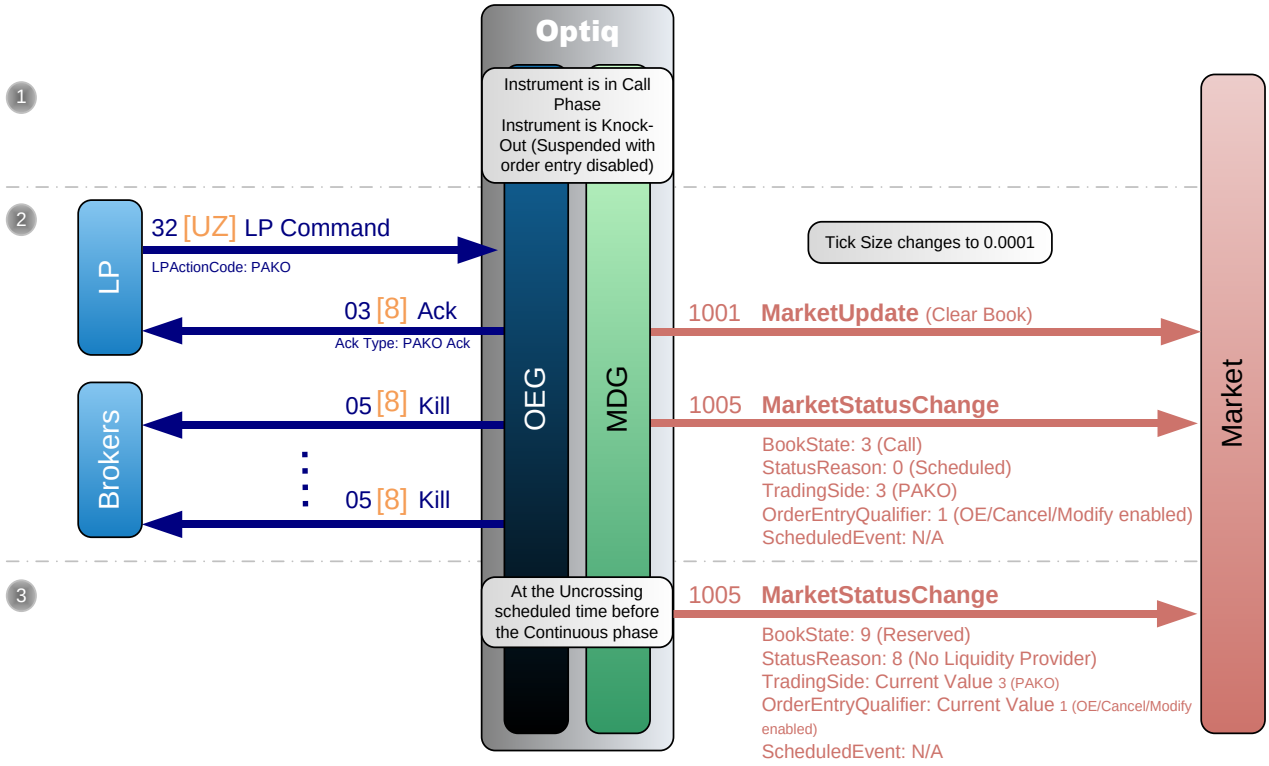
5.2.9 Reactivating a Warrant (Quote Driven Warrant Market Model)



When a warrant erroneously reaches its deactivation barrier by the underlying instrument (e.g. deactivation barrier incorrectly entered at the warrant creation for example), the warrant is automatically suspended with order entry disabled. The warrant must be reauthorized for trading.

Market Operations reopens the warrant, authorizing it to trade again (according to the market phase). A public **MarketStatusChange** (1005) message is sent to inform the market that the warrant has been reopened by Market Operations.

5.2.10 Starting Payment After a Knock-Out Period



1) An instrument has been knocked-out because trading on its underlying has breached the authorized trading barriers and is in a suspended state. The LP wants to start Payment After a Knock-Out period.

2) The Liquidity Provider submits a private **LiquidityProviderCommand** (32) (FIX UZ) message with *Action Code* = PAKO, because he wants to trade back the residual value of this instrument after the knock-out.

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

   Before the beginning of the PAKO period, all resting orders in the order book are killed and the brokers are notified for their killed orders by **Kill** (05) (FIX 8) messages. A **MarketUpdate** (1001) message is sent to the market to clear the order book.

   Then a public **MarketStatusChange** (1005) message is sent to the market for the instrument state change and the beginning of the PAKO period.

3) At the scheduled Uncrossing time as there is no quote from the LP, the instrument is reserved. A public **MarketStatusChange** (1005) message is sent to notify the market that the instrument is reserved.

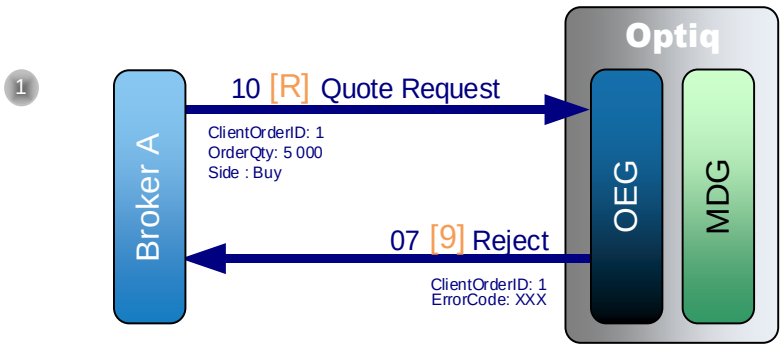
   The kinematic describing the return of the Liquidity Provider to the market is explained in section 5.2.7 Reserved No LP / LP is back.

Note: During the PAKO period, the *TradingSide* remains at '3' (PAKO) and the tick size is forced to 0.0001 but no additional message is sent to the market.

6. RFQ SPECIFIC MESSAGES

6.1 RFQ COMMON KINEMATICS

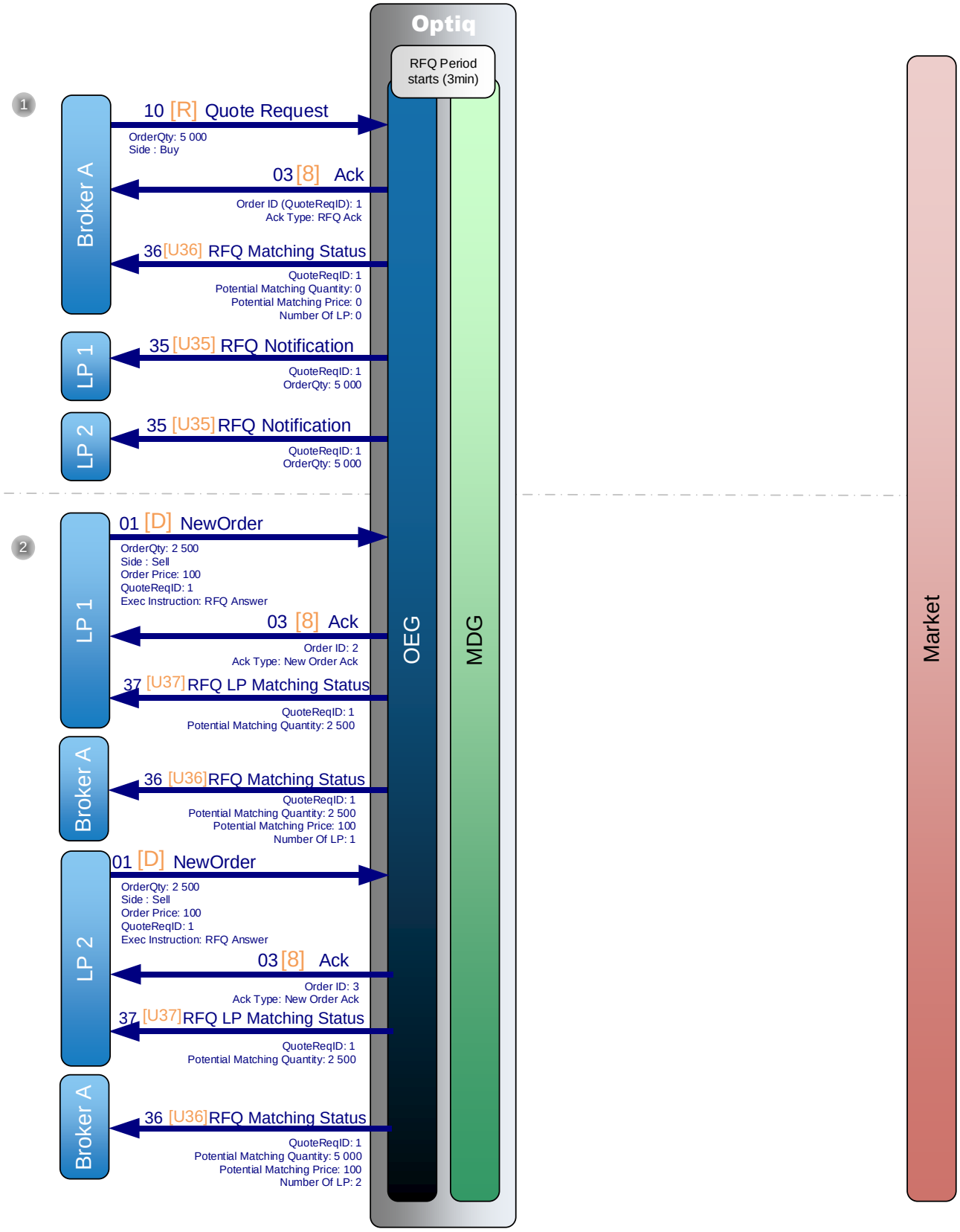
6.1.1 RFQ Rejected



1) A Broker sends a private Quote Request (10) (FIX R) message to broadcast to the concerned LPs a new RFQ order with a quantity of 5,000.

If the request is rejected OEG sends back a private **Reject** (07) (FIX 9) message with an Error Code. The reason of the rejection can be found using the Error Code within the *Error list document*. No message is sent to the Market.

6.1.2 RFQ Expired



1) A Broker sends a private **QuoteRequest** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 5 000. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the *Order ID* will contain the QuoteReqID.

   OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument.

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (potential matching price and potential matching quantity). Potential Matching Price and Quantity are calculated from existing Lit and Dark orders in the Order Book (there is no answer from LP at this stage).

2) LP 1 answers to the RFQ with a NewOrder (01) (FIX D) message with a quantity of 2 500 and a price of 100. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

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

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to Broker A (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*).

   OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity*).

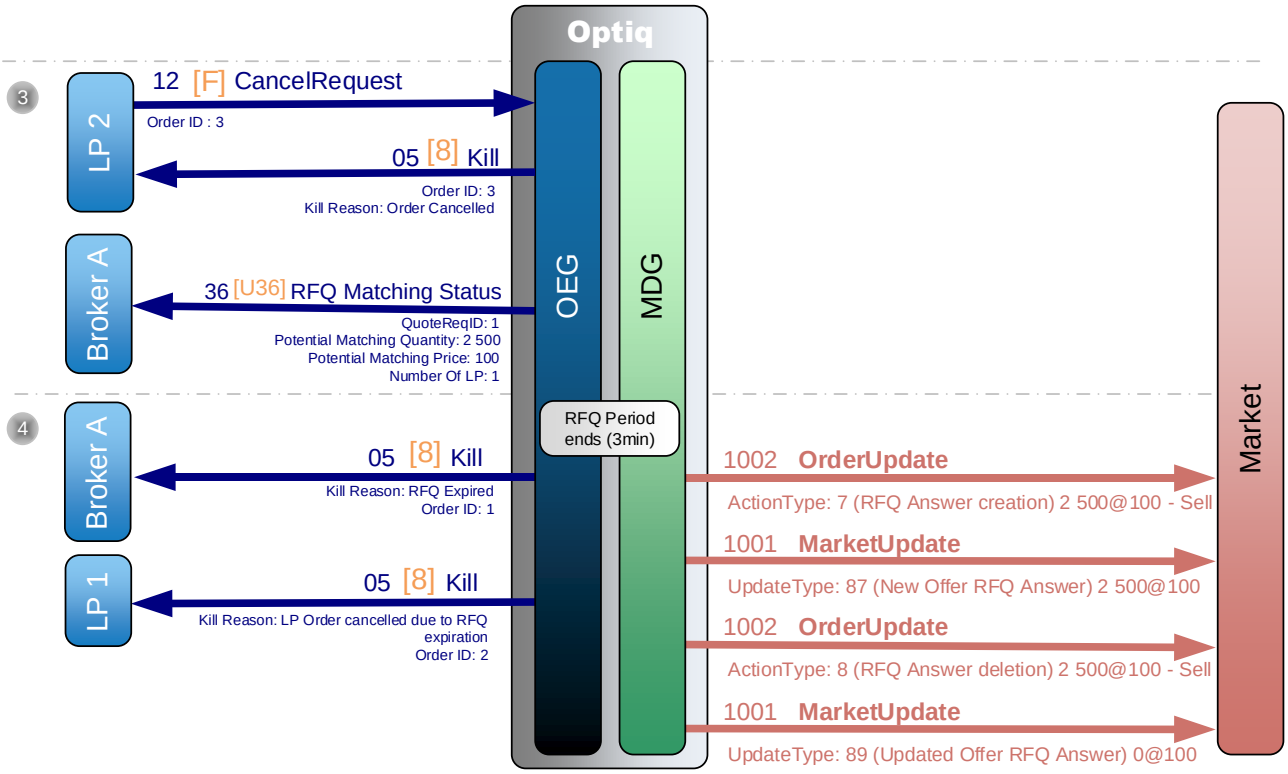
   LP 2 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 2 500 and a price of 100.

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

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to Broker A (RFQ issuer) to update information about the potential matching situation (*potential matching price* and *potential matching quantity*).

   OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to LP2 to give some information about his potential matching situation (*potential matching quantity*).

Note: In this kinematics, RFQ answer from LP2 does not modify the Potential Matching Quantity of LP1. Consequently no **RFQ LP Matching Status** (37) (FIX U37) is sent to LP1.



3) LP2 sends a private CancelRequest (12) (FIX F) message to cancel the previously entered RFQ answer.

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

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to Broker A (RFQ issuer) to update information about the potential matching situation (*potential matching price* and *potential matching quantity*).

4) 180 seconds after the **Quote Request** (10) (FIX R) message has been submitted, the Broker A (RFQ Issuer) did not send a confirmation for his RFQ leading to the expiration of the RFQ.

   OEG sends to Broker A a private **Kill** (05) (FIX 8) message to cancel the RFQ.

   OEG sends to LP1 a private **Kill** (05) (FIX 8) message to cancel the RFQ Answer.

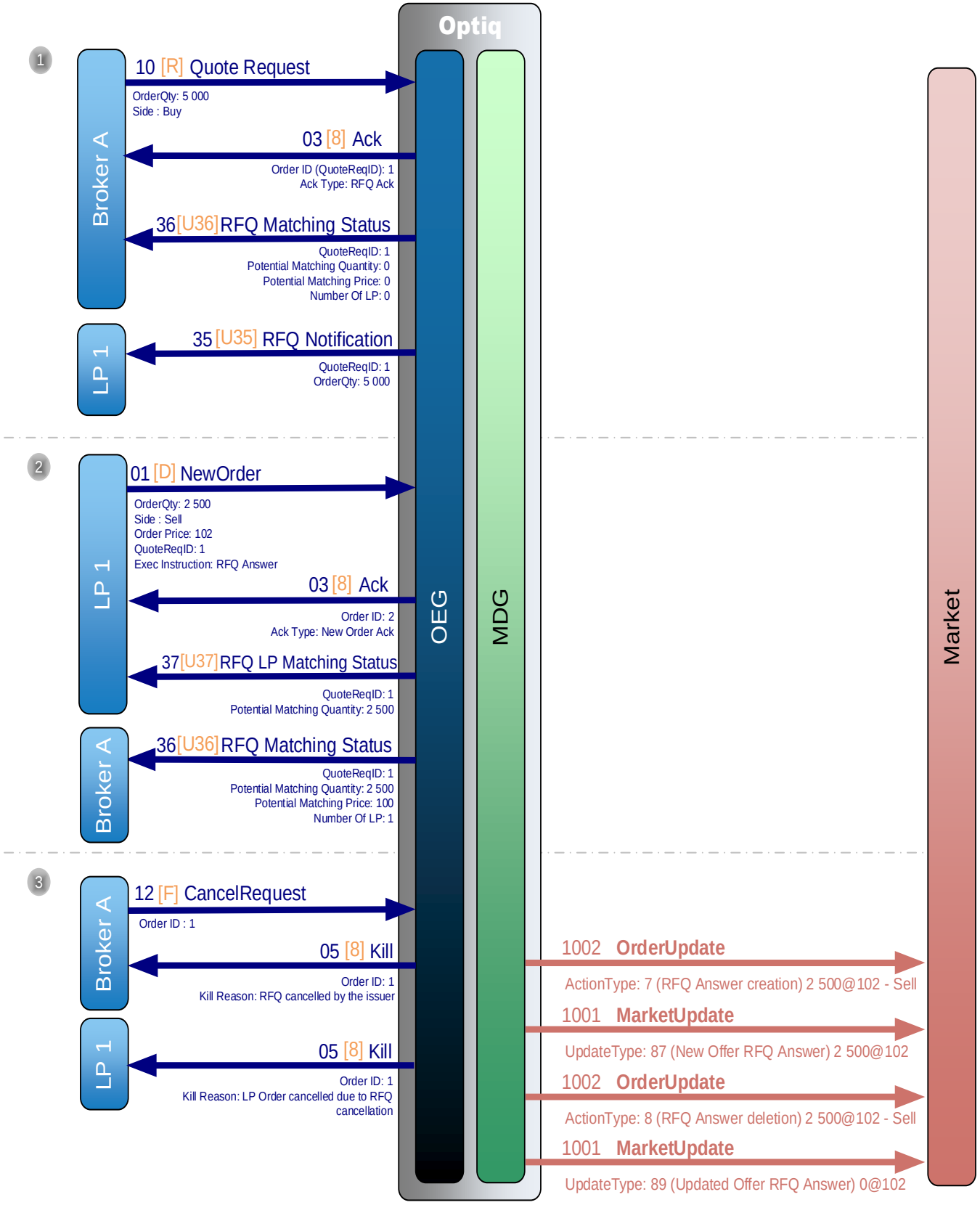
   A public **OrderUpdate** (1002) is sent to the market for RFQ Answer (from LP 1).

   A public **MarketUpdate** (1001) is sent to the market to create new limits for RFQ.

   Then, a public **OrderUpdate** (1002) and a public **MarketUpdate** (1001) are sent to delete all RFQ Answers and clear the RFQ limits.

Note: No public messages for LP2 are broadcasted to the market because only living LP answers are sent to the market.

6.1.3 RFQ Cancelled



1) A Broker sends a private **QuoteRequest** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 5 000.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the *Order ID* will contain the QuoteReqID.

OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (potential matching price and potential matching quantity). Potential Matching Price and Quantity are calculated from existing Lit and Dark orders in the Order Book (there is no answer from LP at this stage).

2) LP 1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 2 500 and a price of 102. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

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

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to Broker A (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*).

   OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity*).

3) Broker A sends a private **CancelRequest** (12) (FIX F) message to cancel the previously entered RFQ.

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

   OEG sends a **Kill** (05) (FIX 8) message to LP 1 to cancel the RFQ Answer due to the cancellation of the RFQ.

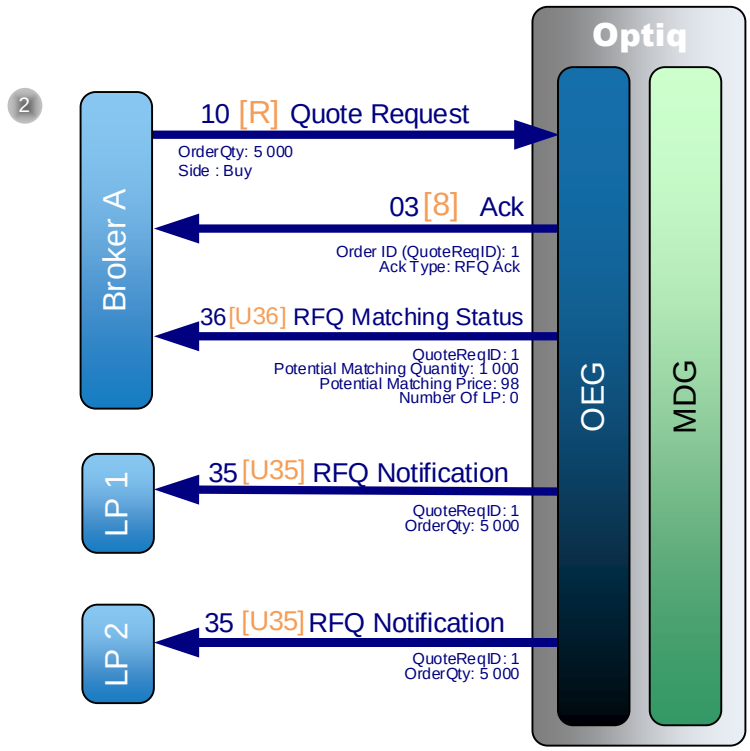
   A public **OrderUpdate** (1002) is sent to the market for RFQ Answer (from LP 1).

   A public **MarketUpdate** (1001) is sent to the market to create new limits for RFQ.

   Then, a public **OrderUpdate** (1002) and a public **MarketUpdate** (1001) are sent to delete all RFQ Answers and clear the RFQ limits.

6.2 RFQ SPECIFIC BEHAVIOUR

6.2.1 RFQ Fully Matched



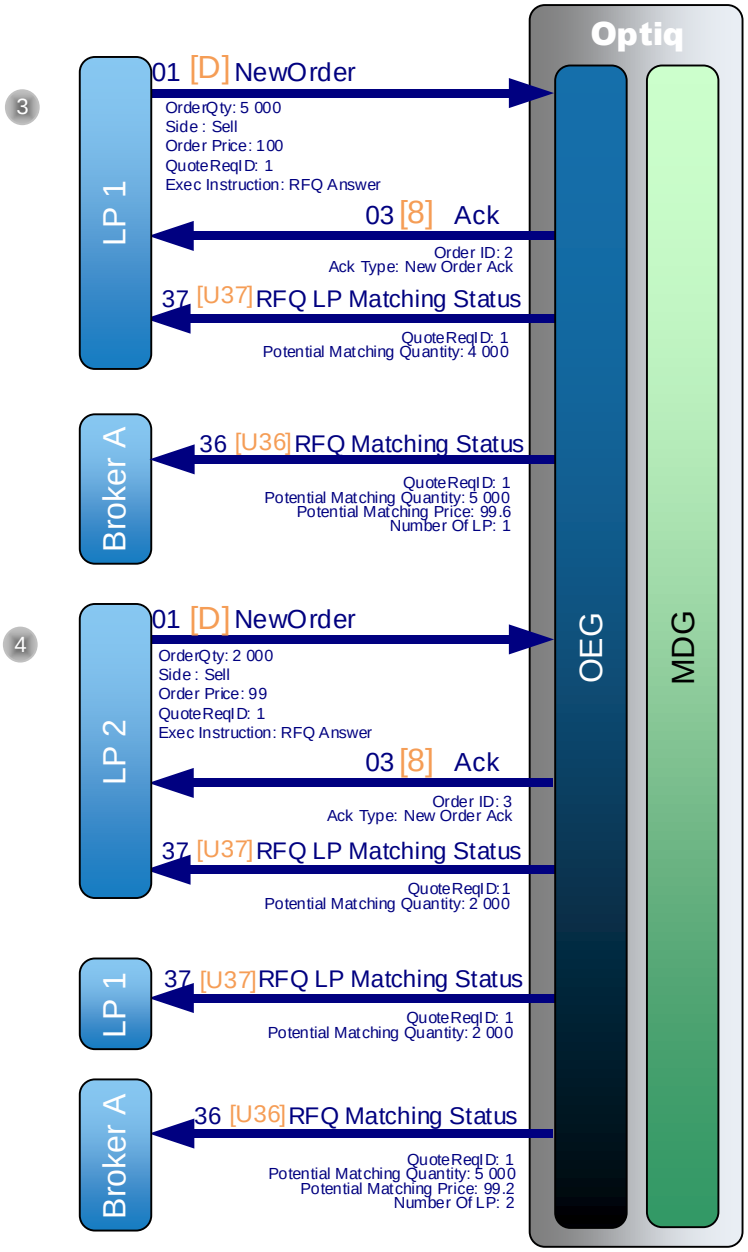
1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 1,000. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

   The order enters the order book without matching and a public **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

2) A Broker sends a private **Quote Request** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 5,000. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the *Order ID* will contain the QuoteReqID.

   OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument.

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (potential matching price and potential matching quantity). Potential Matching Price and Quantity are calculated from existing Lit and Dark orders in the Order Book (there is no answer from LP at this stage).



3) LP 1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 5,000 and a price of 100. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*).

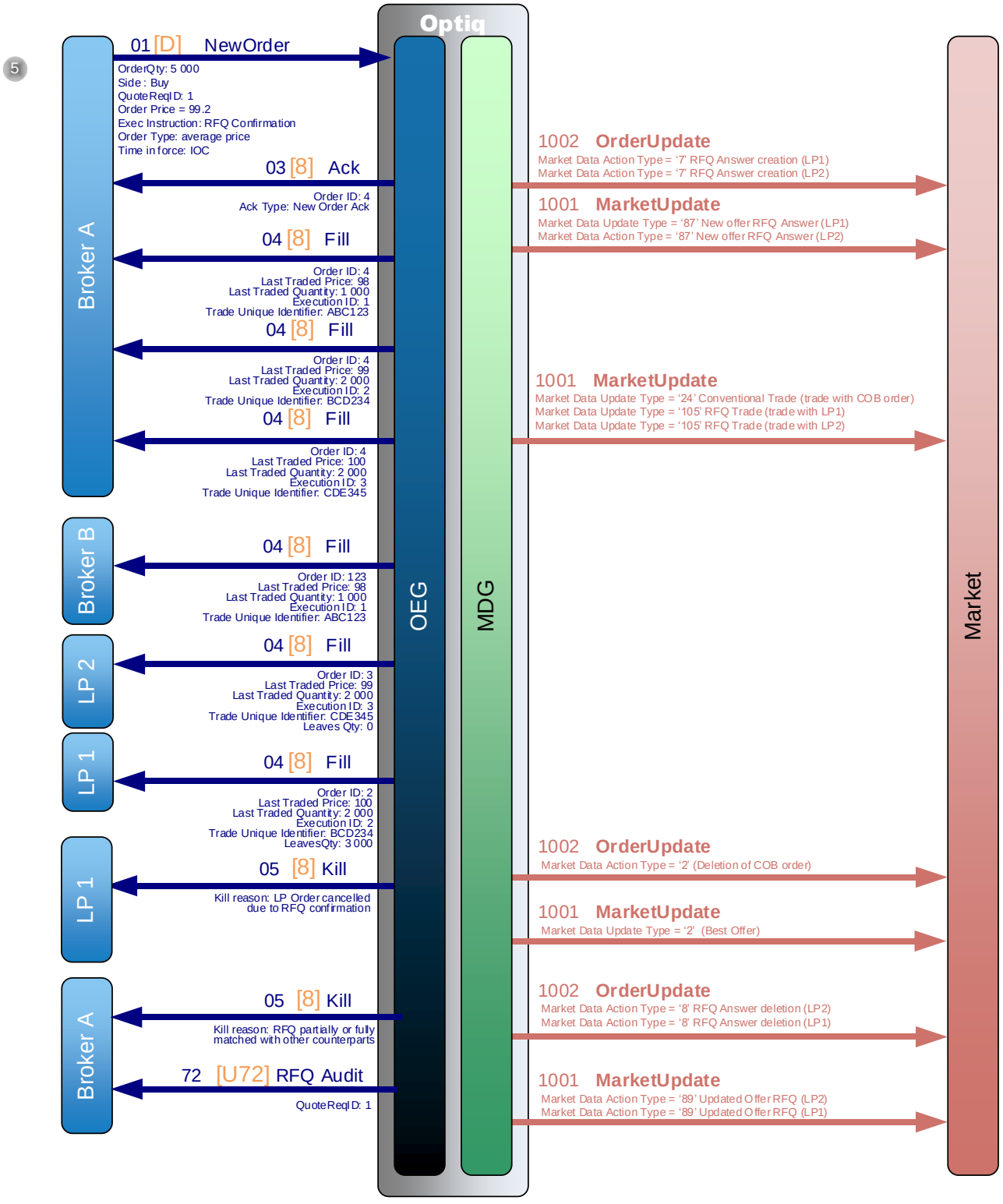
OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity*).

4) LP 2 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 2,000 and a price of 99. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

   It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker A (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*).

   OEG sends two **RFQ LP Matching Status** (37) (FIX U37) to both LPs to give some information about their own potential matching situation (*potential matching quantity*).



5) The broker A (RFQ issuer) confirms the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 5,000 and a price of 99.2.

The new order message Confirmation is sent with an *Order Type* **'***Average price'* and *Time in Force* **'***IOC'***.**

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

The confirmation of the Quote Request through the New Order will trigger the publication of the LPs' answers to the Market.

A public **OrderUpdate** (1002) message is sent to market data to add the order from LP1 and the one from LP2 with a *Market Data Action Type ' 7: RFQ Answer Creation'*.

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

The entering order from the RFQ Issuer matches the order in the book (Order ID 123) for a quantity of 1,000 and OEG sends back a private **Fill** (04) (FIX 8) message to the RFQ issuer and to Broker B.

The entering order from the RFQ Issuer matches LP1's order for a quantity of 2,000 and OEG sends back a private **Fill** (04) (FIX 8) message to the RFQ issuer and to LP2.

The entering order from the RFQ Issuer matches LP2's order for a quantity of 2,000 and OEG sends back a private **Fill** (04) (FIX 8) message to the RFQ issuer and to LP1.

A **Kill** (05) (FIX 8) message is sent to LP1 with a *Kill reason '22: LP Order cancelled due to RFQ confirmation*' because the leaves quantity of LP1 is not null.

A **Kill** (05) (FIX 8) message is sent to Broker A with a *Kill reason 'RFQ partially or fully matched with other counterparts'*. This message is sent to the emitter of the QuoteRequest.

A private **RFQ Audit** (72) (FIX U72) is sent to Broker A with all LP Answers (living at the time the RFQ is confirmed) and COB orders having participated to the RFQ.

A public **MarketUpdate** (1001) message is sent to the market for the trade executed within the COB with *Market Data Update Type '24' (Conventional Trade)* and for both trade executed with the LPs' responses (LP1 & LP2) with *Market Data Update Type '105' (RFQ Trade)*.

A public **OrderUpdate** message is sent to market data to delete the COB order.

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

Another public **OrderUpdate** message is sent to market data to delete both LPs' orders from the RFQ book with *Market Data Action '8: RFQ Answer Deletion'.*

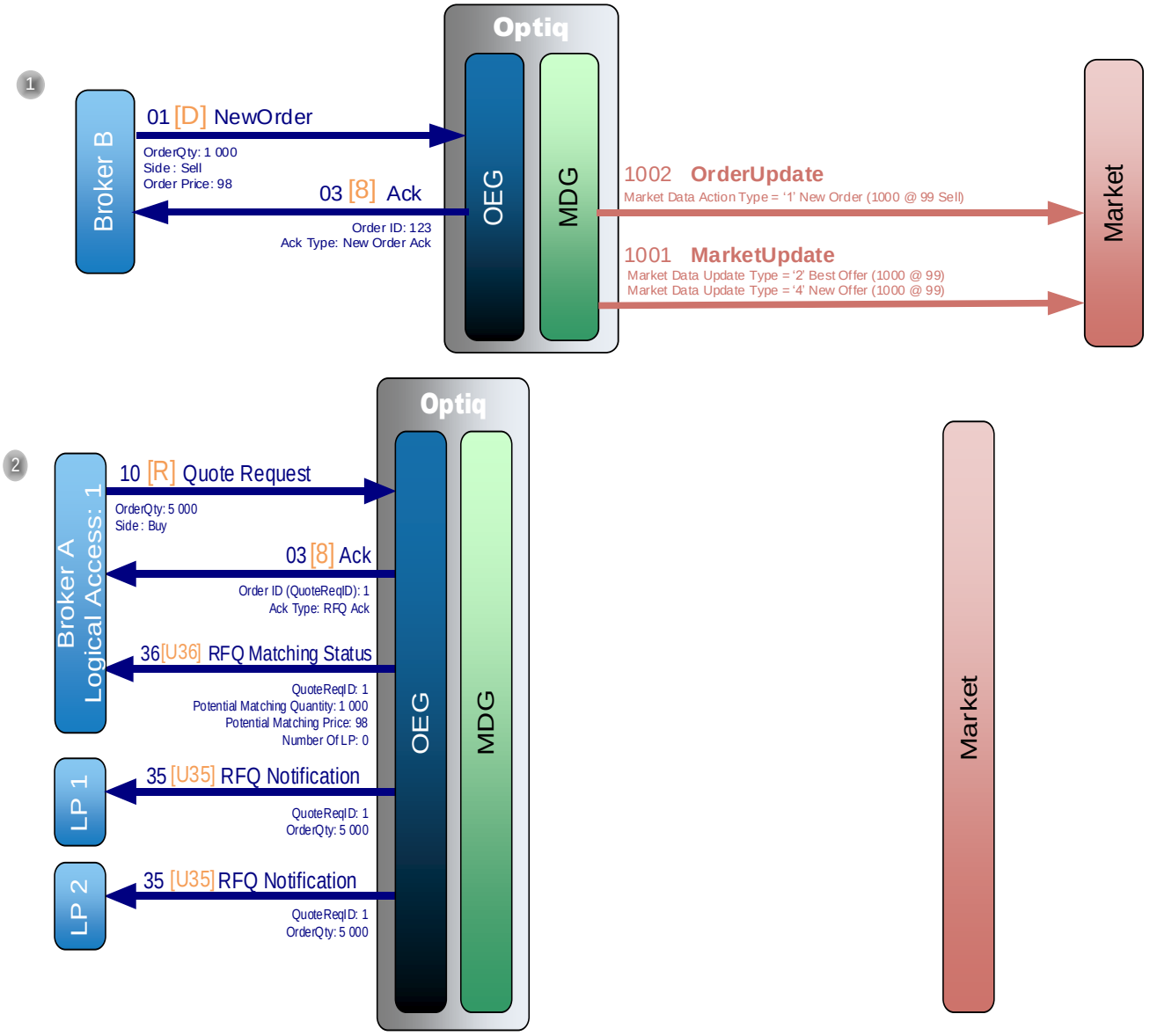
Another **MarketUpdate** (1001) message is sent to the market to update the limits of the RFQ.

Note: Publication to Market Data only occurs when an RFQ Issuer send a **NewOrder** (01) (FIX D) message and that it matches with a/several LP New Order or with Orders in the COB. Before any execution, RFQ are private messages that won't be sent to Market Data.

RFQ Matching Status (36) (FIX U36) is only sent if there is a change in the Potential Matching Price and/or Potential Matching Quantity that was previously sent to the RFQ issuer.

RFQ LP Matching Status (37) (FIX U37) is only sent if there is a change in the Potential Matching Quantity that was previously sent to the LP.

6.2.2 RFQ Partially Matched



1) Broker B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 1 000 and a price of 98. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

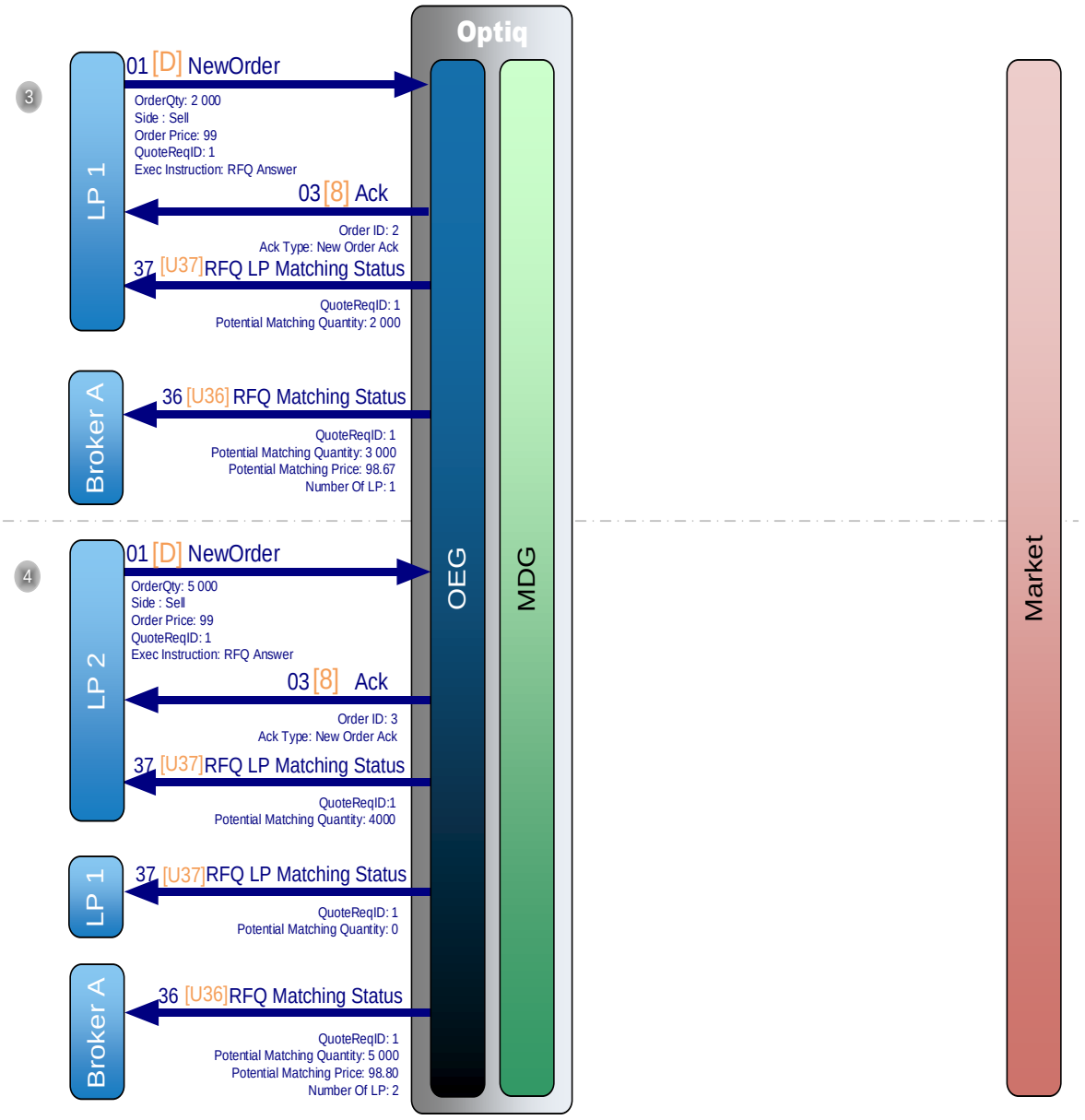
   The order enters the order book without matching and a public **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

2) Broker A from Logical Access 1 sends a private **Quote Request** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 5 000. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the OrderID will contain the QuoteReqID.

   OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument.

   OEG sends two **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (potential matching price and potential matching

quantity). One for the case he chooses Sell side and one for the case he chooses Buy side. Potential Matching Price and Quantity are calculated from existing Lit and Dark orders in the Order Book (there is no answer from LP at this stage).



3) LP 1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 2 000 and a price of 99. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*).

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

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*) on Buy side.

OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity*).

4) LP 2 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 5 000 and a price of 99. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

   It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

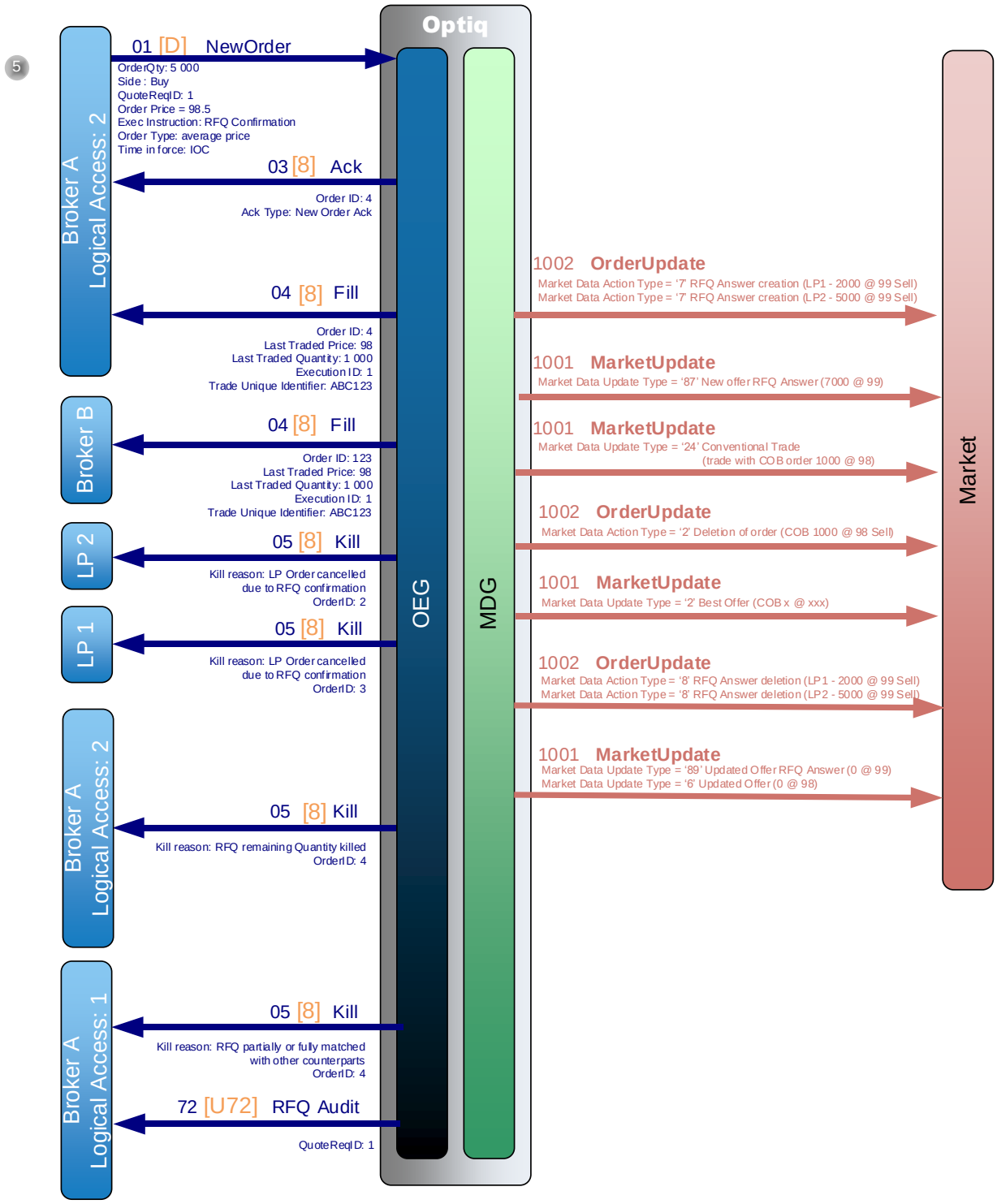
   OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker A (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*) on Sell side with an updated number of LP = 2.

   OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to LP1 & LP2 to give some information about his potential matching situation (*potential matching quantity*).

   At the same price, LP 2 answer (Quantity = 5000) has a best quantity than LP 1 (Quantity = 2000).

   The priority goes to LP 2 answers and OEG sends an **RFQ LP Matching Status** (37) (FIX U37) with a *Potential Matching Quantity* of '4000'.

   OEG will update the information by sending an **RFQ LP Matching Status** (37) (FIX U37) to LP 1 with an update of the *Potential Matching Quantity* of '0' because LP 1 has lost his priority and will not match with the RFQ.



5) The broker A (RFQ issuer) from Logical Access 2 confirms the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 5 000 and a price of 98.5.

The new order message Confirmation is sent with an *Order Type* **'***Average price'* and *Time in Force* **'***IOC'***.**

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

The confirmation of the Quote Request through the New Order will trigger the publication of the LPs' answers to the Market.

A public **OrderUpdate** (1002) message is sent to market data to add the order from LP1 and the one from LP2 with a *Market Data Action Type ' 7: RFQ Answer Creation'*.

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

The entering order from the RFQ Issuer matches with a COB order (from Broker B) for a quantity of 1 000; price of 98 and OEG sends back a private **Fill** (04) (FIX 8) message to the Broker B and to the Broker A.

A public **MarketUpdate** (1001) message is sent to the market for the trade executed with the COB order.

The entering order from the RFQ Issuer will not match with the LPs answers because of the price (99 instead of 98.5 max): there is no trade here, as a consequence there will be no publication in market data of any trade with LPs in this case.

Two private **Kill** (05) (FIX 8) messages are sent to LP 1 & LP 2 with a Kill Reason *'22: LP Order cancelled due to RFQ confirmation'*.

A private **Kill** (05) (FIX 8) message is sent to Broker A from Logical Access 2 with a Kill Reason *'21: RFQ Remaining quantity killed'*.

A private **Kill** (05) (FIX 8) message is sent to the RFQ Issuer to kill the QuoteRequest: Broker A from Logical Access 1 receives the Kill message with a Kill Reason *'13: RFQ partially or fully matched with other counterparts'.*

A private **RFQ Audit** (72) (FIX U72) is sent to Broker A (Logical Access 1) with all LP Answers (living at the time the RFQ is confirmed) and COB orders having participated to the RFQ.

As the *Time in Force* is 'IOC' (Immediate or Cancel), and as all the quantity could not match because of the LP's price, a final private **Kill** (05) (FIX 8) message is sent to the Broker A (RFQ Issuer) with a *Kill Reason '21: RFQ remaining quantity killed'.*

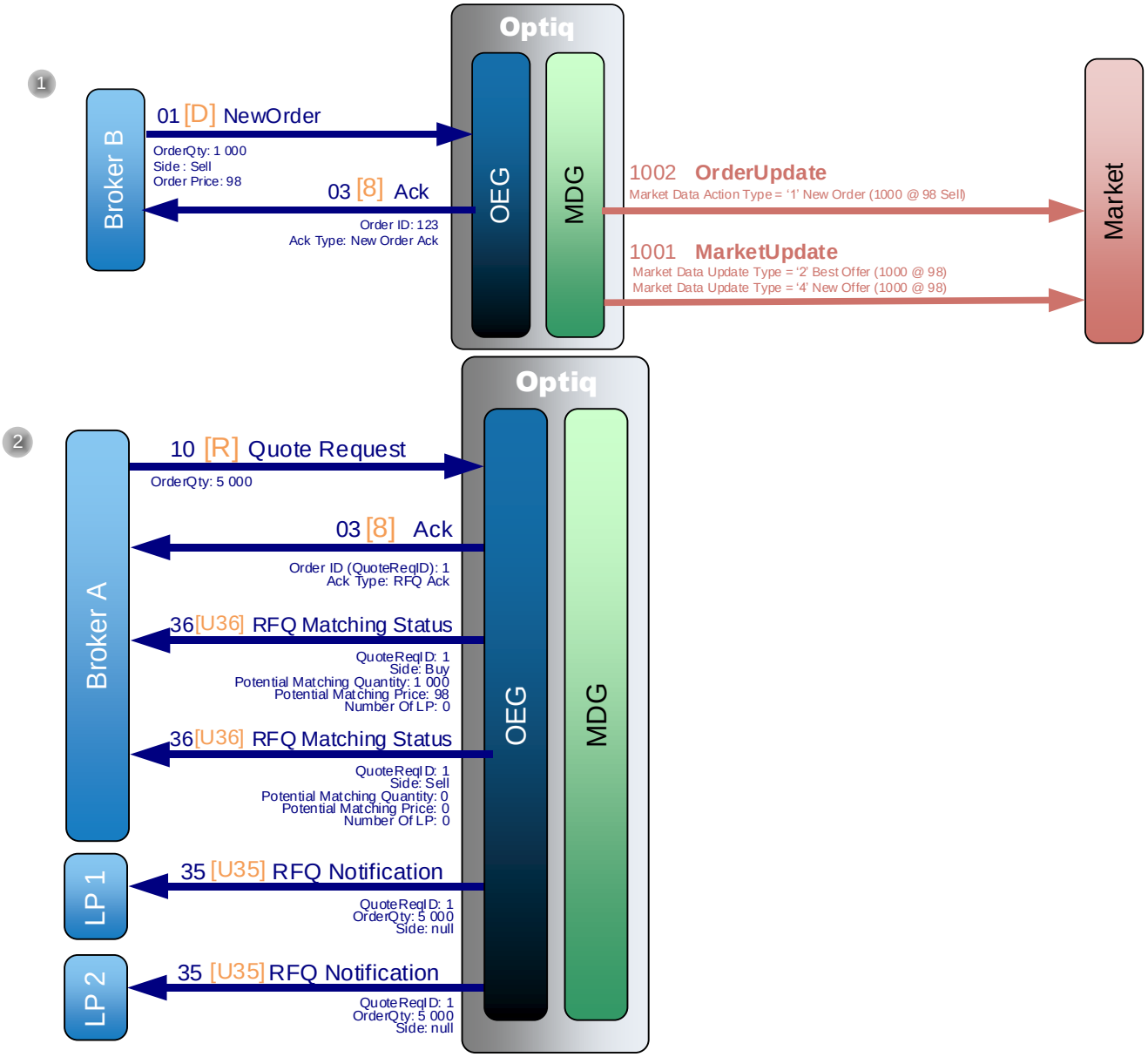
A public **OrderUpdate** (1002) message is sent to market data to delete the COB order from the book.

A public **MarketUpdate** (1001) message is sent to the market to update the Best Offer [because there is a trade with the COB order]

A public **OrderUpdate** (1002) message is sent to market data to delete all LPs' orders from the RFQ book with a *Market Data Action '8: RFQ Answer Deletion'.*

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

6.2.3 RFQ With No Side



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

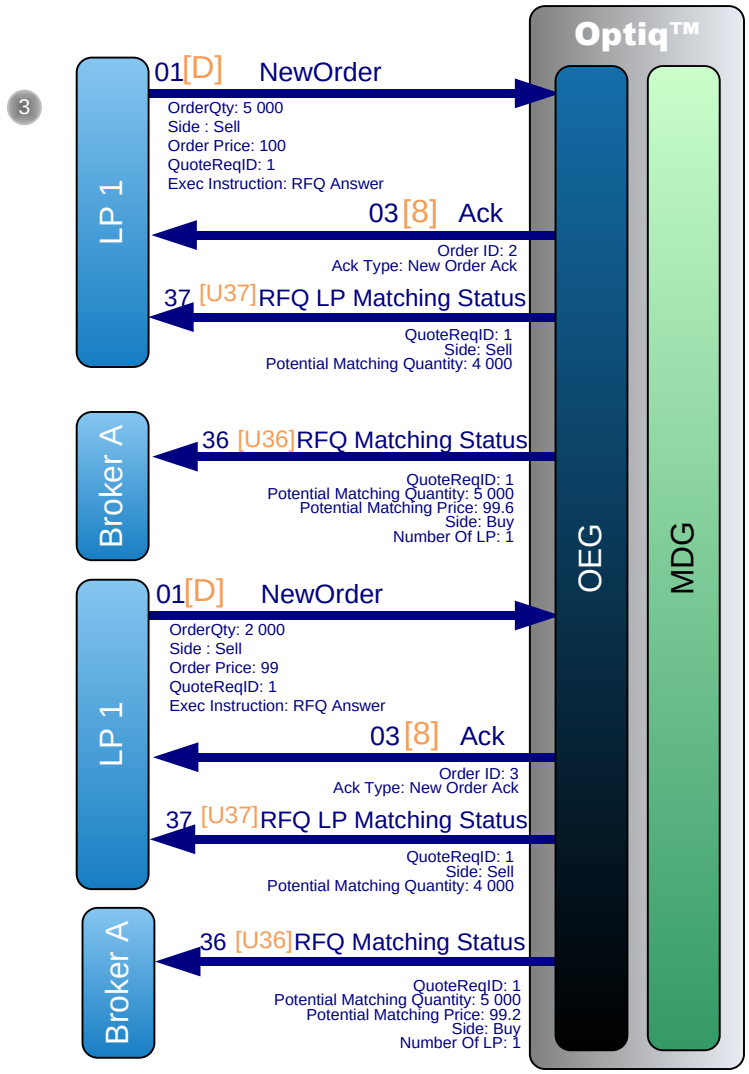
   The order enters the order book without matching and a public **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

2) Broker A sends a private **Quote Request** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 5,000 and no Side is specified.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an 'RFQ Ack', as a consequence the OrderID will contain the QuoteReqID.

   OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument with Side = null. LPs will be able to propose orders for both sides.

OEG sends two **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (potential matching price and potential matching quantity). One for the case he chooses Sell side and one for the case he chooses Buy side. Potential Matching Price and Quantity are calculated from existing Lit and Dark orders in the Order Book (there is no answer from LP at this stage).



3) LP 1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 5,000 and a price of 100. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*) on Buy side.

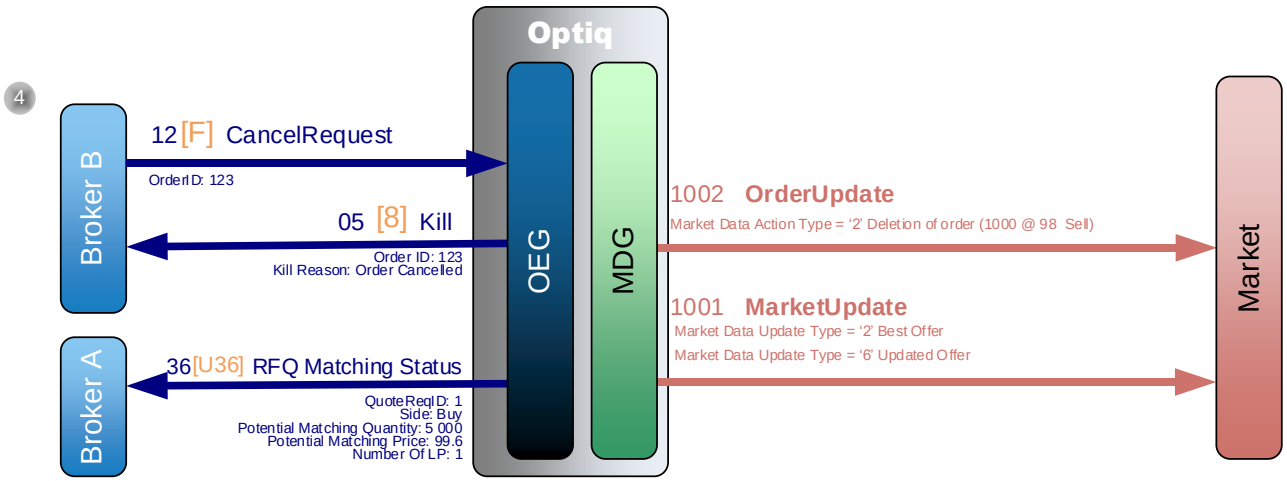
OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity*).

LP 1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 2,000 and a price of 99. This order is identified as an RFQ by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker A (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*) on Sell side.

OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to LP1 to give some information about his potential matching situation (*potential matching quantity*).

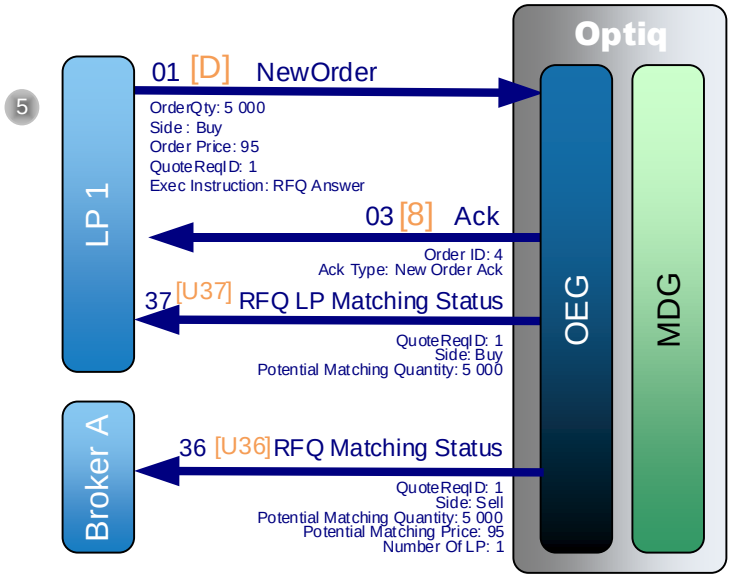


4) Broker B sends a private **CancelRequest** (12) (FIX F) message to cancel his previously entered order.

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

A public **OrderUpdate** (1002) message is sent to the market to remove the Buy, followed by another **MarketUpdate** (1001) message to update the limits.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*) on Buy side.

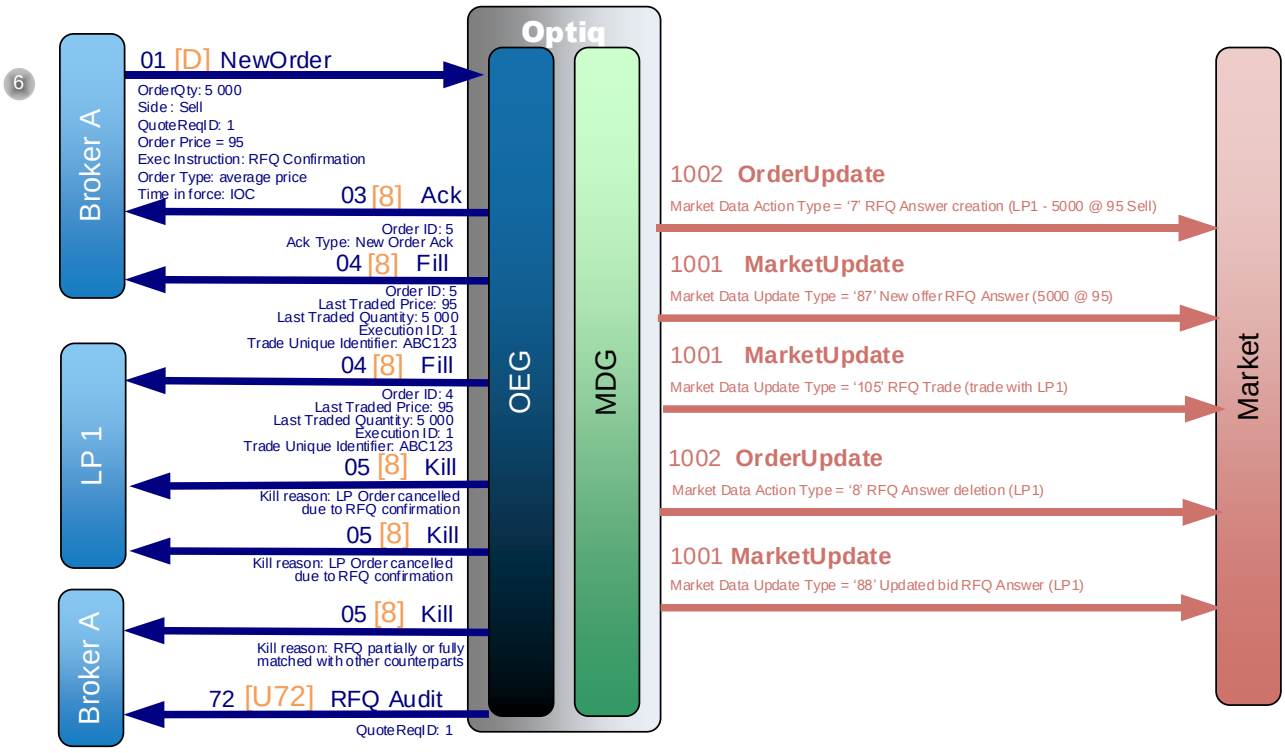


5) LP 1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 5,000 and a price of 95. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (*potential matching price* and *potential matching quantity*) on Sell side.

OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to LP1 to give some information about his potential matching situation (*potential matching quantity*).



6) The broker A (RFQ issuer) confirms the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 5,000 and a price of 95 on Sell side**.**

The new order message Confirmation is sent with an *Order Type '9: Average price'* and *Time in Force 'IOC'***.**

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

The confirmation of the Quote Request through the New Order will trigger the publication of the LPs' answers to the Market.

A public **OrderUpdate** (1002) message is sent to market data to add the order from LP1 and the one from LP2 with a *Market Data Action Type '7: RFQ Answer Creation'*.

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

The entering order from the RFQ Issuer matches LP1's order for a quantity of 5,000 and OEG sends back a private **Fill** (04) (FIX 8) message to the RFQ issuer and to LP1.

A public **MarketUpdate** (1001) message is sent to the market for the trade executed with the LP responses with *Market Data Update Type '105' (RFQ Trade)*.

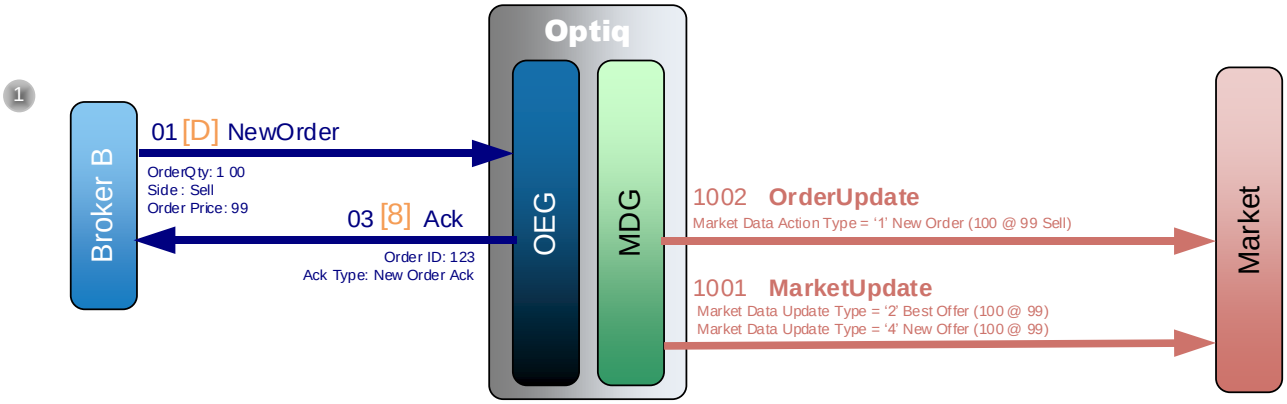
Two private **Kill** (05) (FIX 8) messages are sent to LP1 for the 2 orders (order ID:2 and orderID:3) with a *Kill Reason '22: LP Order cancelled due to RFQ confirmation'*.

A private **Kill** (05) (FIX 8) message is sent to Broker A with a *Kill Reason '13: RFQ partially or fully matched with other counterparts'* to kill the QuoteRequest.

A public **OrderUpdate** (1002) message is sent to market data to delete all LPs' orders from the RFQ book and a public **MarketUpdate** (1001) message is sent to the market to update the limits of the RFQ.

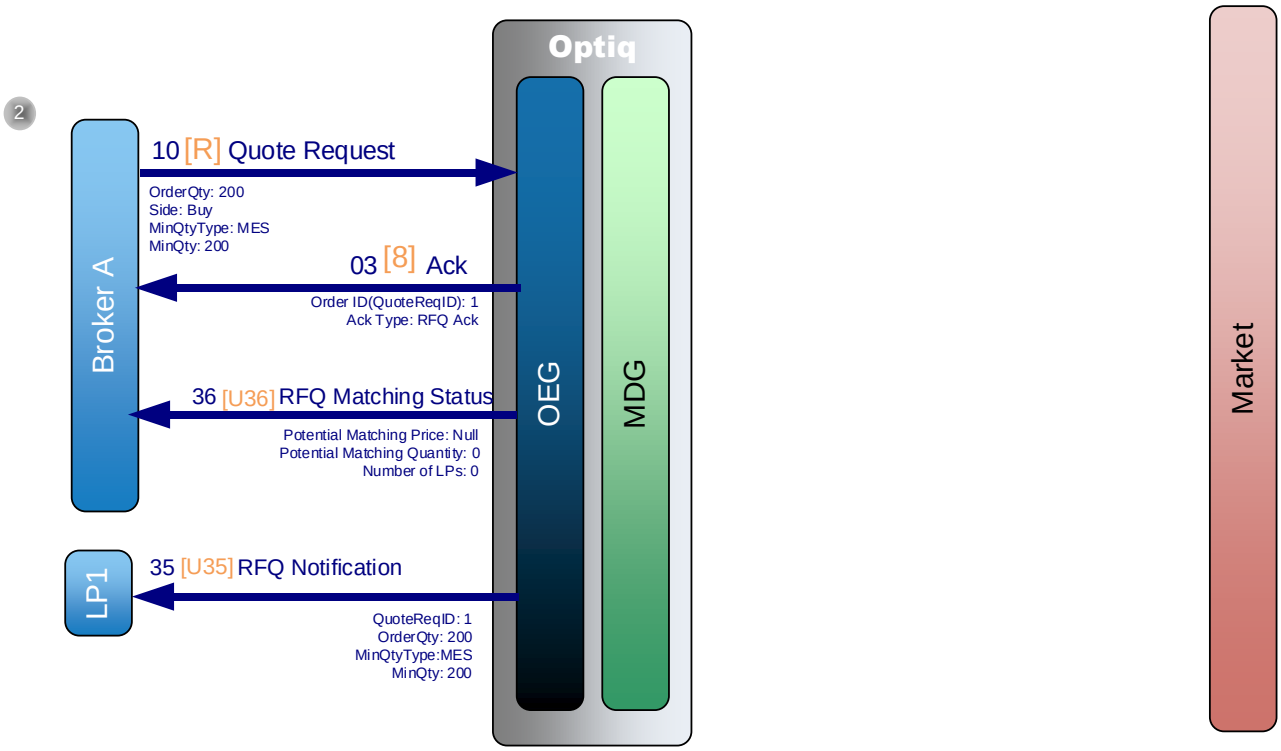
A private **RFQ Audit** (72) (FIX U72) is sent to Broker A with all LP Answers (living at the time the RFQ is confirmed) and COB orders having participated to the RFQ.

6.2.4 RFQ with MES – COB order and RFQ LP answer at the same price



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 200 at price 99. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

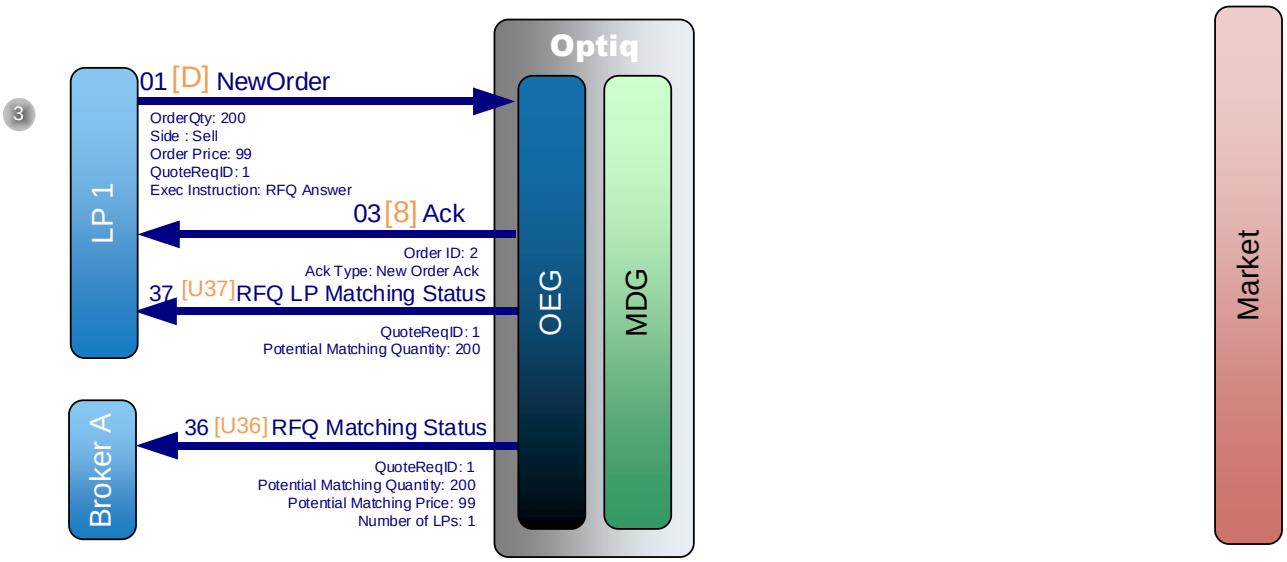
   The order enters the order book without matching and a public **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.



2) A Broker sends a private **Quote Request** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 200 with a Minimum Executable Size (MES) of 200. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the *Order ID* will contain the QuoteReqID.

   OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument with a potential matching quantity of 200 and a Minimum Executable Size (MES) of 200.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation. The potential matching price is null and the potential matching quantity is zero because the MES constraint is not reached.

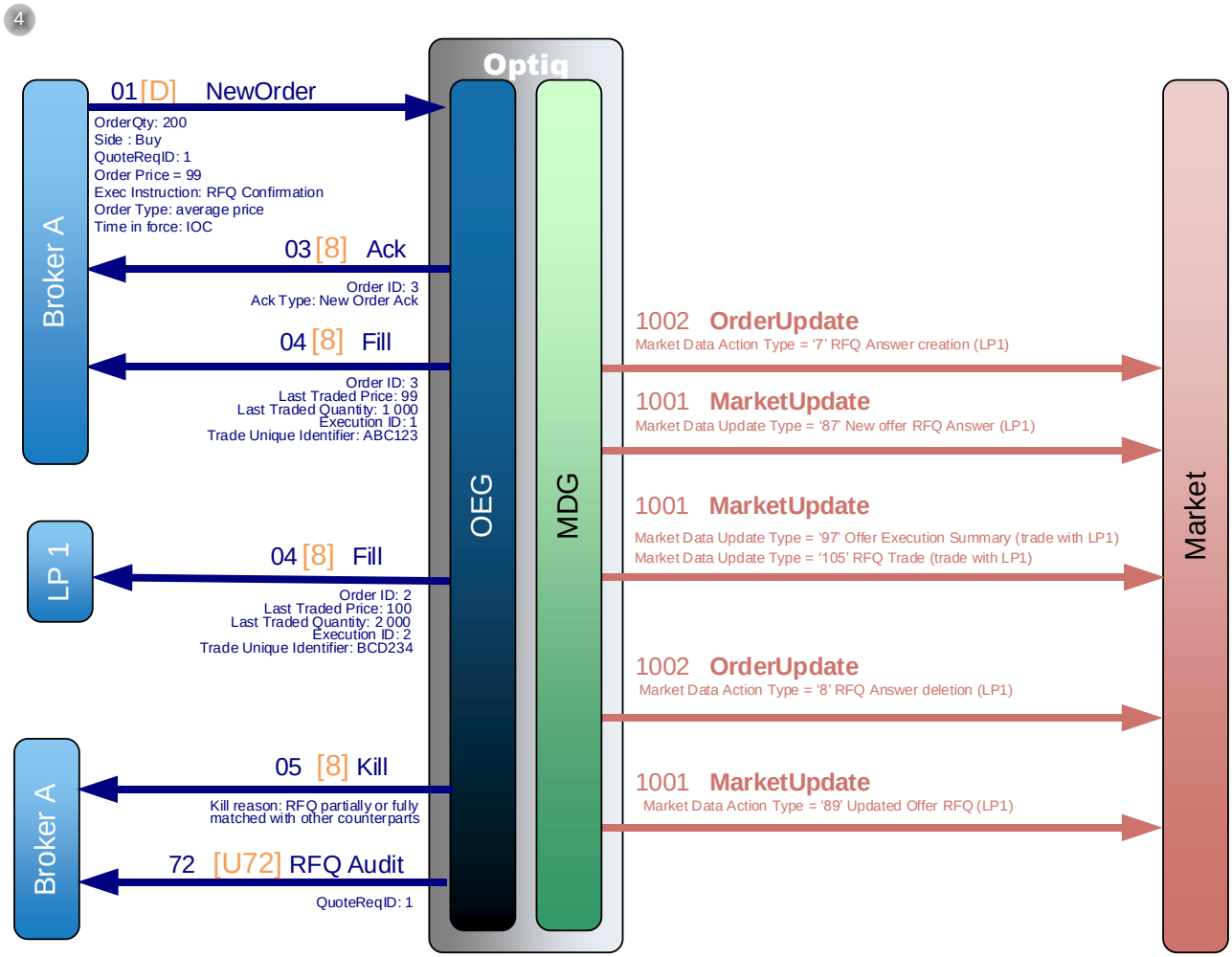


3) LP 1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 200 and a price of 99. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (the potential matching price is 99 and potential matching quantity is 200 and the number of LPs is 1).

OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity*).



4) The broker A (RFQ issuer) confirms the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 200 and a price of 99.

The new order message Confirmation is sent with an *Order Type* **'***Average price'* and *Time in Force* **'***IOC'***.**

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

The confirmation of the Quote Request through the New Order will trigger the publication of the LPs' answers to the Market.

A public **OrderUpdate** (1002) message is sent to market data to add the order from LP1 with a *Market Data Action Type ' 7: RFQ Answer Creation'*.

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

The entering order from the RFQ Issuer matches LP1's order for a quantity of 200 and OEG sends back a private **Fill** (04) (FIX 8) message to the RFQ issuer and to LP1.

A **Kill** (05) (FIX 8) message is sent to Broker A with a *Kill reason 'RFQ partially or fully matched with other counterparts'*. This message is sent to the emitter of the QuoteRequest.

A private **RFQ Audit** (72) (FIX U72) is sent to Broker A with all LP Answers (living at the time the RFQ is confirmed) and COB orders having participated to the RFQ.

A public **MarketUpdate** (1001) message is sent to the market for the trade executed with the LPs' response (LP1) with *Market Data Update Type '105' (RFQ Trade)*.

A public **OrderUpdate** message is sent to market data to delete LP1 order with *Market Data Action '8: RFQ Answer Deletion'.*

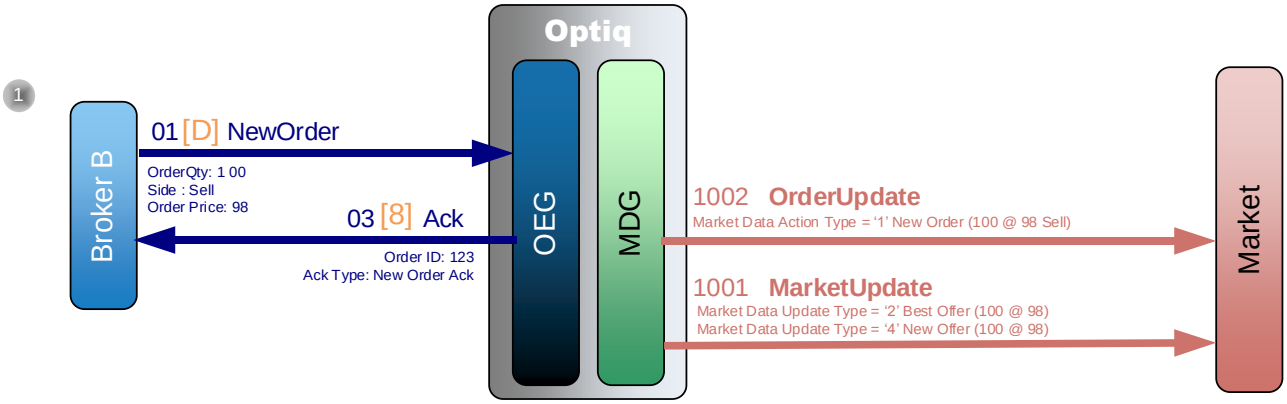
A public **MarketUpdate** (1001) message is sent to the market to update the limits of the RFQ.

Note: Publication to Market Data only occurs when an RFQ Issuer send a **NewOrder** (01) (FIX D) message and that it matches with a/several LP New Order or with Orders in the COB. Before any execution, RFQ are private messages that won't be sent to Market Data.

RFQ Matching Status (36) (FIX U36) is only sent if there is a change in the Potential Matching Price and/or Potential Matching Quantity that was previously sent to the RFQ issuer.

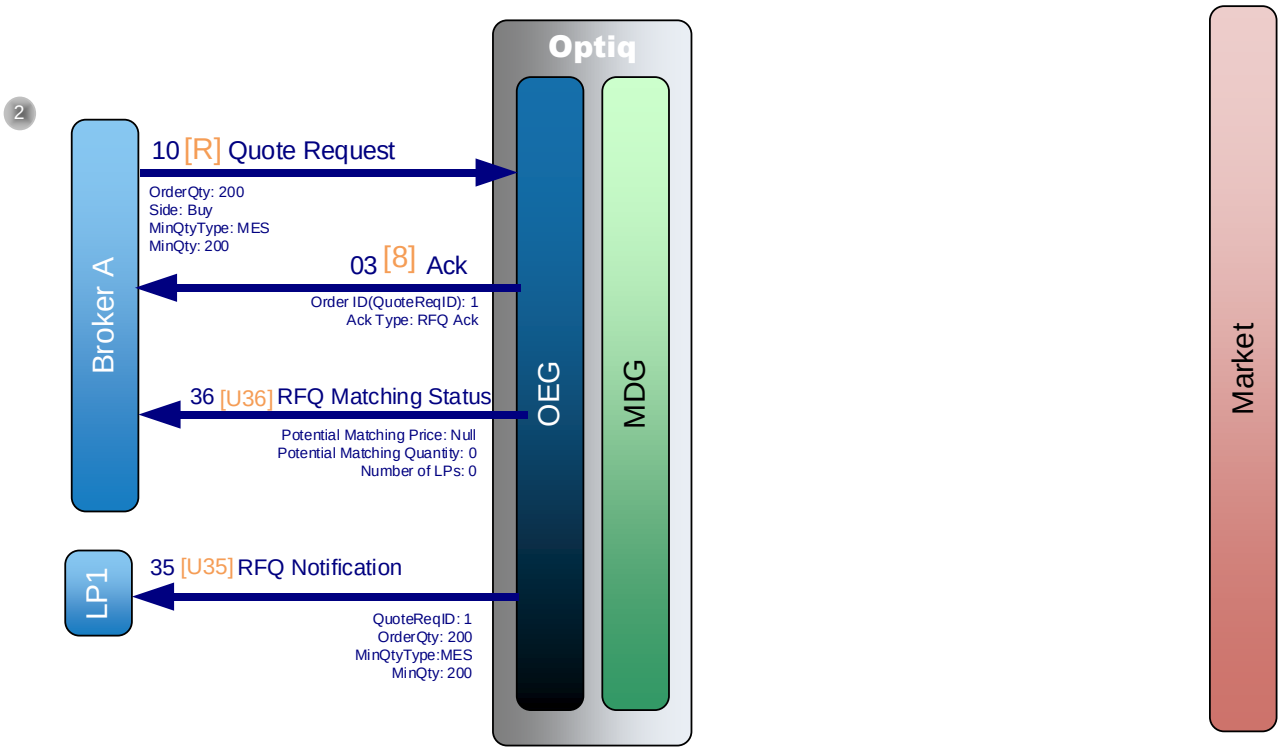
RFQ LP Matching Status (37) (FIX U37) is only sent if there is a change in the Potential Matching Quantity that was previously sent to the LP.

6.2.5 RFQ with MES – COB order at a better price than RFQ LP answer



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 100 at price 98. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

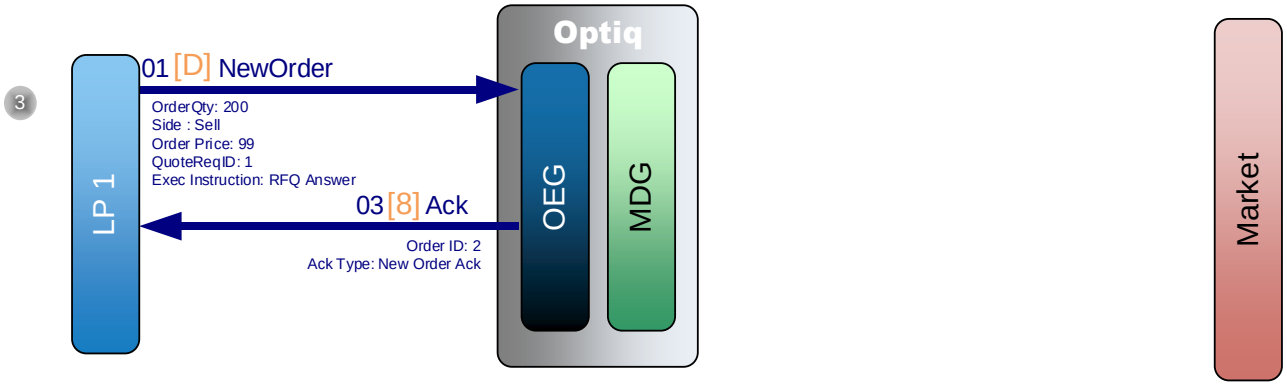
   The order enters the order book without matching and a public **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.



2) A Broker sends a private **Quote Request** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 200 with a Minimum Executable Size (MES) of 200. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the *Order ID* will contain the QuoteReqID.

   OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument with a potential matching quantity of 200 and a Minimum Executable Size (MES) of 200.

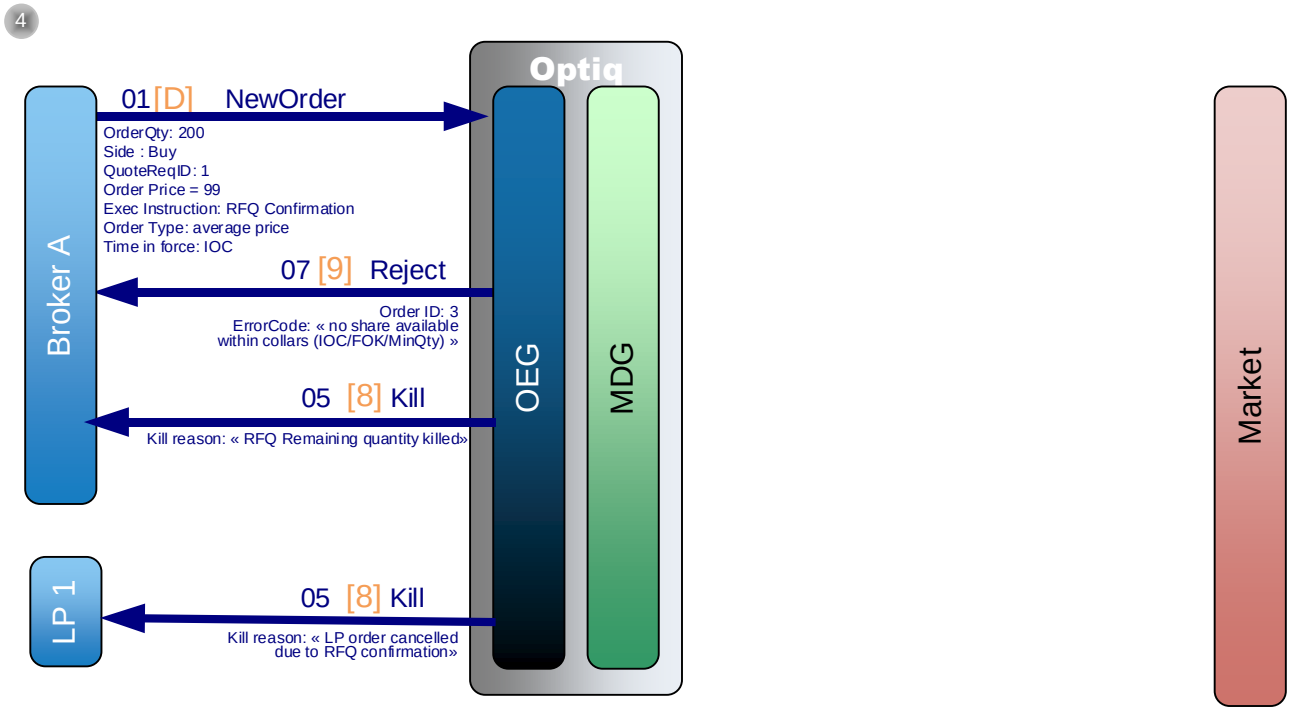
OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation. The potential matching price is null and the potential matching quantity is zero because the MES constraint is not reached.



3) LP1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 200 and a price of 99. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

As the order at price 98 already present in the book can't be skipped, OEG **does not** sent an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) neither an **RFQ LP Matching Status** (37) (FIX U37) to LP1.



4) The broker A (RFQ issuer) nevertheless tries to confirms its RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 200 and a price of 99.

The new order message Confirmation is sent with an *Order Type* **'***Average price'* and *Time in Force* **'***IOC'***.**

OEG sends back a private **Reject** (07) (FIX 8) message with an Error Code (no share available within collars (IOC/FOK/MinQty)). The reason of the rejection can be found using the Error Code within the *Error list document*. No message is sent to the Market.

A **Kill** (05) (FIX 8) message is sent to Broker A with a *Kill reason 'RFQ remaining quantity killed'*. This message is sent to the issuer of the QuoteRequest.

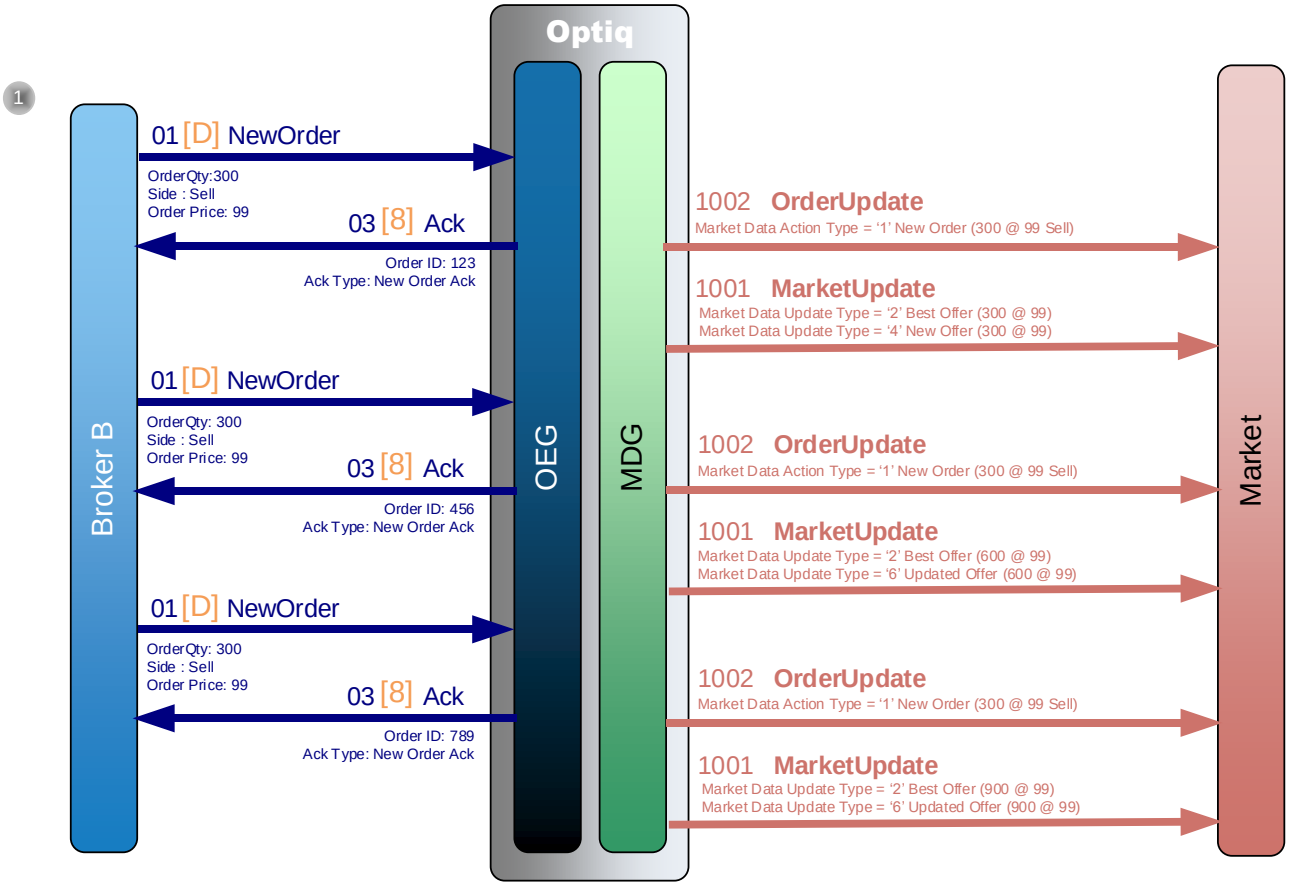
A **Kill** (05) (FIX 8) message is sent to LP1 with a *Kill reason 'RFQ partially or fully matched with other counterparts'*.

Note: Publication to Market Data only occurs when an RFQ Issuer send a **NewOrder** (01) (FIX D) message and that it matches with a/several LP New Order or with Orders in the COB. Before any execution, RFQ are private messages that won't be sent to Market Data.

RFQ Matching Status (36) (FIX U36) is only sent if there is a change in the Potential Matching Price and/or Potential Matching Quantity that was previously sent to the RFQ issuer.

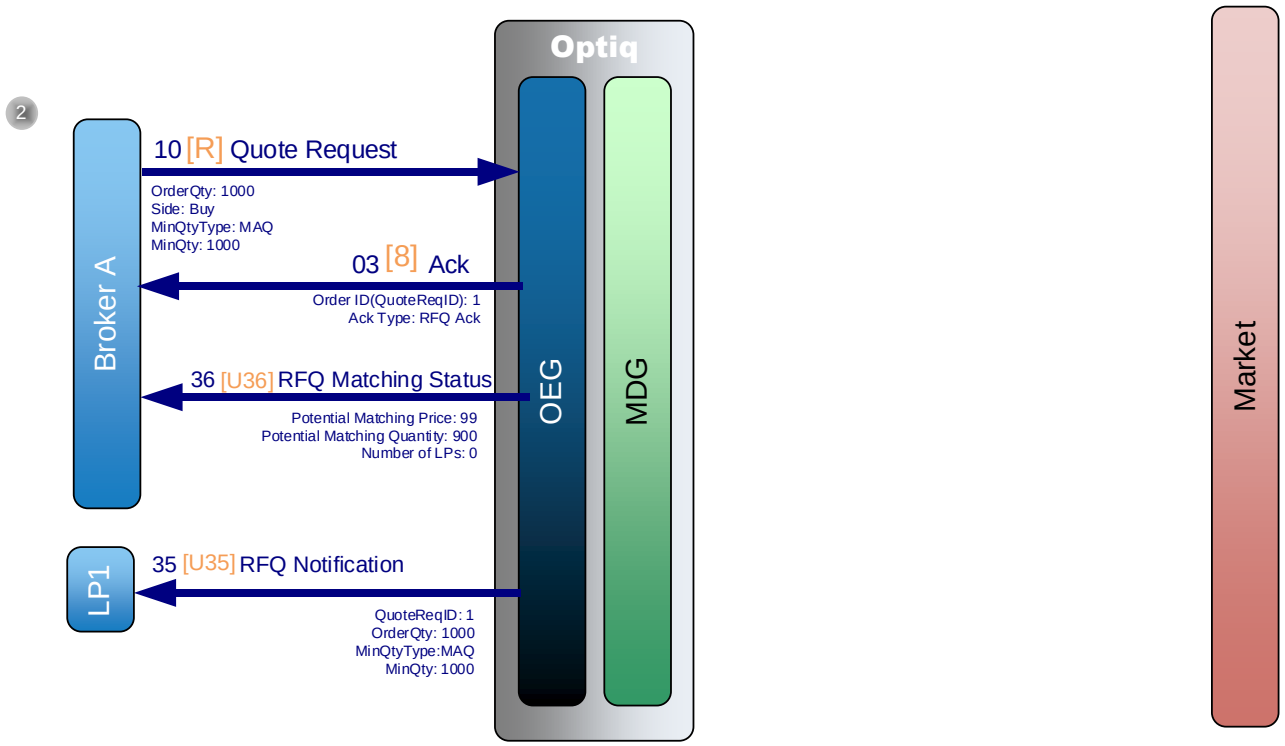
RFQ LP Matching Status (37) (FIX U37) is only sent if there is a change in the Potential Matching Quantity that was previously sent to the LP.

6.2.6 RFQ with MAQ – COB order and RFQ LP answer at the same price



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter three new sell orders with a quantity of 300 at price 99. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the three orders.

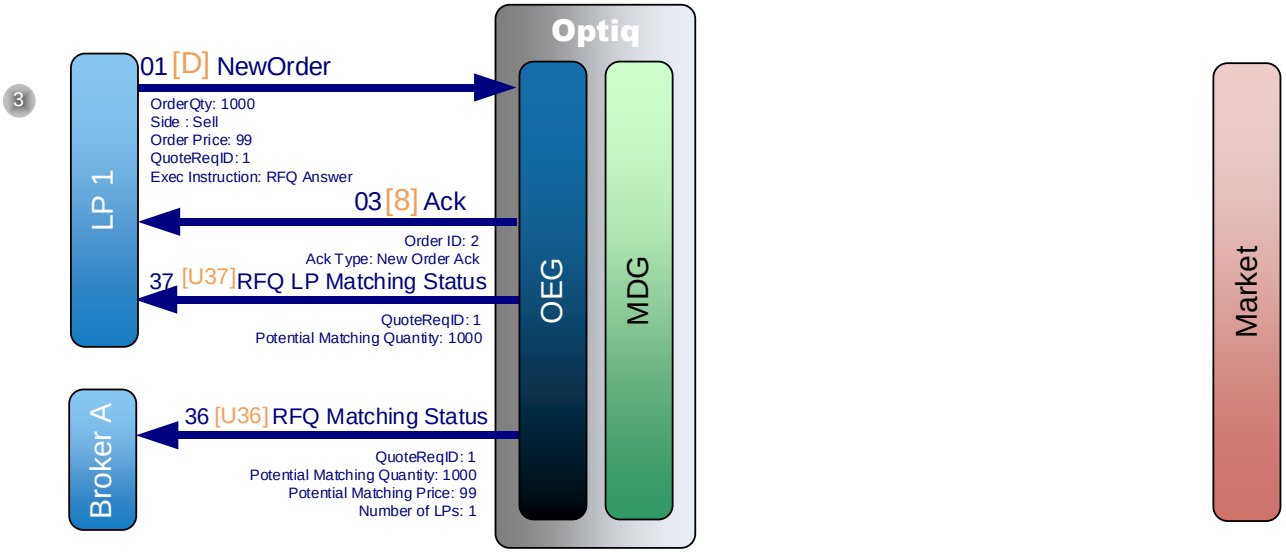
   Each of the three order enters the order book without matching and a public **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.



2) A Broker sends a private **Quote Request** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 1,000 with a Minimum Acceptable Quantity (MAQ) of 1,000. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the *Order ID* will contain the QuoteReqID.

OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument with a potential matching quantity of 1,000 and a Minimum Acceptable Quantity (MAQ) of 1,000.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation. The potential matching price is equal to 99, the potential matching quantity is 900, and the number of LPs is zero.

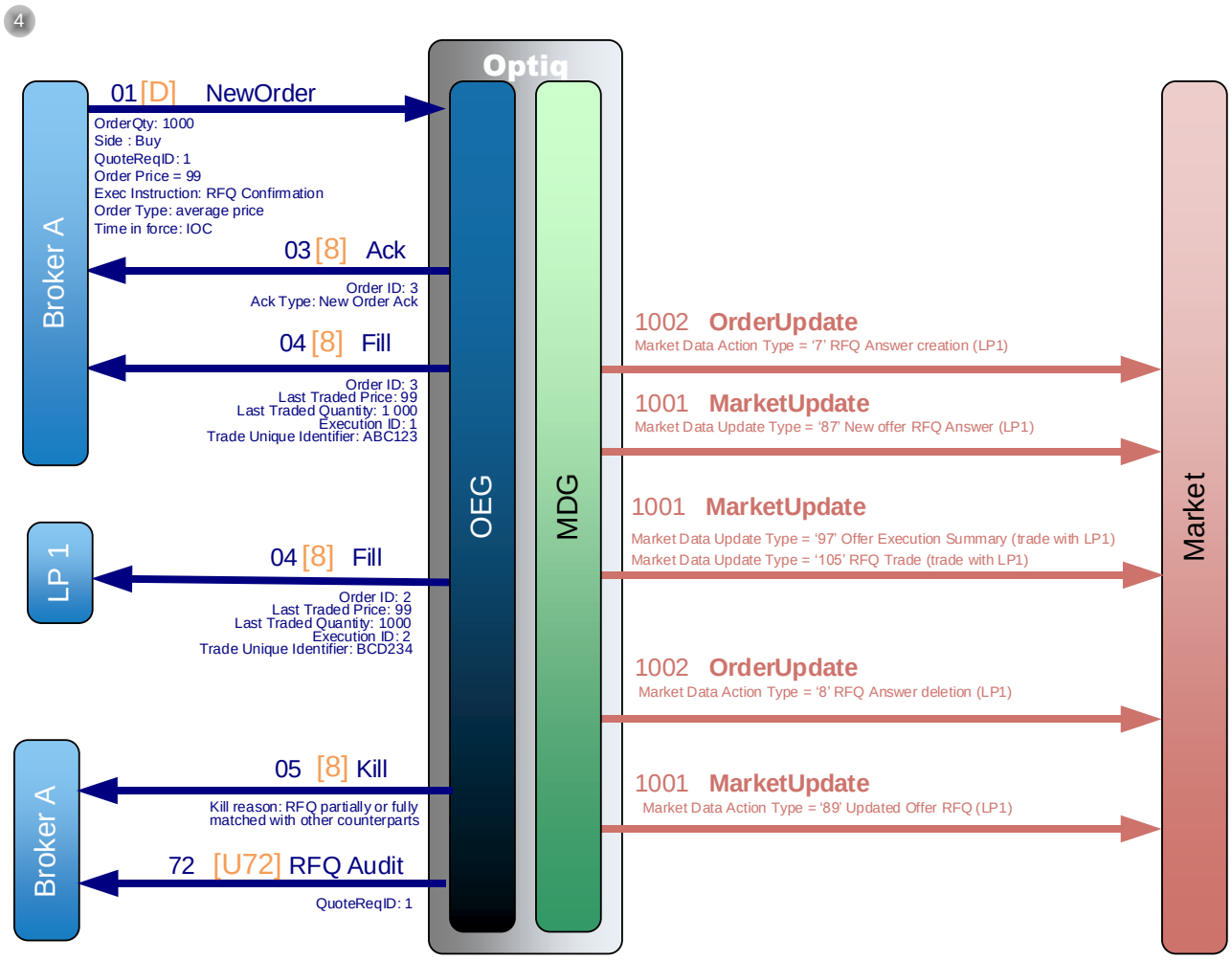


3) LP1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 1,000 and a price of 99. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (the potential matching price is 99 and potential matching quantity is 1,000, the number of LPs is 1).

OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity*).



4) The broker A (RFQ issuer) confirms the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 1,000 and a price of 99.

The new order message Confirmation is sent with an *Order Type* **'***Average price'* and *Time in Force* **'***IOC'***.**

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

The confirmation of the Quote Request through the New Order will trigger the publication of the LPs' answers to the Market.

A public **OrderUpdate** (1002) message is sent to market data to add the order from LP1 with a *Market Data Action Type ' 7: RFQ Answer Creation'*.

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

The entering order from the RFQ Issuer matches LP1's order for a quantity of 1,000 and OEG sends back a private **Fill** (04) (FIX 8) message to the RFQ issuer and to LP1.

A **Kill** (05) (FIX 8) message is sent to Broker A with a *Kill reason 'RFQ partially or fully matched with other counterparts'*. This message is sent to the emitter of the QuoteRequest.

A private **RFQ Audit** (72) (FIX U72) is sent to Broker A with all LP Answers (living at the time the RFQ is confirmed) and COB orders having participated to the RFQ.

A public **MarketUpdate** (1001) message is sent to the market for the trade executed with the LPs' response (LP1) with *Market Data Update Type '105' (RFQ Trade)*.

A public **OrderUpdate** message is sent to market data to delete LP1's order with *Market Data Action '8: RFQ Answer Deletion'.*

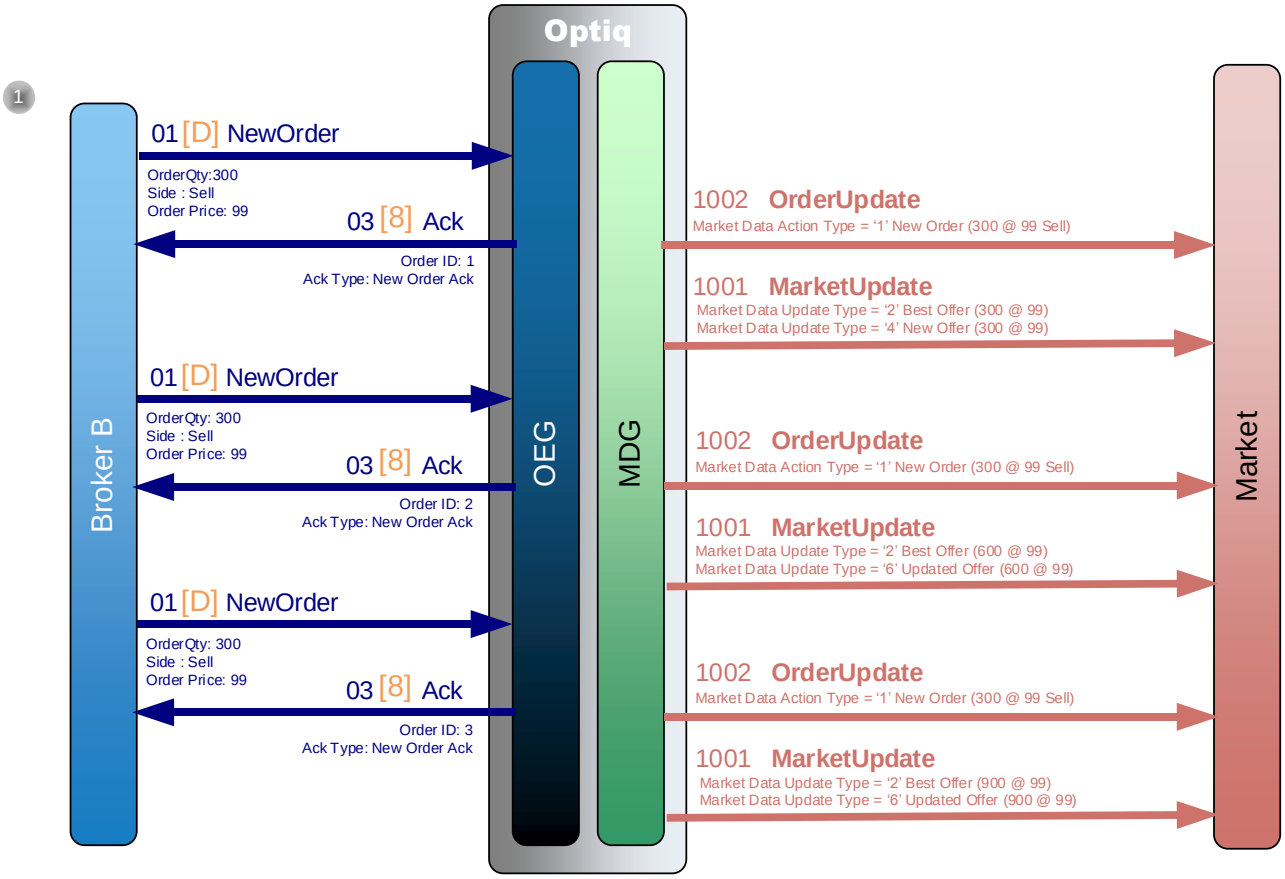
Another **MarketUpdate** (1001) message is sent to the market to update the limits of the RFQ.

Note: Publication to Market Data only occurs when an RFQ Issuer send a **NewOrder** (01) (FIX D) message and that it matches with a/several LP New Order or with Orders in the COB. Before any execution, RFQ are private messages that won't be sent to Market Data.

RFQ Matching Status (36) (FIX U36) is only sent if there is a change in the Potential Matching Price and/or Potential Matching Quantity that was previously sent to the RFQ issuer.

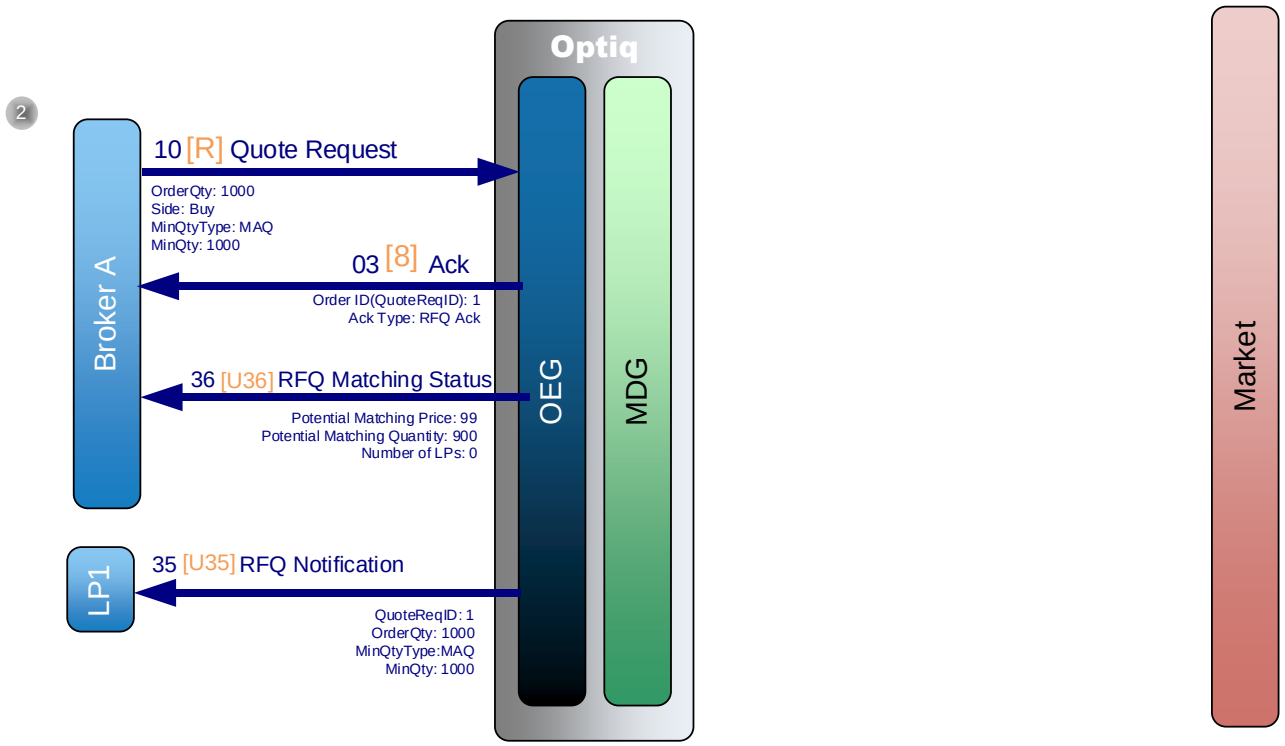
RFQ LP Matching Status (37) (FIX U37) is only sent if there is a change in the Potential Matching Quantity that was previously sent to the LP.

6.2.7 RFQ with MAQ – COB order at a better price than RFQ LP answer



1) A Broker sends a private **NewOrder** (01) (FIX D) message to enter three new sell orders with a quantity of 300 at price 99. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the three orders.

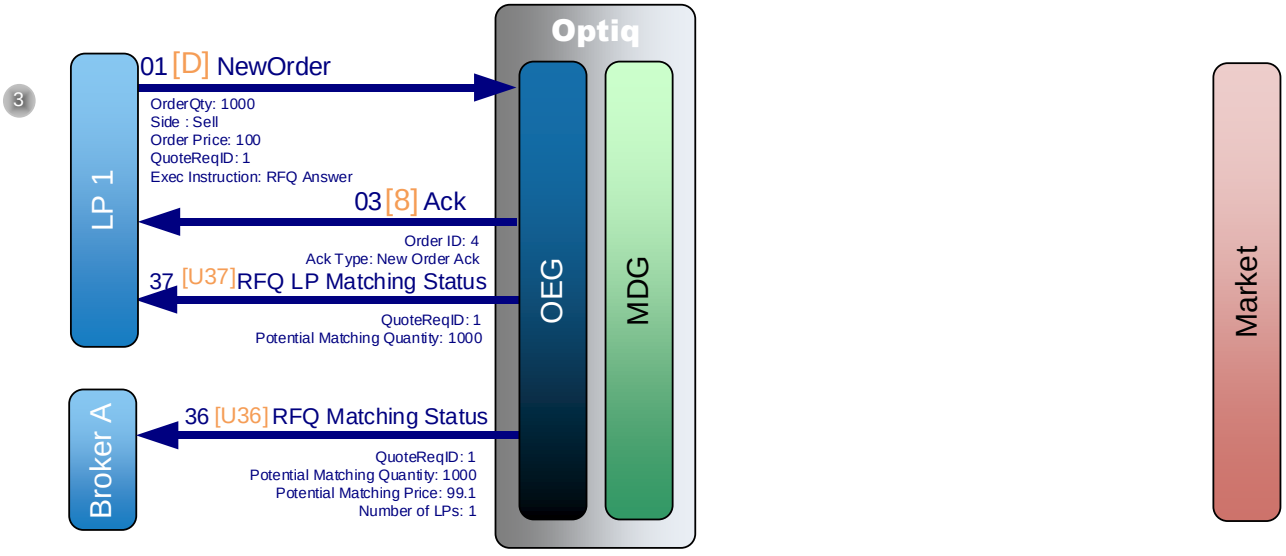
   Each of the three order enters the order book without matching and a public **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.



2) A Broker sends a private **Quote Request** (10) (FIX R) message to broadcast a new RFQ order with a quantity of 1,000 with a Minimum Acceptable Quantity (MAQ) of 1,000. OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the RFQ. This Ack message is an "RFQ Ack", as a consequence the *Order ID* will contain the QuoteReqID.

OEG sends an **RFQ Notification** (35) (FIX U35) message to every Liquidity Providers registered for the concerned instrument with a potential matching quantity of 1,000 and a Minimum Acceptable Quantity (MAQ) of 1,000.

OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation. The potential matching price is equal to 99, the potential matching quantity is 900, and the number of LPs is zero.

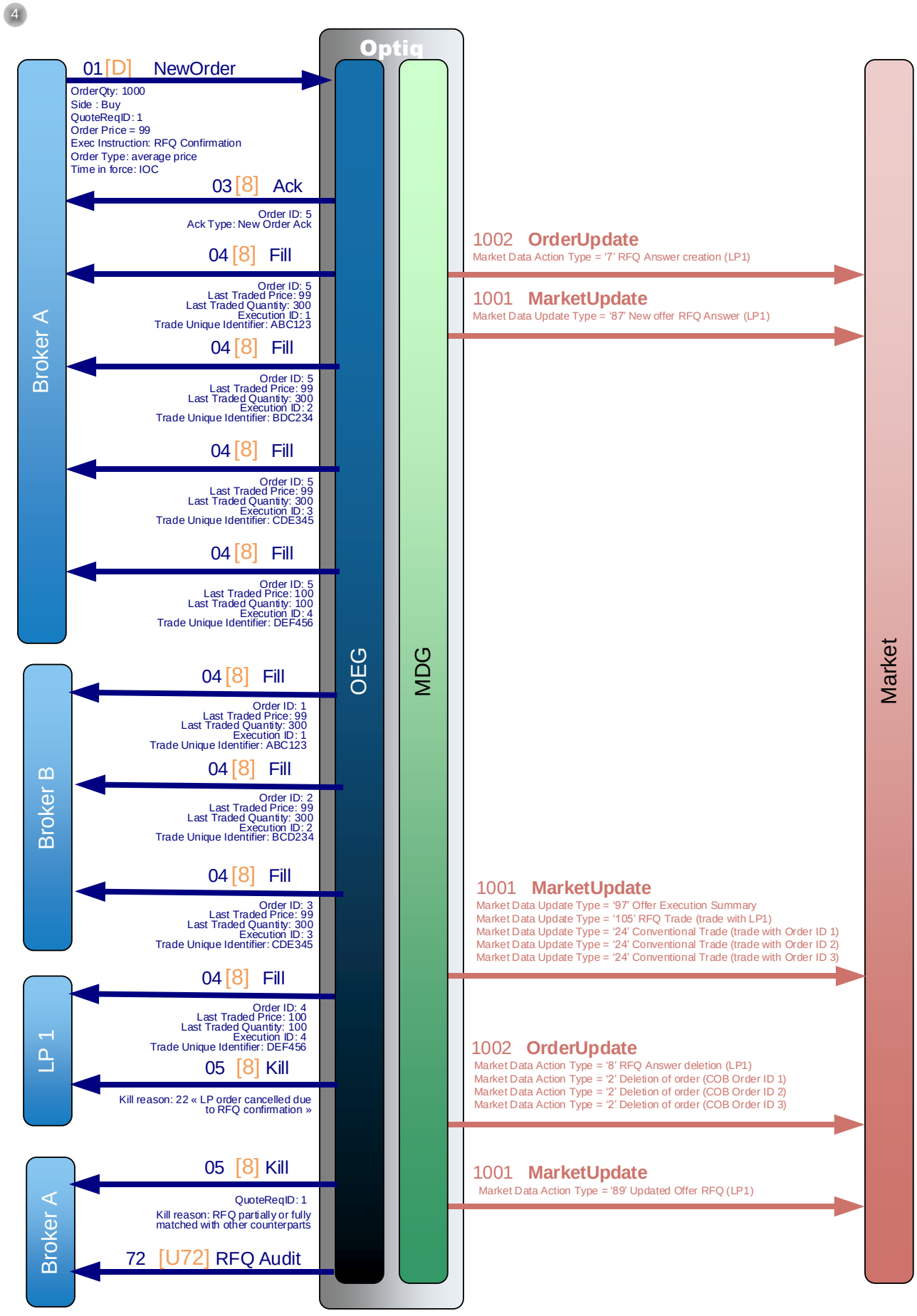


3) LP1 answers to the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 1,000 and a price of 100. This order is identified as an RFQ answer by setting the Execution Instruction to 'RFQ Answer'. It will not be able to match against any other order than the RFQ validation.

   It is not published through market data channel (*Response to a request for quote may be published when they become executable. This order will never be disclosed if it never matches*). OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

   OEG sends an **RFQ Matching Status** (36) (FIX U36) to the broker (RFQ issuer) to give some information about the potential matching situation (the potential matching price is 99.1 and potential matching quantity is 1000 and the number of LPs is 1).

   OEG sends an **RFQ LP Matching Status** (37) (FIX U37) to the LP to give some information about his potential matching situation (*potential matching quantity=100*).


4
Optiq
Broker A
OEG
MDG
Market
01 [D] NewOrder
OrderQty: 1000
Side : Buy
QuoteReqID: 1
Order Price = 99
Exec Instruction: RFQ Confirmation
Order Type: average price
Time in force: IOC
03 [8] Ack
Order ID: 5
Ack Type: New Order Ack
04 [8] Fill
Order ID: 5
Last Traded Price: 99
Last Traded Quantity: 300
Execution ID: 1
Trade Unique Identifier: ABC123
04 [8] Fill
Order ID: 5
Last Traded Price: 99
Last Traded Quantity: 300
Execution ID: 2
Trade Unique Identifier: BDC234
04 [8] Fill
Order ID: 5
Last Traded Price: 99
Last Traded Quantity: 300
Execution ID: 3
Trade Unique Identifier: CDE345
04 [8] Fill
Order ID: 5
Last Traded Price: 100
Last Traded Quantity: 100
Execution ID: 4
Trade Unique Identifier: DEF456
1002 OrderUpdate
Market Data Action Type = '7' RFQ Answer creation (LP1)
1001 MarketUpdate
Market Data Update Type = '87' New offer RFQ Answer (LP1)
Broker B
04 [8] Fill
Order ID: 1
Last Traded Price: 99
Last Traded Quantity: 300
Execution ID: 1
Trade Unique Identifier: ABC123
04 [8] Fill
Order ID: 2
Last Traded Price: 99
Last Traded Quantity: 300
Execution ID: 2
Trade Unique Identifier: BCD234
04 [8] Fill
Order ID: 3
Last Traded Price: 99
Last Traded Quantity: 300
Execution ID: 3
Trade Unique Identifier: CDE345
1001 MarketUpdate
Market Data Update Type = '97' Offer Execution Summary
Market Data Update Type = '105' RFQ Trade (trade with LP1)
Market Data Update Type = '24' Conventional Trade (trade with Order ID 1)
Market Data Update Type = '24' Conventional Trade (trade with Order ID 2)
Market Data Update Type = '24' Conventional Trade (trade with Order ID 3)
LP 1
04 [8] Fill
Order ID: 4
Last Traded Price: 100
Last Traded Quantity: 100
Execution ID: 4
Trade Unique Identifier: DEF456
05 [8] Kill
Kill reason: 22 « LP order cancelled due to RFQ confirmation »
1002 OrderUpdate
Market Data Action Type = '8' RFQ Answer deletion (LP1)
Market Data Action Type = '2' Deletion of order (COB Order ID 1)
Market Data Action Type = '2' Deletion of order (COB Order ID 2)
Market Data Action Type = '2' Deletion of order (COB Order ID 3)
Broker A
05 [8] Kill
QuoteReqID: 1
Kill reason: RFQ partially or fully matched with other counterparts
72 [U72] RFQ Audit
1001 MarketUpdate
Market Data Action Type = '89' Updated Offer RFQ (LP1)

4) The broker A (RFQ issuer) confirms the RFQ with a **NewOrder** (01) (FIX D) message with a quantity of 1,000 and a price of 99.1.

   The new order message Confirmation is sent with an *Order Type* **'***Average price'* and *Time in Force* **'***IOC'***.**

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

   The confirmation of the Quote Request through the New Order will trigger the publication of the LPs' answers to the Market.

   A public **OrderUpdate** (1002) message is sent to market data to add the order from LP1 with a *Market Data Action Type ' 7: RFQ Answer Creation'*.

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

   The entering order from the RFQ Issuer matches the three COB orders (OrderID 1, 2 and 3) for a quantity of 300 each and OEG sends back three private **Fill** (04) (FIX 8) messages to Broker B and to the RFQ issuer Broker A.

   The entering order from the RFQ Issuer matches LP1's order for a quantity of 100 and OEG sends back a private **Fill** (04) (FIX 8) message to the RFQ issuer and to LP1.

   A **Kill** (05) (FIX 8) message is sent to LP1 with a *Kill reason '22: LP Order cancelled due to RFQ confirmation*' because the leaves quantity of LP1 is not null.

   A **Kill** (05) (FIX 8) message is sent to Broker A with a *Kill reason 'RFQ partially or fully matched with other counterparts'*. This message is sent to the submitter of the QuoteRequest.

   A private **RFQ Audit** (72) (FIX U72) is sent to Broker A with all LP Answers (living at the time the RFQ is confirmed) and COB orders having participated to the RFQ.

   A public **MarketUpdate** (1001) message is sent to the market for the three trades executed within the COB with *Market Data Update Type '24' (Conventional Trade)* and for the trade executed with the LP1's answer with *Market Data Update Type '105' (RFQ Trade)*.

   Another public **OrderUpdate** message is sent to market data to delete LP1 order with *Market Data Action '8: RFQ Answer Deletion'*, and to delete the three COB orders with *Market Data Action '2': Deletion of order'*

   Another **MarketUpdate** (1001) message is sent to the market to update the limits of the RFQ.

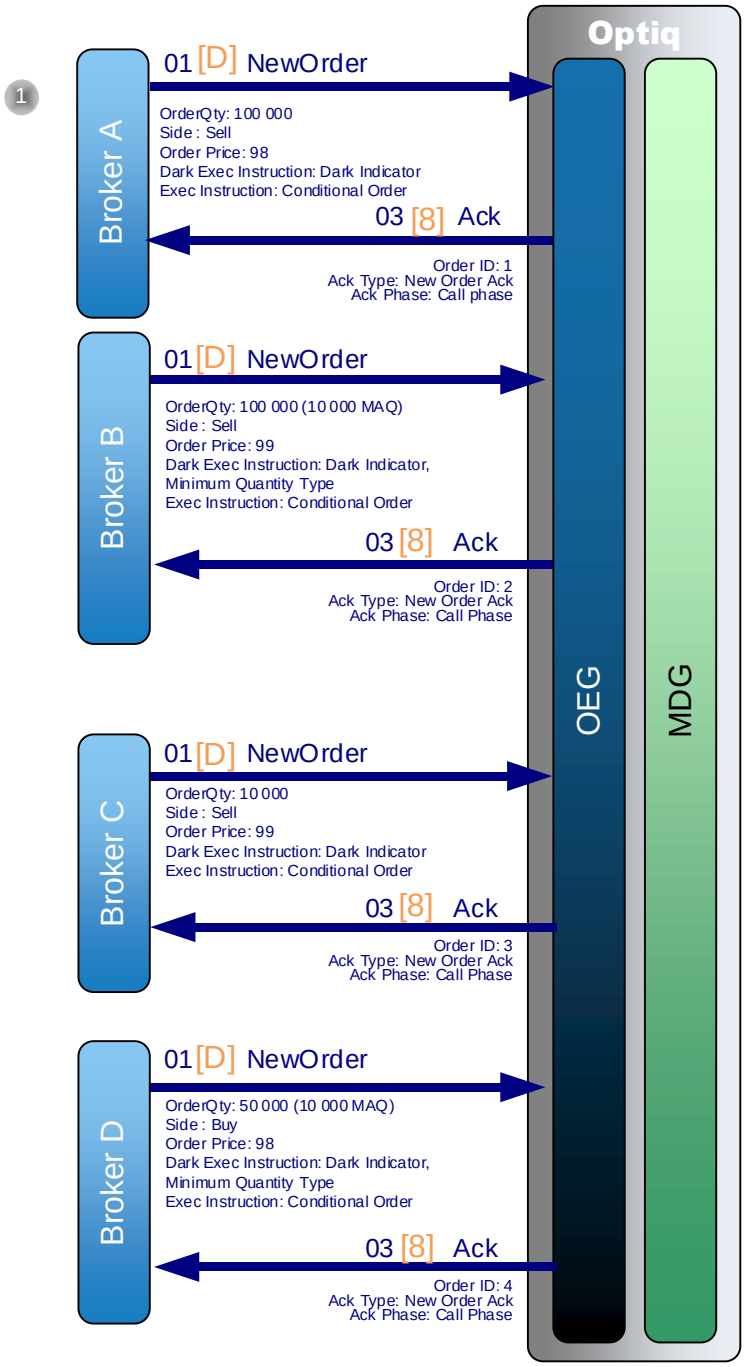
Note: Publication to Market Data only occurs when an RFQ Issuer send a **NewOrder** (01) (FIX D) message and that it matches with a/several LP New Order or with Orders in the COB. Before any execution, RFQ are private messages that won't be sent to Market Data.

RFQ Matching Status (36) (FIX U36) is only sent if there is a change in the Potential Matching Price and/or Potential Matching Quantity that was previously sent to the RFQ issuer.

RFQ LP Matching Status (37) (FIX U37) is only sent if there is a change in the Potential Matching Quantity that was previously sent to the LP.

7. EURONEXT BLOCK SPECIFIC MESSAGES

7.1 REGULAR BLOCK MATCHING



1) Broker A sends a private **NewOrder** (01) (FIX D) message with *Execution Instruction set to '6: Conditional Order'* to enter a new Sell conditional order with a quantity of 100,000.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an *Ack Phase '2: Call Phase'*

   The order enters the Block order book without matching and there is no publication in the Market Data.

   Broker B sends a private **NewOrder** (01) (FIX D) message with *Execution Instruction set to '6: Conditional Order'* to enter a new Sell conditional order with a quantity of 100,000 and a MAQ constraint of 10 000.

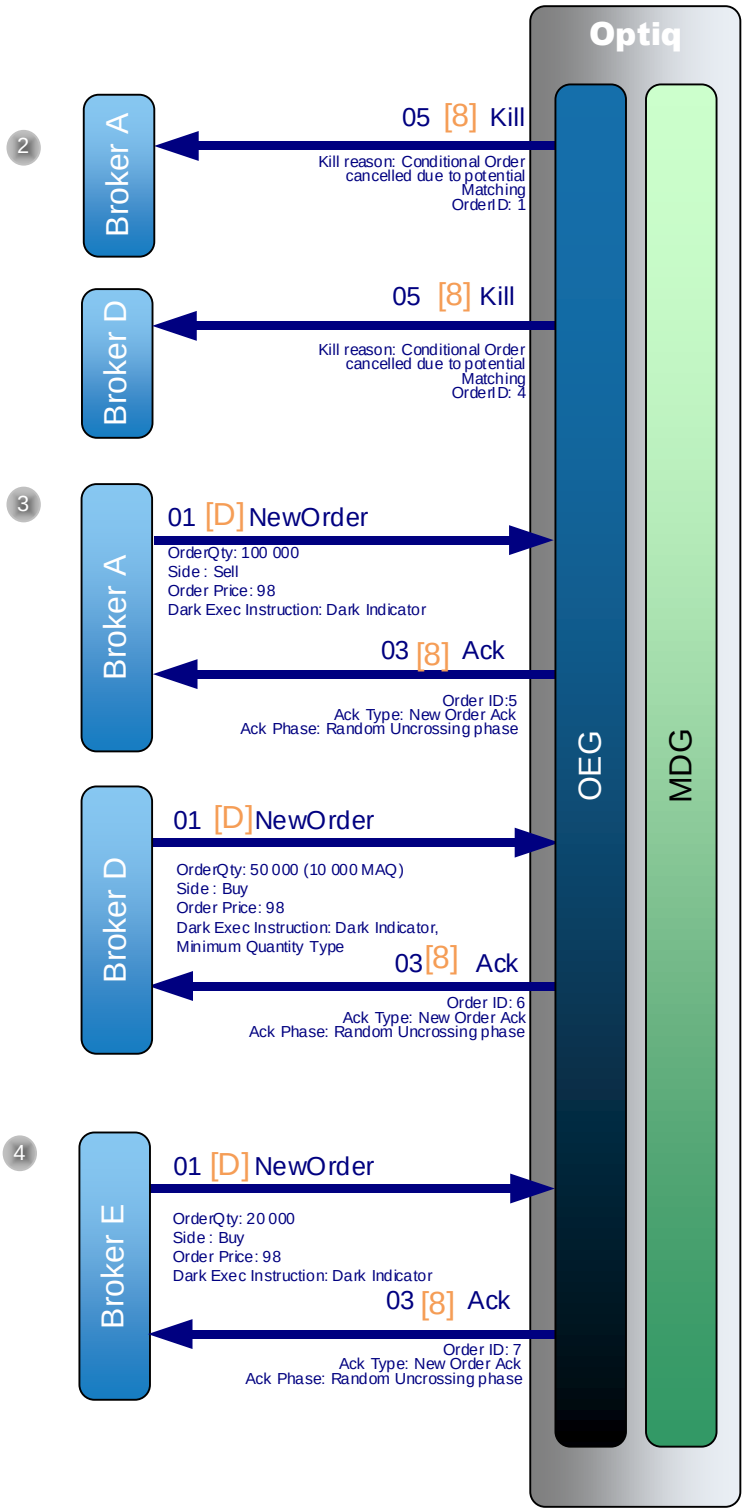
   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an *Ack Phase '2: Call Phase'.*

   Broker C sends a private **NewOrder** (01) (FIX D) message with *Execution Instruction set to '6: Conditional Order'* to enter a new Sell conditional 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 with an *Ack Phase '2: Call Phase'.*

   Broker D sends a private **NewOrder** (01) (FIX D) message with *Execution Instruction set to '6: Conditional Order'* to enter a new Buy conditional order with a quantity of 50,000 and a MAQ constraint of 10 000.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an *Ack Phase '2: Call Phase'.*


Optiq
OEG
MDG
Broker A
Broker D
Broker E
2
3
4
05 [8] Kill
Kill reason: Conditional Order cancelled due to potential Matching
OrderID: 1
05 [8] Kill
Kill reason: Conditional Order cancelled due to potential Matching
OrderID: 4
01 [D] NewOrder
OrderQty: 100 000
Side : Sell
Order Price: 98
Dark Exec Instruction: Dark Indicator
03 [8] Ack
Order ID:5
Ack Type: New Order Ack
Ack Phase: Random Uncrossing phase
01 [D] NewOrder
OrderQty: 50 000 (10 000 MAQ)
Side : Buy
Order Price: 98
Dark Exec Instruction: Dark Indicator,
Minimum Quantity Type
03 [8] Ack
Order ID: 6
Ack Type: New Order Ack
Ack Phase: Random Uncrossing phase
01 [D] NewOrder
OrderQty: 20 000
Side : Buy
Order Price: 98
Dark Exec Instruction: Dark Indicator
03 [8] Ack
Order ID: 7
Ack Type: New Order Ack
Ack Phase: Random Uncrossing phase

2) A potential Matching Situation is triggered by the entrance of the *Order* 4 (Broker D) in the Block order book.

   The system cancels all the orders that could potentially match.

   The *Order 1* (Broker A) and the *Order 4* (Broker D) are cancelled as they can potentially match.

   OEG sends a private **Kill** (05) (FIX 8) message to the Broker A and to the Broker D with a *Kill Reason: '18: Conditional Order cancelled due to potential Matching'.*

3) To confirm his initial conditional order, Broker A answers with a **NewOrder** (01) (FIX D) message with a firm order with same quantity and same price.

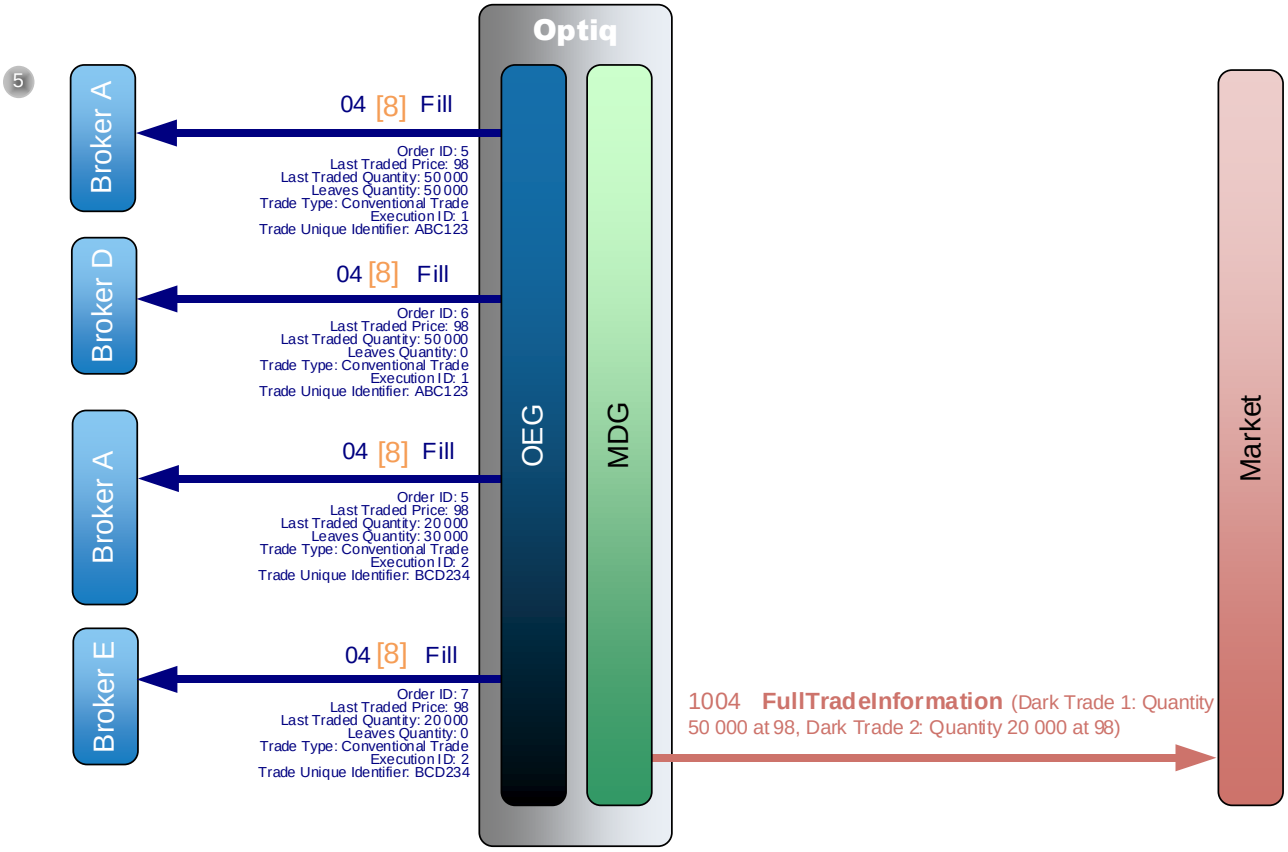
   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an *Ack Phase '8: Random Uncrossing Phase'* to inform that his order will participate to the next Random Uncrossing.

   To confirm his initial conditional order, Broker D answers with a **NewOrder** (01) (FIX D) message with a firm order with same quantity and same price.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an *Ack Phase '8: Random Uncrossing Phase'* to inform that his order will participate to the next Random Uncrossing.

4) Broker E sends a private **NewOrder** (01) (FIX D) message to enter a new Buy firm order with a quantity of 20,000.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an *Ack Phase '8: Random Uncrossing Phase'* to inform that his order will participate to the next Random Uncrossing.



At the end of the Random Uncrossing period, all the firm orders will be taken into account for the matching process and all the conditional orders will be ignored during the matching process.

5) The order of the Broker A (*Order ID* 5) matches with the firm order of the Broker D (*Order ID* 6) for a quantity of 50 000 and a price 98.

   OEG sends back a private **Fill** (04) (FIX 8) message to the Broker A and to the Broker D.

   The order of the Broker A (*Order ID 5*) matches with the firm order of the Broker B (*Order ID 6*) for a quantity of 20 000 and a price 98.

   OEG sends back a private **Fill** (04) (FIX 8) message to the Broker A and to the Broker B.

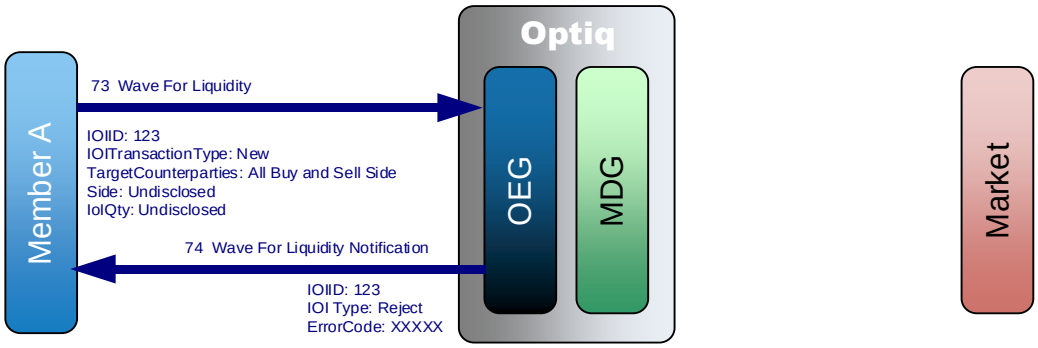
   A public **FullTradeInformation** (1004) message is sent to the market for both of the Dark trades executed.

Note: For this case we assume that the amount of the two trades are not sufficient to benefit from the Deferred Publication.

7.2 INDICATION OF INTEREST SPECIFIC BEHAVIOUR

7.2.1 New Indication of Interest rejected due to Technical Reasons

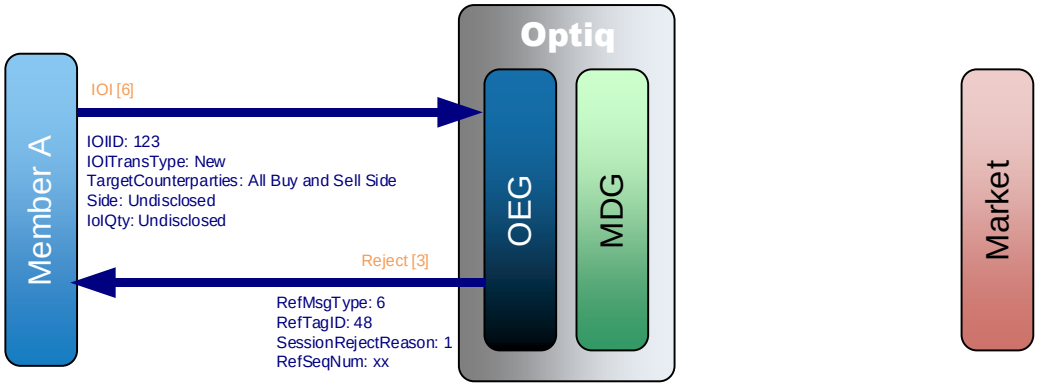
7.2.1.1 New Indication of Interest rejected due to Technical Reasons - SBE Protocol



Member A sends a private **Wave for Liquidity** (73) message to enter an indication of interest. If the indication of interest gets rejected due to technical reasons, OEG sends back a private **Wave for Liquidity Notification** (74) 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 file (.csv).

No message is sent to the Market.

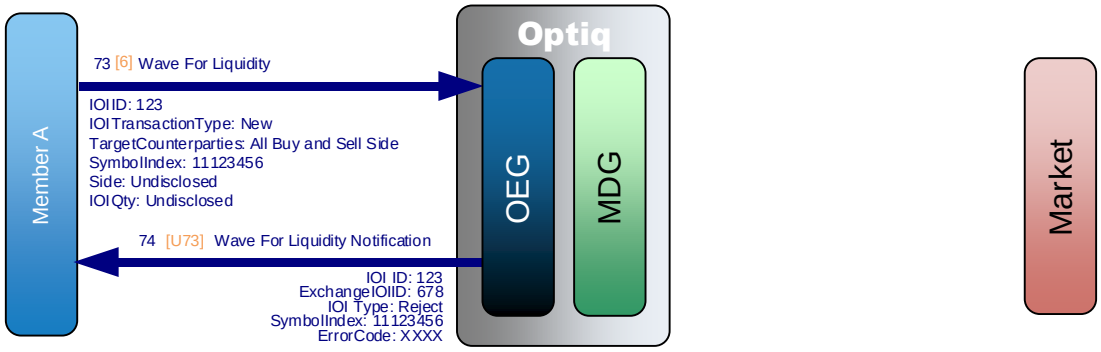
7.2.1.2 New Indication of Interest rejected due to Technical Reasons - FIX Protocol



A Member sends a private **IOI (6)** message to enter an indication of interest. If the indication of interest gets rejected due to technical reason, OEG sends back a private **Reject** (3) message, where *SessionRejectReason (373)* provides the reason of the rejection. In the example above, IOI (6) is rejected due to the fact that a mandatory tag – SecurityID (48) is missing.

No message is sent to the Market.

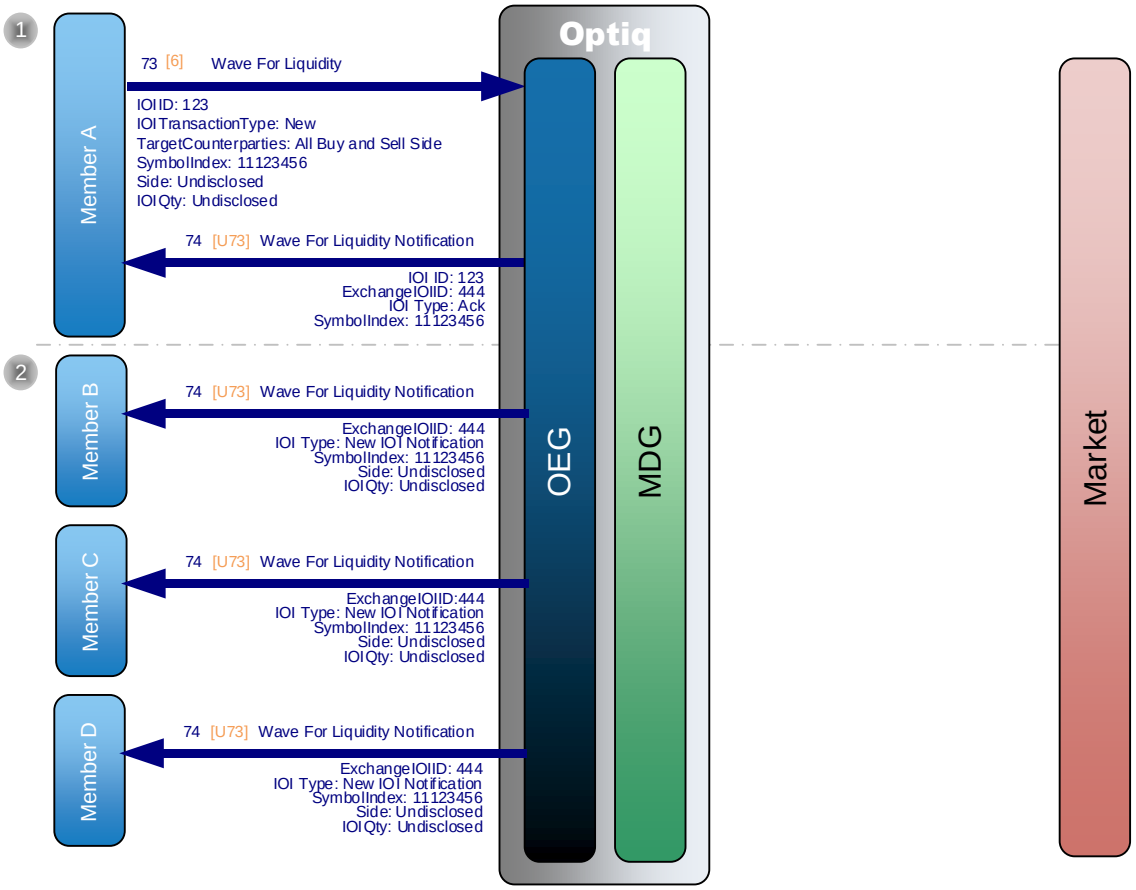
7.2.2 New Indication of Interest rejected due to Functional Reasons



Member A sends a private **Wave for Liquidity** (73) (FIX 6) message to enter an indication of interest. If the indication of interest gets rejected due to functional reasons, OEG sends back a private **Wave for Liquidity Notification** (74) (FIX U73) 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 file (.csv).

No message is sent to the Market.

7.2.3 New Indication of Interest without Reply from the Counterparties



1) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to submit an indication of interest targeting "All firms on Buy and Sell Side", identified in the field Target Counterparties (*FIX RoutingGrp*).

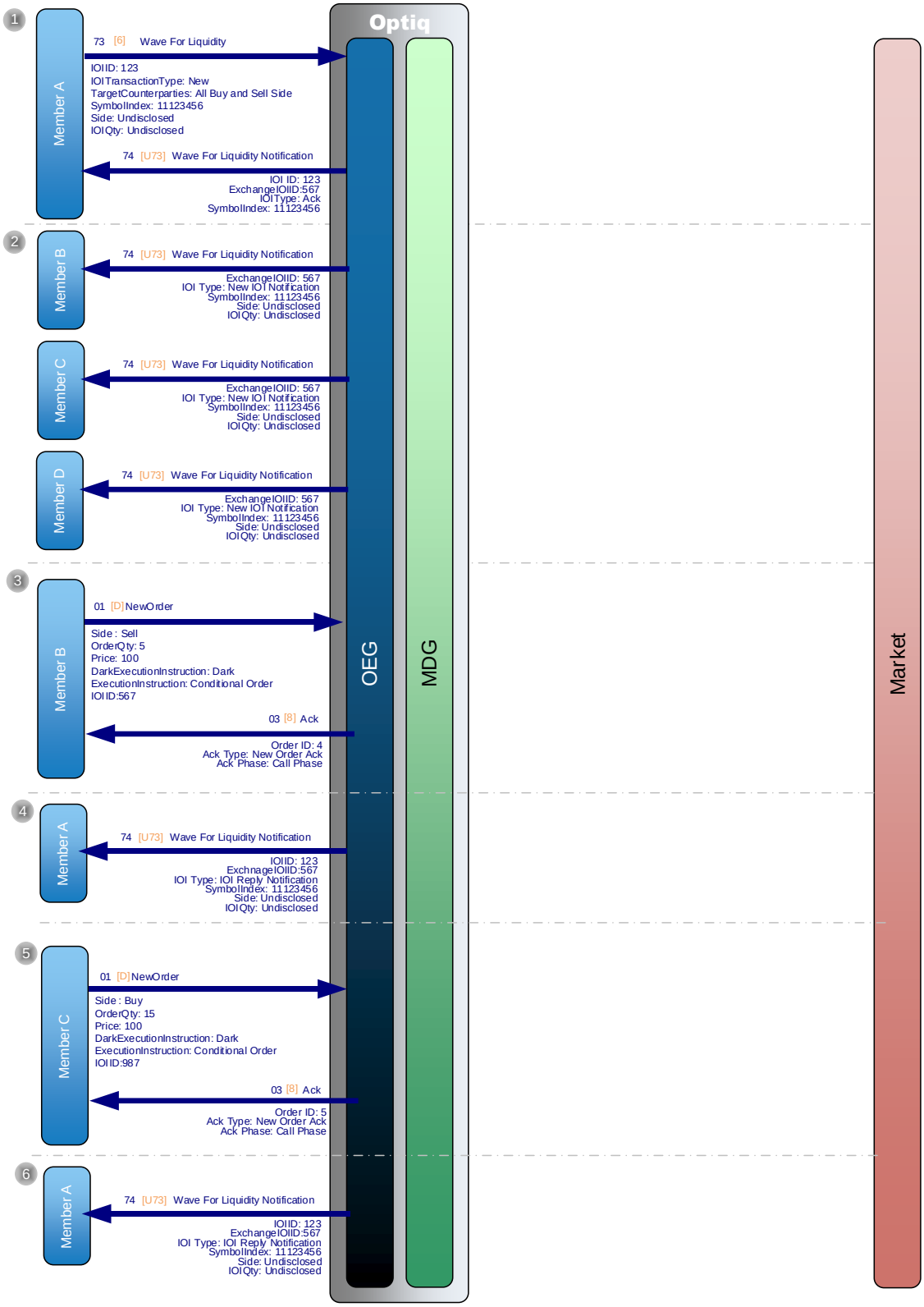
   OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt and technical processing of the message as well as to provide the unique IOI ID assigned by the Exchange upon reception of a new indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

2) Members B, C and D are notified of the indication of interest via **Wave for Liquidity Notification** (74) (FIX U73). The **Wave for Liquidity Notification** (74) (FIX U73) message is sent to all OE Sessions to which Member B, C and D are connected, for the given Optiq Segment. In this case the **Wave for Liquidity Notification** (74) (FIX U73) contains the only the Exchange IOI ID, assigned by the Trading System and not the IOI ID provided by the **Wave For Liquidity** (73) submitter.

Note: In this case, as no counterparty replies to the indication of interest, the request remains active up to the end of the trading day or up to the moment the indication of interest submitter cancels it.

7.2.4 New Indication of Interest with Reply from the Counterparties



1) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to submit an indication of interest targeting "All firms on Buy and Sell Side", identified in the field Target Counterparties (FIX RoutingGrp).

OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt and technical processing of the message as well as to provide the unique IOI ID assigned by the Exchange upon reception of a new indication of interest.

The indication of interest enters the Block MTF and there is no publication in the Market Data.

2) Members B, C and D are notified of the indication of interest via **Wave for Liquidity Notification** (74) (FIX U74). The **Wave for Liquidity Notification** (74) (FIX U73) message is sent to all OE Sessions to which Member B, C and D are connected, for the given Optiq Segment. In this case the **Wave for Liquidity Notification** (74) (FIX U73) contains the only the Exchange IOI ID, assigned by the Trading System and not the IOI ID provided by the **Wave For Liquidity** (73) submitter.

3) Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 5 and a price of 100. As the order is a direct response to the indication of interest, Member B provides the IOI ID sent by the trading engine in the **Wave for Liquidity Notification** (74) (FIX U73).

   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 Block order book without matching and there is no publication in the Market Data.

4) OEG sends a **Wave for Liquidity Notification** (74) (FIX U73) message to notify the Wave for Liquidity Submitter that an order was submitted as a reply to its indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

5) Member C sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 15 and a price of 100. As the order is a direct response to the indication of interest, Member B provides the IOI ID sent by the trading engine in the **Wave for Liquidity Notification** (74) (FIX U73).

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

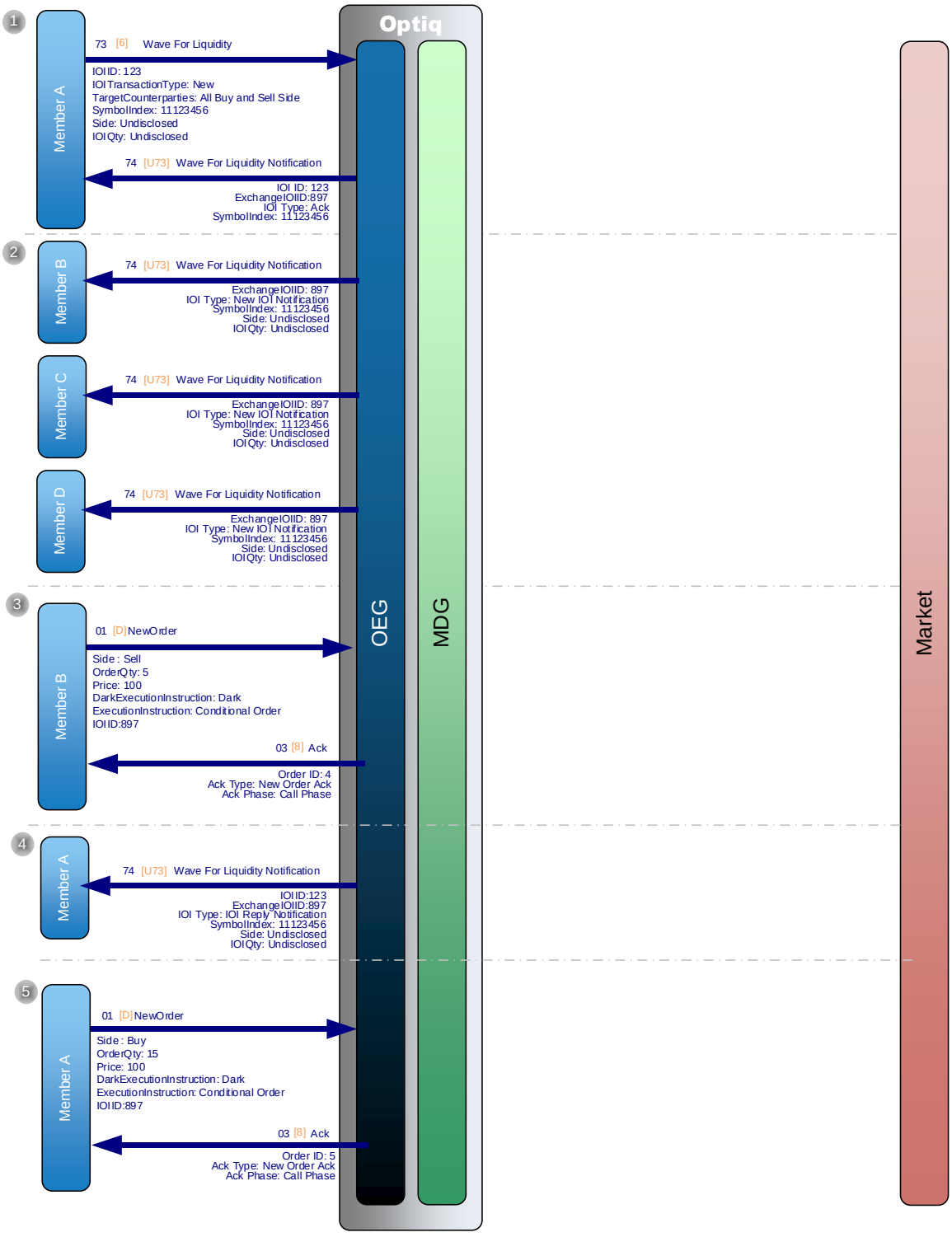
   The order enters the Block order book without matching and there is no publication in the Market Data.

6) OEG sends a **Wave for Liquidity Notification** (74) (FIX U73) message to notify the Wave for Liquidity Submitter that an order was submitted as a reply to its indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

7.2.5 New Indication of Interest leading to a potential matching situation – initiator confirms his IOI

Note: in the case described below the initiator of the indication of interest confirms his indication of interest by submitting a new order once the counterparties answer.



1) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to submit an indication of interest targeting "All firms on Buy and Sell Side", identified in the field Target Counterparties (FIX RoutingGrp).

OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt and technical processing of the message as well as to provide the unique IOI ID assigned by the Exchange upon reception of a new indication of interest.

The indication of interest enters the Block MTF and there is no publication in the Market Data.

2) Members B, C and D are notified of the indication of interest via **Wave for Liquidity Notification** (74) (FIX U73). The **Wave for Liquidity Notification** (74) (FIX U73) message is sent to all OE Sessions to which Member B, C and D are connected, for the given Optiq Segment. In this case the **Wave for Liquidity Notification** (74) (FIX U73) contains the only the Exchange IOI ID, assigned by the Trading System and not the IOI ID provided by the **Wave For Liquidity** (73) submitter.

3) Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 5 and a price of 100. As the order is a direct response to the indication of interest, Member B provides the IOI ID sent by the trading engine in the **Wave for Liquidity Notification** (74) (FIX U73).

   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 Block order book without matching and there is no publication in the Market Data.

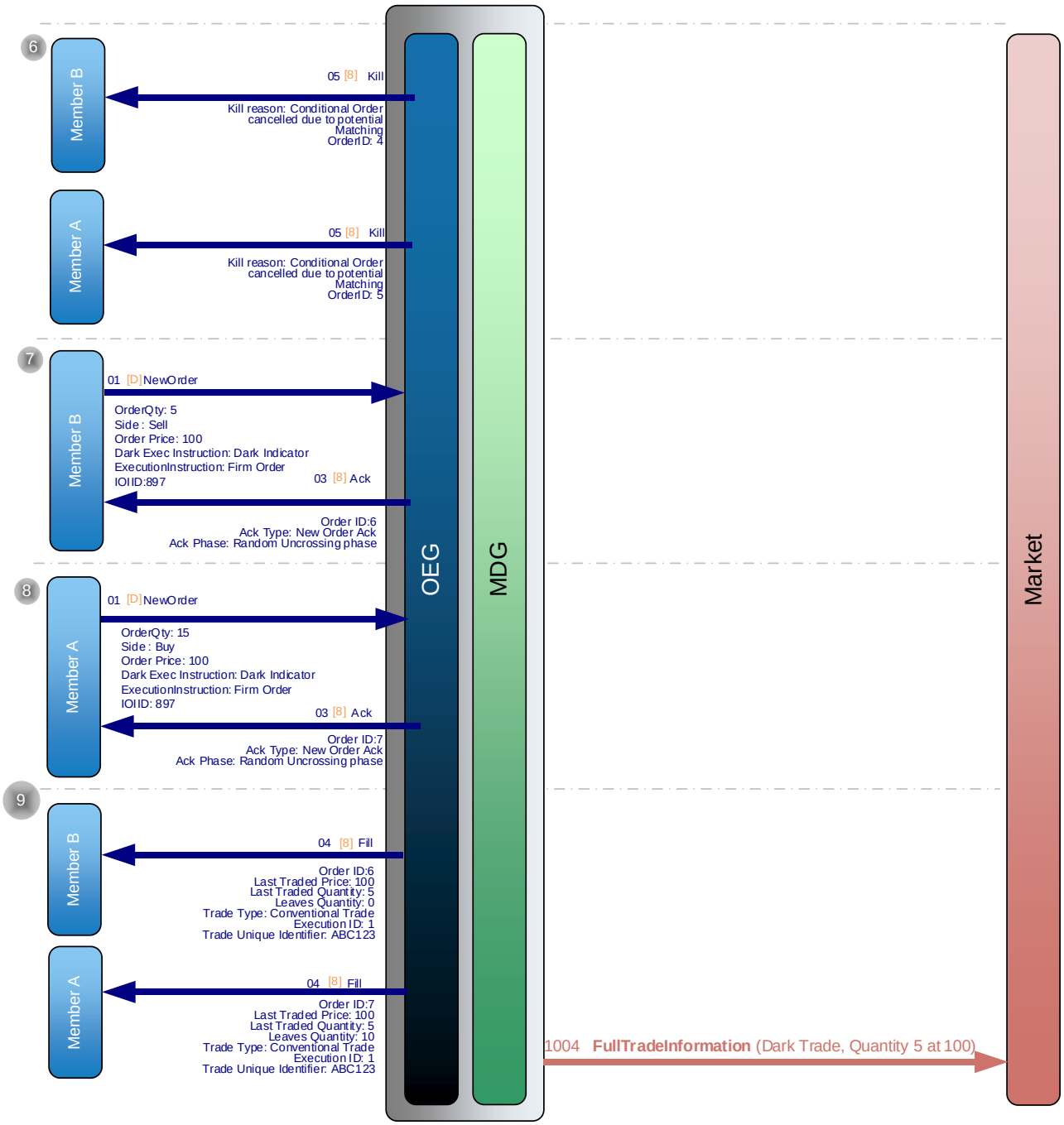
4) OEG sends a **Wave for Liquidity Notification** (74) (FIX U73) message to notify the Wave for Liquidity Submitter that an order was submitted as a reply to its indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

5) Member A sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 15 and a price of 100. As the order is a direct response to the indication of interest, Member A provides the IOI ID sent by the trading engine in the **Wave for Liquidity Notification** (74) (FIX U73).

   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 Block order book without matching and there is no publication in the Market Data.



6) A potential Matching Situation is triggered by the entrance of the Order 2 (Member A) in the Block order book. The system cancels all the orders that could potentially match.

   The Order 1 (Member B) and the Order 2 (Member A) are cancelled as they can potentially match.

   OEG sends a private **Kill** (05) (FIX 8) message to Member B and to Member A with a Kill Reason: '18: Conditional Order cancelled due to potential Matching'.

7) To confirm his initial conditional order, Member B answers with a **NewOrder** (01) (FIX D) message with a firm order with same quantity and same price.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an Ack Phase '8: Random Uncrossing Phase' to inform that his order will participate to the next Random Uncrossing.

8) To confirm his initial conditional order, Member A answers with a **NewOrder** (01) (FIX D) message with a firm order with same quantity and same price.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an Ack Phase '8: Random Uncrossing Phase' to inform that his order will participate to the next Random Uncrossing.

   At the end of the Random Uncrossing period, all the firm orders will be taken into account for the matching process and all the conditional orders will be ignored during the matching process.

9) The order of Member B (Order ID 6) matches with the firm order of Member A (Order ID 7) for a quantity of 5 and a price 100.

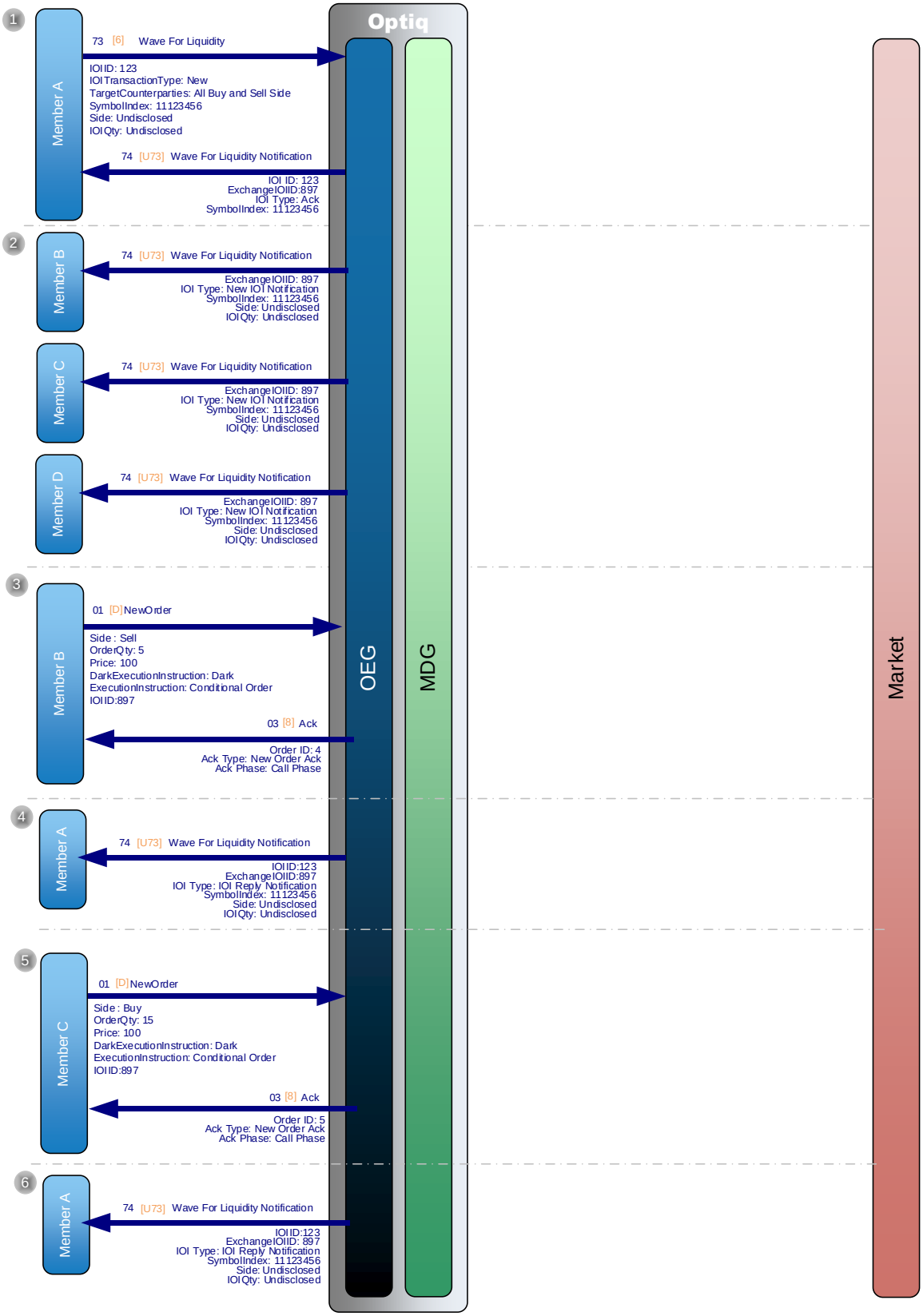
   OEG sends back a private **Fill** (04) (FIX 8) message to Member B and to Member A.

   A public **FullTradeInformation** (1004) message is sent to the market for the Dark trade executed.

Note: For this case we assume that the amount of the two trades are not sufficient to benefit from the Deferred Publication.

7.2.6 New Indication of Interest leading to a potential matching situation – initiator does not confirm his IOI

Note: in the case described below the initiator of the indication of interest does not confirm his indication of interest, meaning, does not submit a new order once the counterparties answer.



1) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to submit an indication of interest targeting "All firms on Buy and Sell Side", identified in the field Target Counterparties (FIX RoutingGrp).

   OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt and technical processing of the message as well as to provide the unique IOI ID assigned by the Exchange upon reception of a new indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

2) Members B, C and D are notified of the indication of interest via **Wave for Liquidity Notification** (74) (FIX U73). The **Wave for Liquidity Notification** (74) (FIX U73) message is sent to all OE Sessions to which Member B, C and D are connected, for the given Optiq Segment. In this case the **Wave for Liquidity Notification** (74) (FIX U73) contains the only the Exchange IOI ID, assigned by the Trading System and not the IOI ID provided by the **Wave For Liquidity** (73) submitter.

3) Member B sends a private **NewOrder** (01) (FIX D) message to enter a new Sell order with a quantity of 5 and a price of 100. As the order is a direct response to the indication of interest, Member B provides the IOI ID sent by the trading engine in the **Wave for Liquidity Notification** (74) (FIX U73).

   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 Block order book without matching and there is no publication in the Market Data.

4) OEG sends a **Wave for Liquidity Notification** (74) (FIX U73) message to notify the Wave for Liquidity Submitter that an order was submitted as a reply to its indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

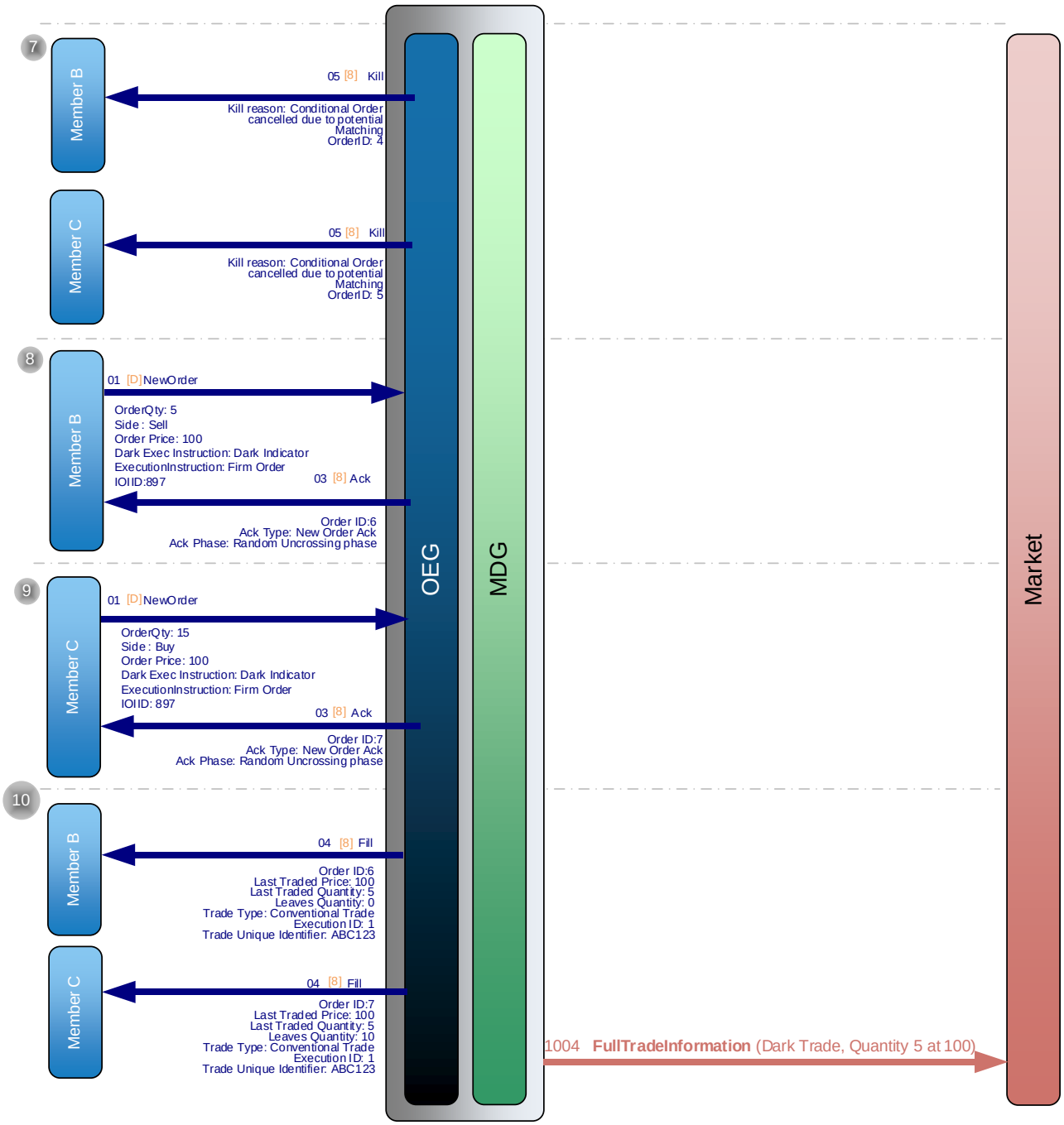
5) Member C sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 15 and a price of 100. As the order is a direct response to the indication of interest, Member B provides the IOI ID sent by the trading engine in the **Wave for Liquidity Notification** (74) (FIX U73).

   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 Block order book without matching and there is no publication in the Market Data.

6) OEG sends a **Wave for Liquidity Notification** (74) (FIX U73) message to notify the Wave for Liquidity Submitter that an order was submitted as a reply to its indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.



7) A potential Matching Situation is triggered by the entrance of the Order 2 (Member C) in the Block order book. The system cancels all the orders that could potentially match.

The Order 1 (Member B) and the Order 2 (Member C) are cancelled as they can potentially match.

OEG sends a private **Kill** (05) (FIX 8) message to Member B and to Member C with a Kill Reason: '18: Conditional Order cancelled due to potential Matching'.

8) To confirm his initial conditional order, Member B answers with a **NewOrder** (01) (FIX D) message with a firm order with same quantity and same price.

OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an Ack Phase '8: Random Uncrossing Phase' to inform that his order will participate to the next Random Uncrossing.

9) To confirm his initial conditional order, Member C answers with a **NewOrder** (01) (FIX D) message with a firm order with same quantity and same price.

   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order with an Ack Phase '8: Random Uncrossing Phase' to inform that his order will participate to the next Random Uncrossing.

   At the end of the Random Uncrossing period, all the firm orders will be taken into account for the matching process and all the conditional orders will be ignored during the matching process.

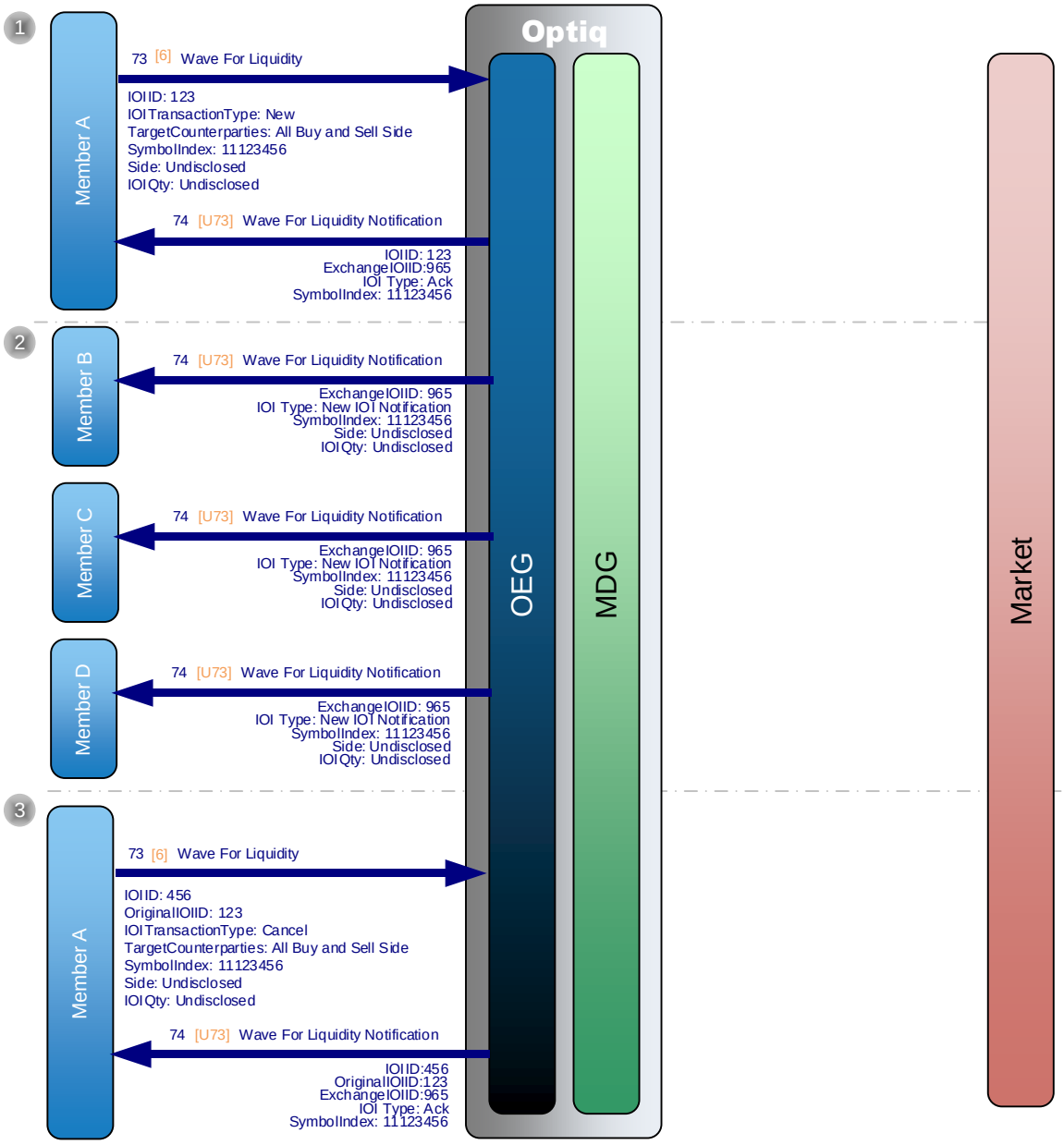
10) The order of Member B (Order ID 6) matches with the firm order of Member C (Order ID 7) for a quantity of 5 and a price 100.

    OEG sends back a private **Fill** (04) (FIX 8) message to Member B and to Member C.

    A public **FullTradeInformation** (1004) message is sent to the market for the Dark trade executed.

Note: For this case we assume that the amount of the two trades are not sufficient to benefit from the Deferred Publication.

7.2.7 Cancellation of an indication of interest



1) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to submit a **new** indication of interest targeting "All firms on Buy and Sell Side", identified in the field Target Counterparties (*FIX RoutingGrp*).

   OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt and technical processing of the message as well as to provide the unique IOI ID assigned by the Exchange upon reception of a new indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

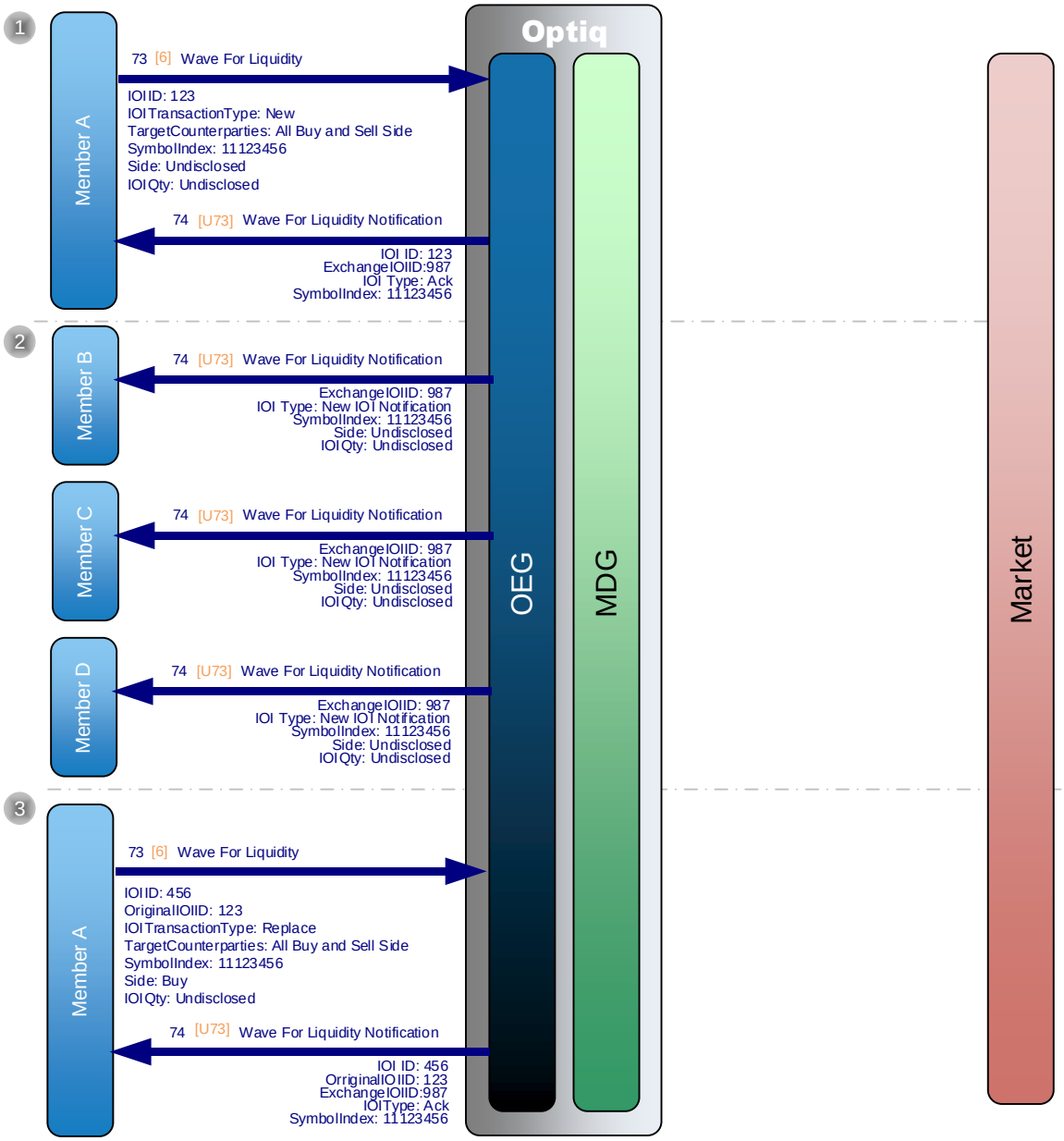
2) Members B, C and D are notified of the indication of interest via **Wave for Liquidity Notification** (74) (FIX U73). The **Wave for Liquidity Notification** (74) (FIX U73) message is sent to all OE Sessions to which Member B, C and D are connected, for the given Optiq Segment. In this case the IOI ID of the **Wave for Liquidity Notification** (74) (FIX U73) is populated with the IOI ID assigned by the Trading System **and not with** the IOI ID provided by the **Wave For Liquidity** (73) submitter.

3) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to **cancel** the previously submitted indication of interest.

   OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt, technical processing of the message and the effective cancellation of the indication of interest.

The indication of interest gets cancelled in the Block MTF and there is no publication in the Market Data.

7.2.8 Modification of an indication of interest



1) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to submit a new indication of interest targeting "All firms on Buy and Sell Side", identified in the field Target Counterparties (FIX RoutingGrp).

   OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt and technical processing of the message as well as to provide the unique IOI ID assigned by the Exchange upon reception of a new indication of interest.

   The indication of interest enters the Block MTF and there is no publication in the Market Data.

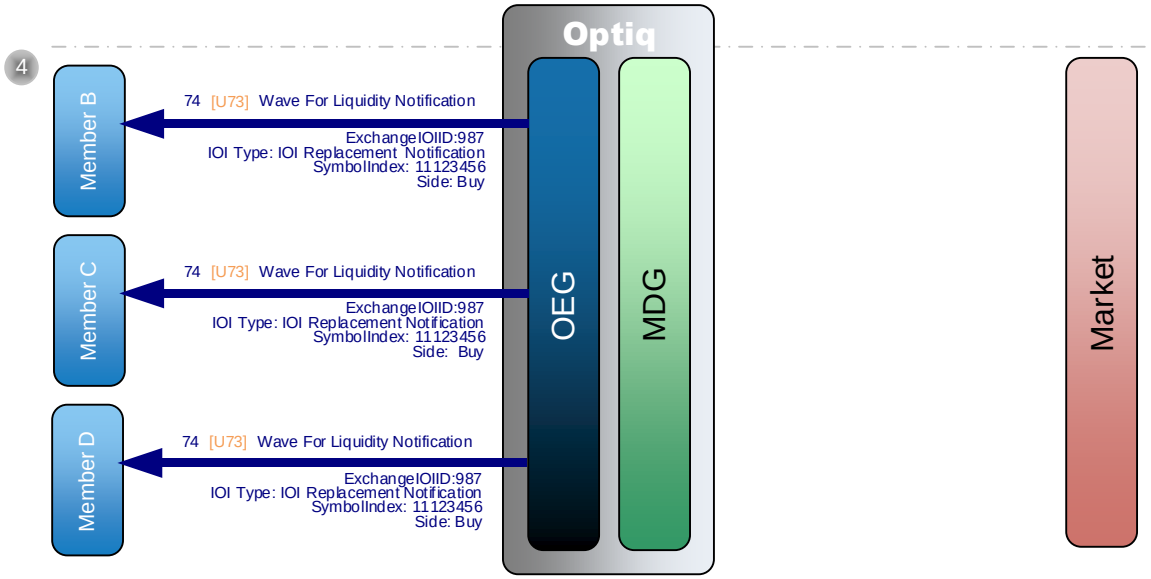
2) Members B, C and D are notified of the indication of interest via **Wave for Liquidity Notification** (74) (FIX U73). The **Wave for Liquidity Notification** (74) (FIX U73) message is sent to all OE Sessions to which Member B, C and D are connected, for the given Optiq Segment. In this case the

IOI ID of the **Wave for Liquidity Notification** (74) (FIX U73) is populated with the IOI ID assigned by the Trading System and not with the IOI ID provided by the **Wave For Liquidity** (73) submitter.

3) Member A sends a **Wave for Liquidity** (73) (FIX 6) message to replace the previously submitted indication of interest. The replacement is targeting to disclose the Side of the indication of interest.

OEG sends back a **Wave for Liquidity Notification** (74) (FIX U73) message to confirm the successful receipt, technical processing of the message and the effective cancellation of the indication of interest.

The indication of interest gets replaced in the Block MTF and there is no publication in the Market Data.

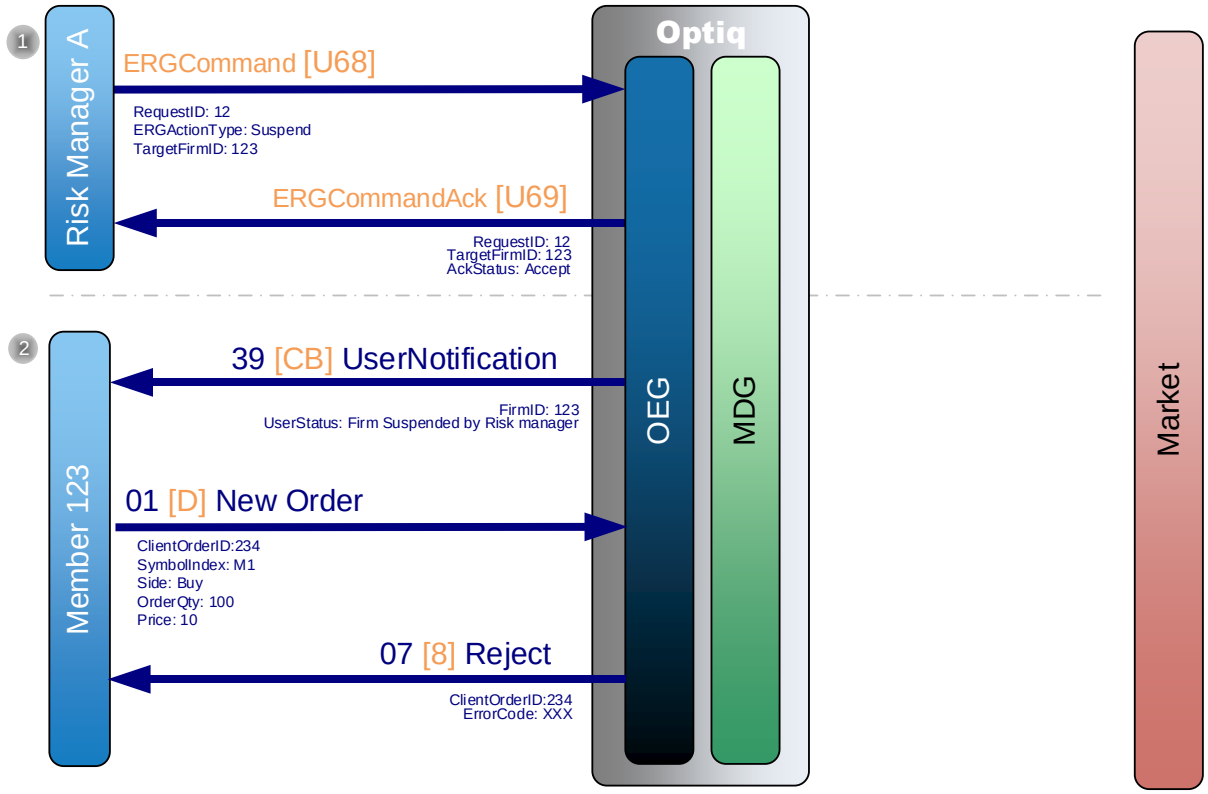


4) Members B, C and D are notified of the **replacement** of the indication of interest via **Wave for Liquidity Notification** (74) (FIX U73). The **Wave for Liquidity Notification** (74) (FIX U73) message is sent to all OE Sessions to which Member B, C and D are connected, for the given Optiq Segment. In this case the IOI ID of the **Wave for Liquidity Notification** (74) (FIX U73) is populated with the IOI ID assigned by the Trading System **and not with** the IOI ID provided by the **Wave For Liquidity** (73) submitter.

No message is published in the Market Data.

8. EURONEXT RISKGUARD (ERG)

8.1 ERG: SUSPEND A FIRM WITHOUT CANCELLATION OF ORDERS



Both the Risk Manager A and Member 123 are logged on to an OEG on the Equities segment, and Risk Manager A is setup as the Risk Manager for this firm.

1) Risk Manager A sends an **ERGCommand** (U68) message to suspend Member 123 (identifier provided within *TargetFirmID*).

   OEG sends back an **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

2) Member 123 is notified of the suspension via **User Notification** (39) (FIX CB) message. **The User Notification** (39) (FIX CB) message is sent to all OE Sessions via which the Member 123 is connected, for the given Optiq Segment.

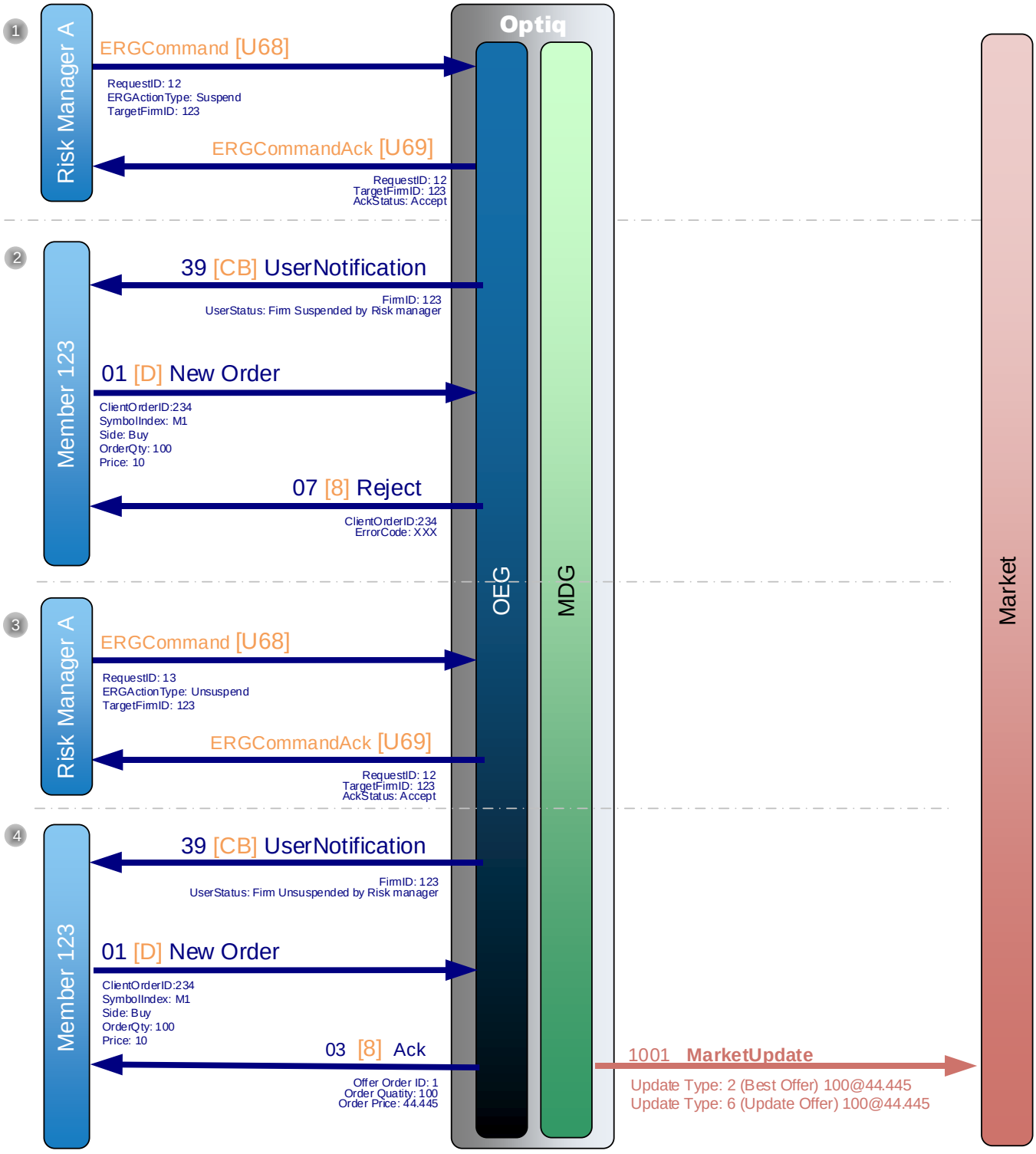
   As the suspension was done without cancellation of orders, no other messages are sent to the Member at this moment. No messages are sent to the market.

   Member 123 submits a **New Order** (01) (FIX D) messages. As member 123 is suspended OEG sends back a private **Reject** (07) (FIX 8) message to reject the creation of the new order with an Error Code.

The reason of the rejection can be found using the Error Code value within the *Euronext Cash and Derivatives Markets – OEG TCS Error List – Technical Specification (.csv)*. No messages are sent to the market.

Note: Maximum scope of any RiskGuard messages is the Optiq segment. If an action from the Risk Manager requires to be effective on multiple segments, a message needs to be sent to each Optiq segment.

8.2 ERG: UNSUSPEND A FIRM



Both the Risk Manager A and Member 123 are logged on an OEG on the Equities segment, and Risk Manager A is setup as the Risk Manager for this firm and has previously suspended Member 123.

1) Risk Manager A sends an **ERGCommand** (U68) message to suspend Member 123 (identifier provided within *TargetFirmID* field).

OEG sends back a private **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

2) Member 123 is notified of the suspension via **User Notification** (39) (FIX CB) message. The **User Notification** (39) (FIX CB) message is sent to all OE Sessions on which the Member 123 is connected, for the given Optiq Segment.

   Member 123 sends a **New Order** (01) (FIX D) messages. As the status of the Member 123 is suspended, the message is rejected. OEG sends back a private **Reject** (07) (FIX 8) message to reject the creation of the new order with an Error Code.

   The reason of the rejection can be found using the Error Code value within the *Euronext Cash and Derivatives Markets – OEG TCS Error List – Technical Specification (.csv)*.

3) Risk Manager A sends an **ERGCommand** (U68) message to request the Unsuspension of Member 123 (identifier provided within *TargetFirmID* field).

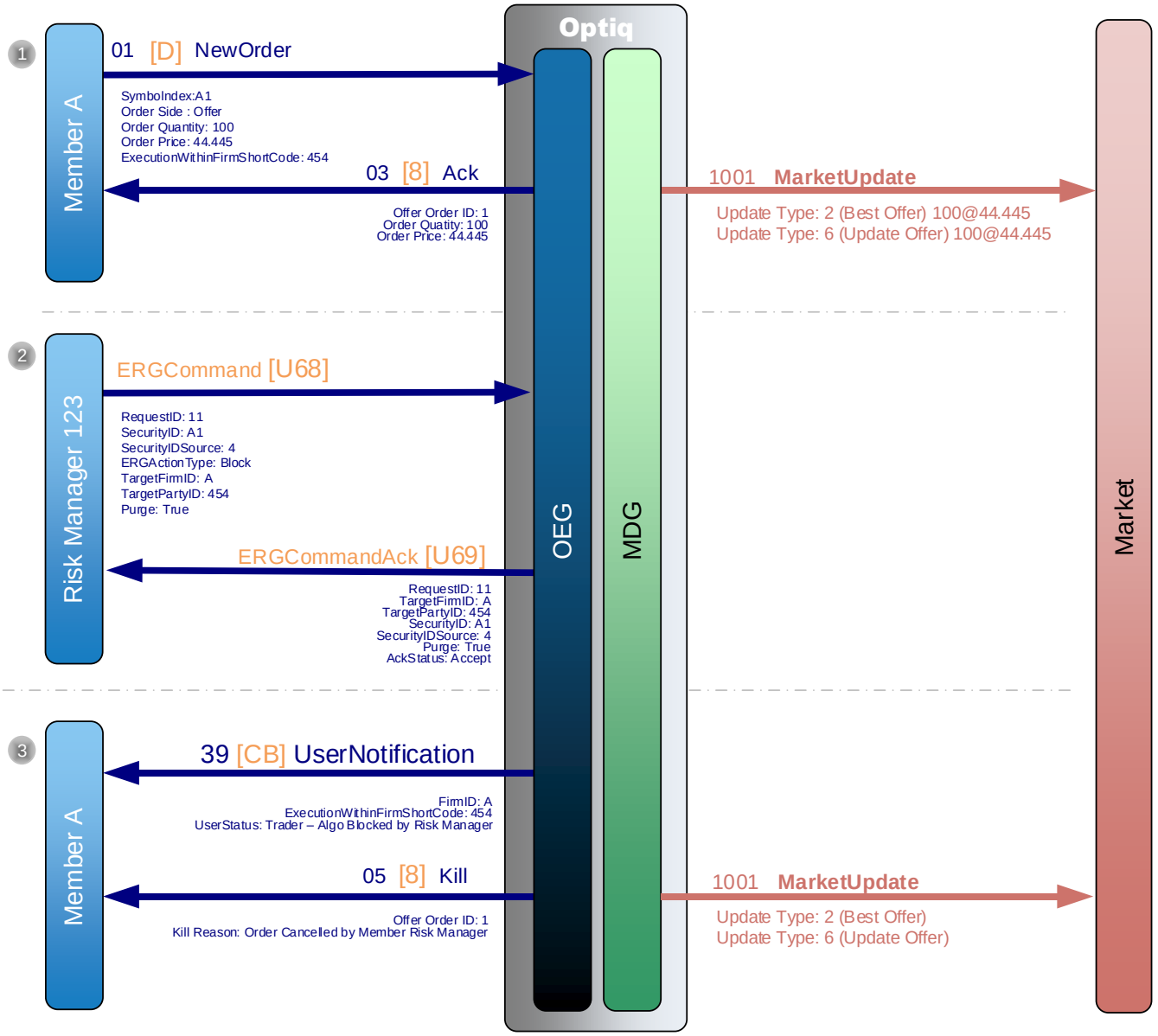
   OEG sends back a private **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

4) Member 123 is notified of the unsuspension through **User Notification** (39) (FIX CB) message. The **User Notification** (39) (FIX CB) message is sent to all OE Sessions on which the Member 123 is connected, for the given Optiq Segment.

   Upon submission of a **New Order** (01) (FIX D) message OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order.

Note: Maximum scope of any RiskGuard messages is the Optiq segment. If an action from the Risk Manager requires to be effective on multiple segments, a message needs to be sent to each Optiq segment.

8.3 ERG: BLOCK WITH ORDER CANCELLATION



Both the Risk Manager 123 and Member A are logged on to an OEG on the Equities segment, and Risk Manager 123 is setup as the risk manager for this firm.

1) Member A submits a **NewOrder** (01) (FIX D) message. 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) Risk Manager 123 sends an **ERGCommand** (U68) message to block a Trader (or an Algorithm) identified by the Short Code '454' (provided within *TargetPartyID* field) of the Member A (provided within *TargetFirmID* field), on a specific instrument A1 (provided within *SecurityID* field), selecting to cancel all of the active orders in the book for this action.

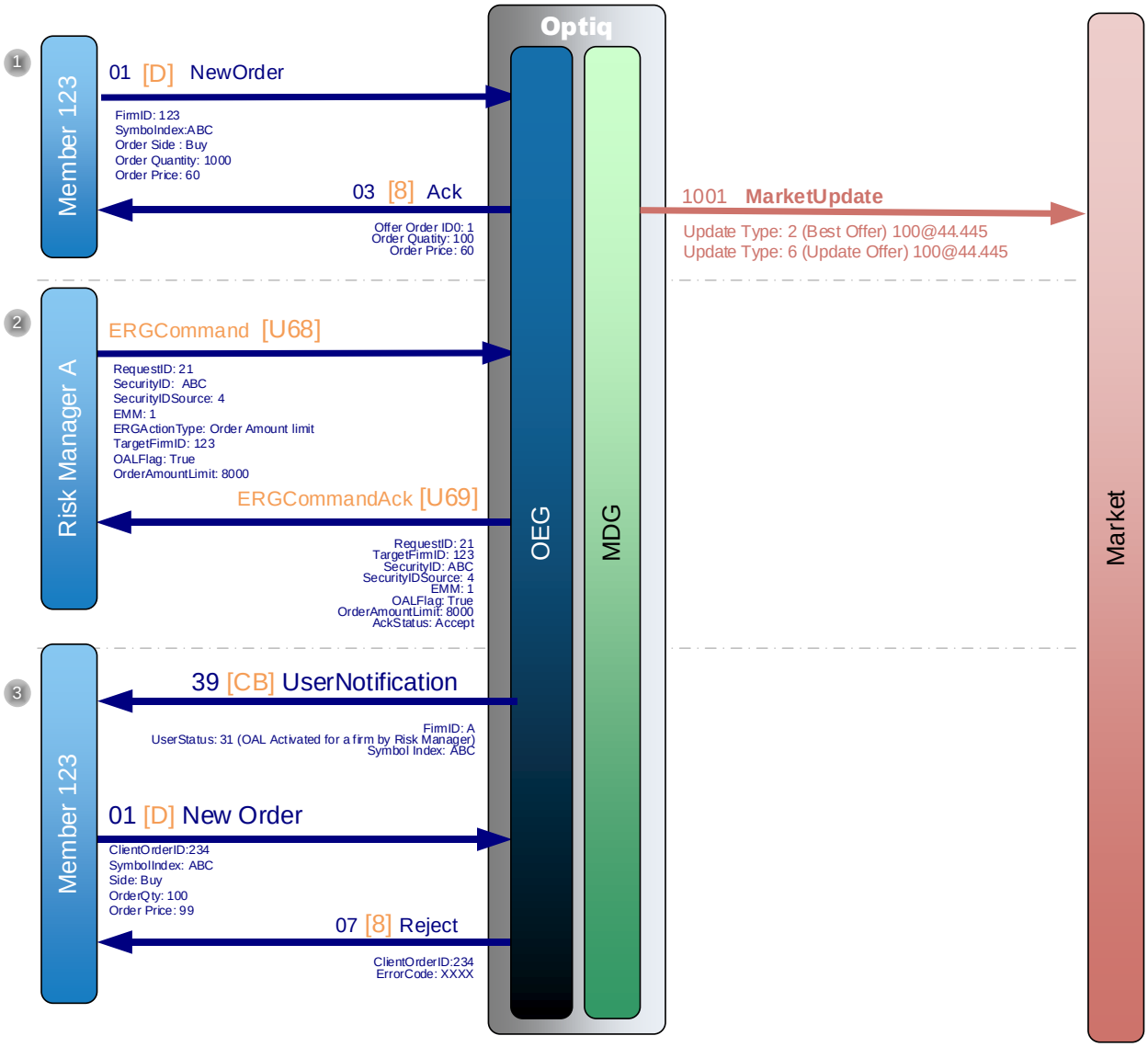
   OEG sends back a private **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

3) OEG then sends a private **UserNotification** (39) (FIX CB) message to all the OE Sessions on which the OA is connected, to notify the member that the identified trader (or an algorithm) is currently blocked for instrument A1.

OEG sends back a private **Kill** (05) (FIX 8) message to notify the member of the cancellation of the active order in the book for the combination of the identified Target Firm ID + Target Party ID. Only the OE session that owns the order receives the message of the order cancellation.

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

8.4 ERG: ACTIVATE OAL



Both the Risk Manager A and Member 123 are logged on to an OEG on the Equities segment, and Risk Manager 123 is setup as the risk manager for this firm.

1) Member 123 submits a **NewOrder** (01) (FIX D) message. 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.

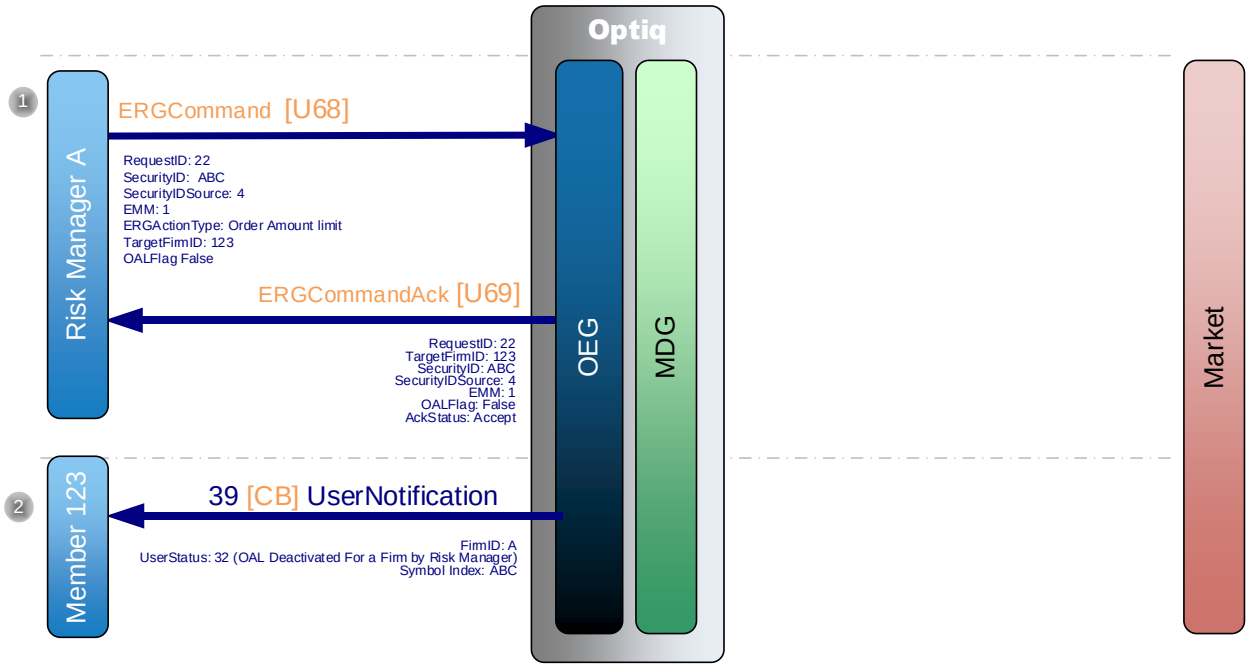
2) Risk Manager A sends an **ERGCommand** (U68) message to activate the Order Amount Limit control for Member A, on Instrument ABC, with the maximum amount of 8000.

   OEG sends back a private **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

3) Then OEG sends a private **UserNotification** (39) (FIX CB) message to all OE Sessions on which the Member 123 is connected, to notify the member that Order Amount Limit is currently activated for the given instrument ABC, with the maximum amount of 8000.

   Member 123 submits a **NewOrder** (01) (FIX D) message, with Order Qty of 100 and Order price of 99, which is higher than the set Order Amount Limit. This order will be rejected as it breaches the set Order Amount limit, and OEG sends back a private **Reject** (07) (FIX 8) message to reject the creation of the new order with an Error Code.

8.5 ERG: DEACTIVATE OAL

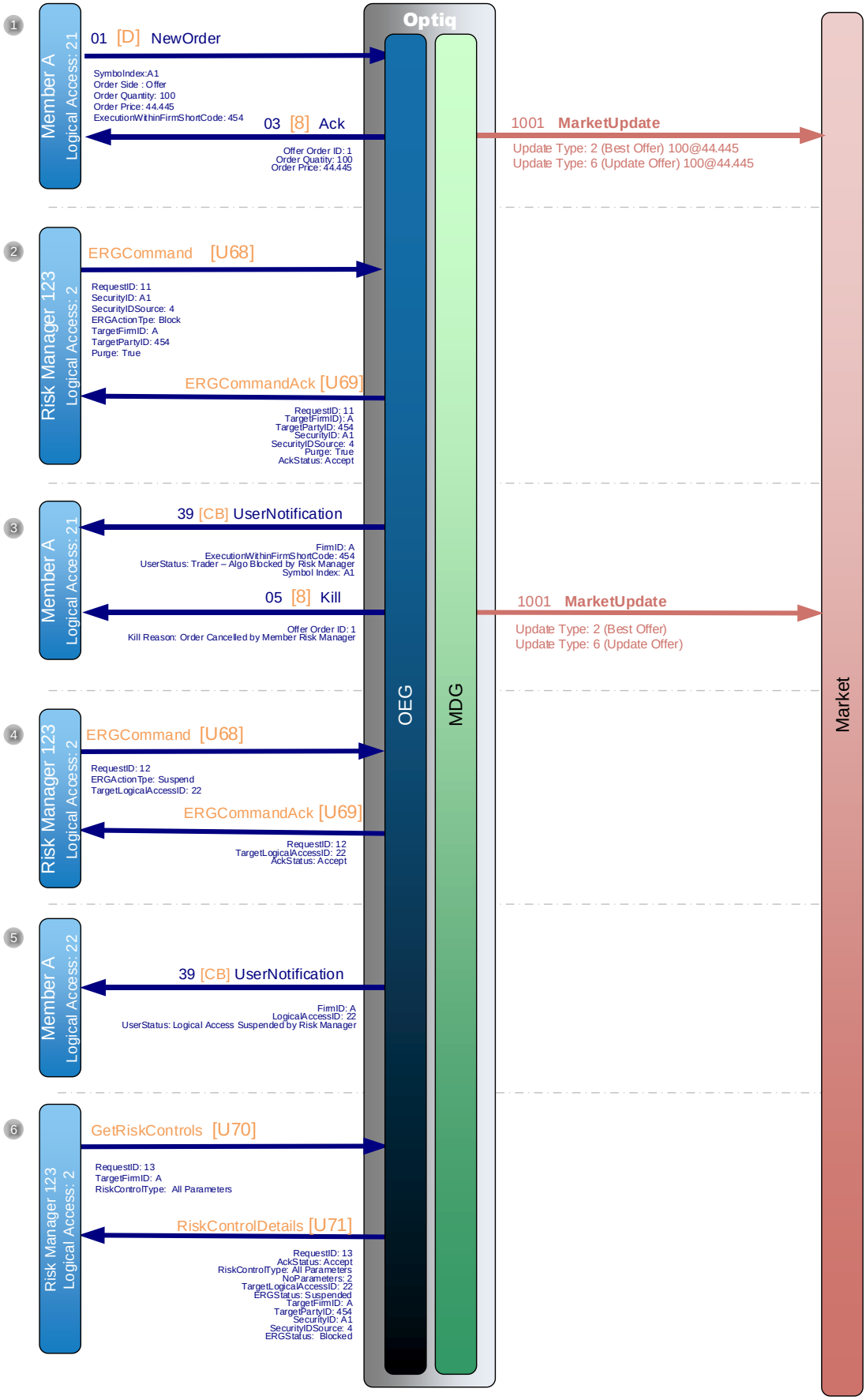


1) Risk Manager A sends an **ERGCommand** (U68) message to deactivate the Order Amount Limit control for Member 123, on Instrument ABC;

   OEG sends back a private **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

2) Then OEG sends a private **UserNotification** (39) (FIX CB) message to all OE Sessions on which the Member 123 is connected, to notify the member that Order Amount Limit is currently deactivated for the given instrument ABC, and the maximum amount of 8000 is removed.

8.6 GET RISK CONTROL DETAILS – ALL PARAMETERS



Both Risk Manager 123 and Member A are logged on to an OEG on the Equity Derivatives segment, and Risk Manager 123 is setup as the risk manager for this firm. Member A is connected through 2 different Logical Accesses to the Equities segment.

1) Member A submits a **NewOrder** (01) (FIX D), 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) Risk Manager 123 sends an **ERGCommand** (U68) message to block Trader (or an Algorithm) identified by the Short Code '454' (provided within *TargetPartyID* field) and Member A (provided within *TargetFirmID* field), on a specific contract A1 (provided within *SecurityID* field), selecting to cancel all of the active orders in the book for this action.

   OEG sends back a private **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

3) OEG sends a private **UserNotification** (39) (FIX CB) message to all OE Sessions on which the Member A is connected, to notify the member that the trader (or an algorithm) is currently blocked on the contract A1.

   OEG sends back a private **Kill** (05) (FIX 8) to notify the member of the cancellation of the only active order in the book for the combination of Target Firm ID + Target Party ID.

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

4) Risk Manager 123 sends an **ERGCommand** (U68) message to suspend for the Logical Access ID 22.

   OEG sends back a private **ERGCommandAck** (U69) message to confirm the successful receipt and technical processing of the message.

5) OEG sends a private **UserNotification** (39) (FIX CB) message to all OE Sessions on which the Member A is connected, to notify the member that the Logical Access 22 has been suspended by the Risk Manager.

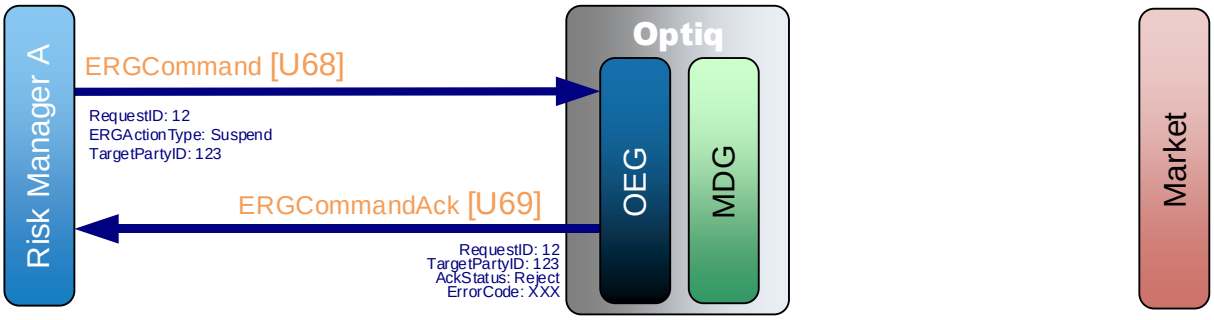
6) Risk Manager 123 sends a **GetRiskControls** (U70) message to request all parameters for Member A.

   OEG sends back a **RiskControlDetails** (U71) message to provide all current RiskGuard controls for the Member A set by the Risk Manager 123. The provided details contain the following records: (i) Logical Access ID 22 is Suspended and (ii) Firm ID A is blocked on contract A1.

Note:

- OEG sends to the Risk Manager 123 only the controls activated by that risk manager.
- The details provided for Member A cover all Logical Access for the Equities segment.

8.7 ERG: SUSPEND COMMAND REJECTED FOR FUNCTIONAL REASONS



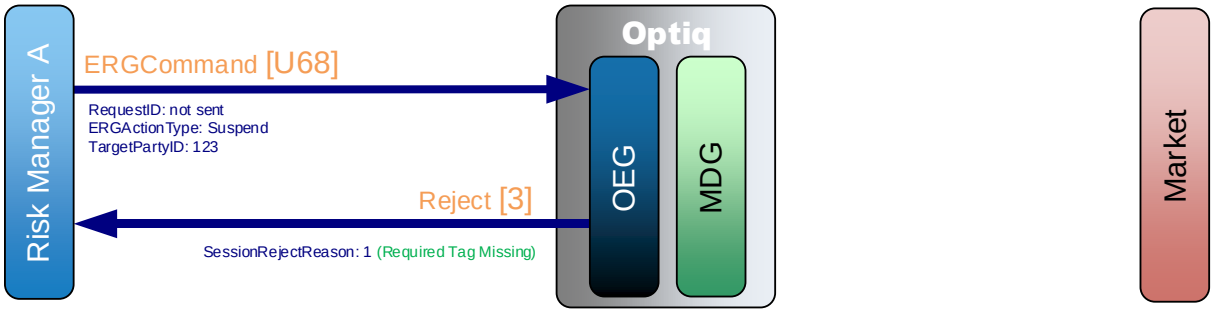
Risk Manager A sends a private **ERGCommand** (U68) message to suspend a trader or an algorithm using a Short Code, without providing the *Firm ID*.

OEG sends back a private **ERGCommandAck** (U69) message to reject the suspension with an *Error Code*.

The reason of the rejection can be found using the *ErrorCode* value within the *Euronext Cash and Derivatives Markets - Optiq OEG TCS Error List – Technical Specification (.csv).*

No message is sent to the Market.

8.8 ERG: COMMAND MESSAGE REJECTED FOR TECHNICAL REASONS

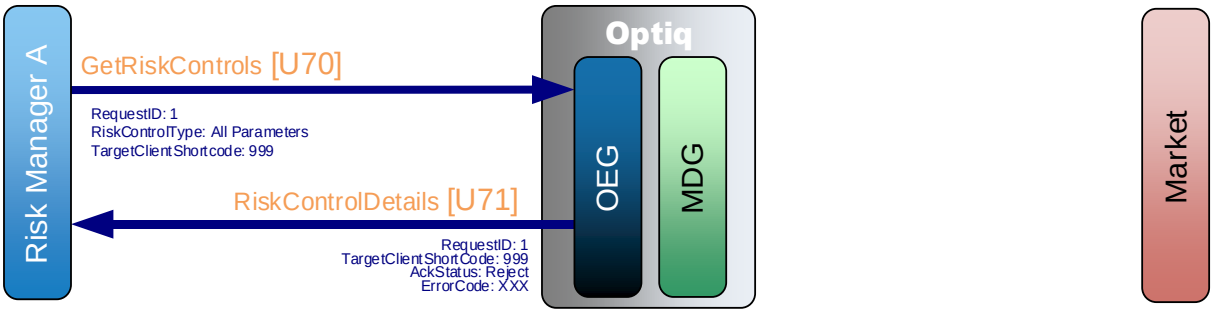


Risk Manager A sends a private **ERGCommand** (U68) message to suspend a trader or an algorithm, without populating a mandatory field *Request ID*.

OEG sends back a private **Reject** (3) message with the field *SessionRejectReason* set to '1' (Required Tag Missing) .

No message is sent to the Market.

8.9 ERG: RISK MANAGER'S REQUEST FOR SETUP DETAILS REJECTED FOR FUNCTIONAL REASONS

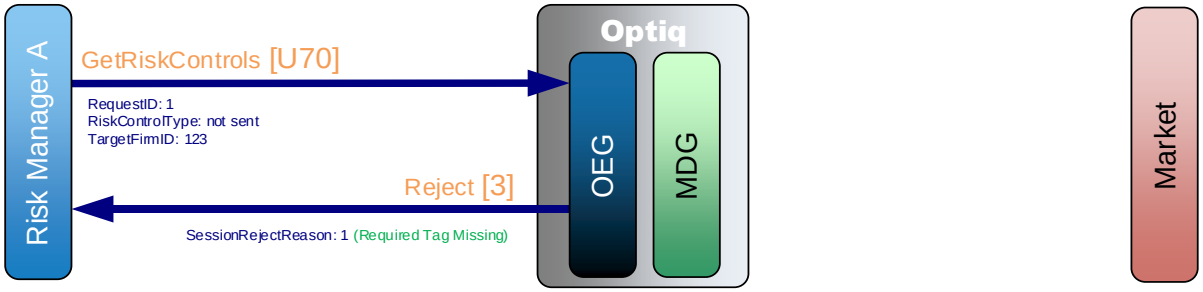


Risk Manager A sends a private **GetRiskControls** (U70) message to request details on all parameters for a given Client Identified Short Code, without providing the Firm ID.

OEG sends back a private **RiskControlDetails** (U71) message to reject the request with an Error Code. The reason of the rejection can be found using the *ErrorCode* value within the *Euronext Cash and Derivatives Markets - Optiq OEG TCS Error List – Technical Specification (.csv).*

No message is sent to the Market.

8.10 ERG: RISK MANAGER'S REQUEST FOR SETUP DETAILS FOR TECHNICAL REASONS



Risk Manager A sends a private **GetRiskControls** (U70) message to request details for a given firm, without providing the Risk Control Type.

OEG sends back a private **Reject** (3) message with the field *SessionRejectReason* set to '1' (Required Tag Missing).

No message is sent to the Market.

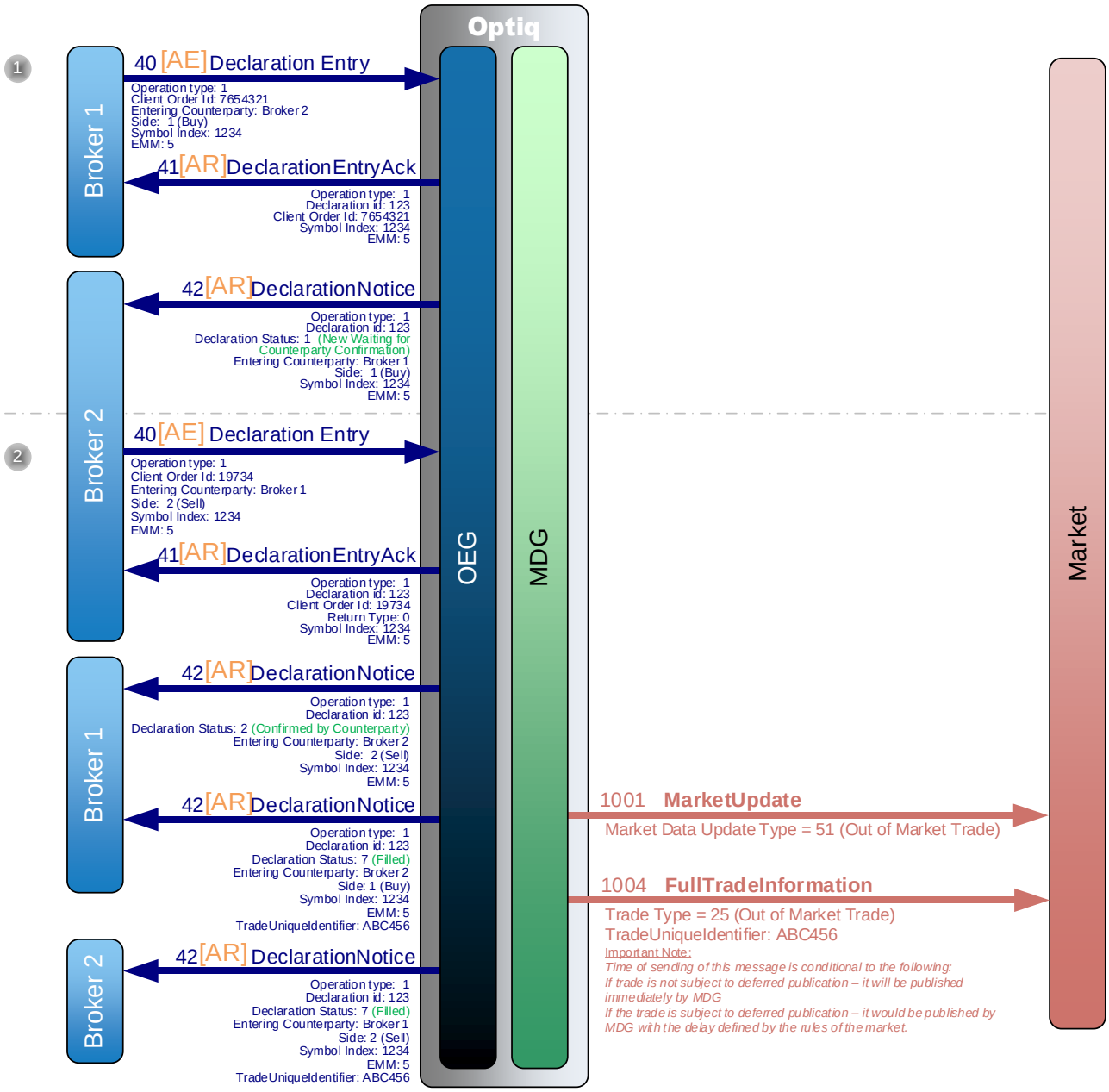
9. TCS KINEMATICS

TCS Kinematics cover the following set of Operation Types:

- 1 = Declaration of a trade outside the book
- 4 = Fund order (quantity)
- 5 = Declaration of a VWAP transaction
- 6 = Fund order (cash amount)
- 7 = Declaration of a trade on a Secondary listing place

9.1 SUCCESSFUL DECLARATION (BUY, SELL, BUT NOT CROSS)

The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 5; and 7) use the same kinematics when applicable.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Buy declaration.

OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

The OEG sends to the counterparty, Broker 2, a **DeclarationNotice** (42) message with the status "New, waiting for counterparty Confirmation".

2) Broker 2 sends a private **DeclarationEntry** (40) message to confirm the declaration by entering a new Sell declaration.

OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

The entering declaration immediately matches the first declaration and OEG sends back a private a **DeclarationNotice** (42) to Broker 1 for the confirmation of its counterparty, and two private **DeclarationNotice** (42) messages to each broker for the execution.

Public **MarketUpdate** (1001) and **FullTradeInformation** (1004) messages are sent to the market for the trade.

Note: If the characteristics of the Declaration submitted by Broker 1 and the one submitted by Broker 2 match, then the DeclarationEntryAck sent back to the Broker 2 contains the same Declaration ID as the one sent to Broker 1.

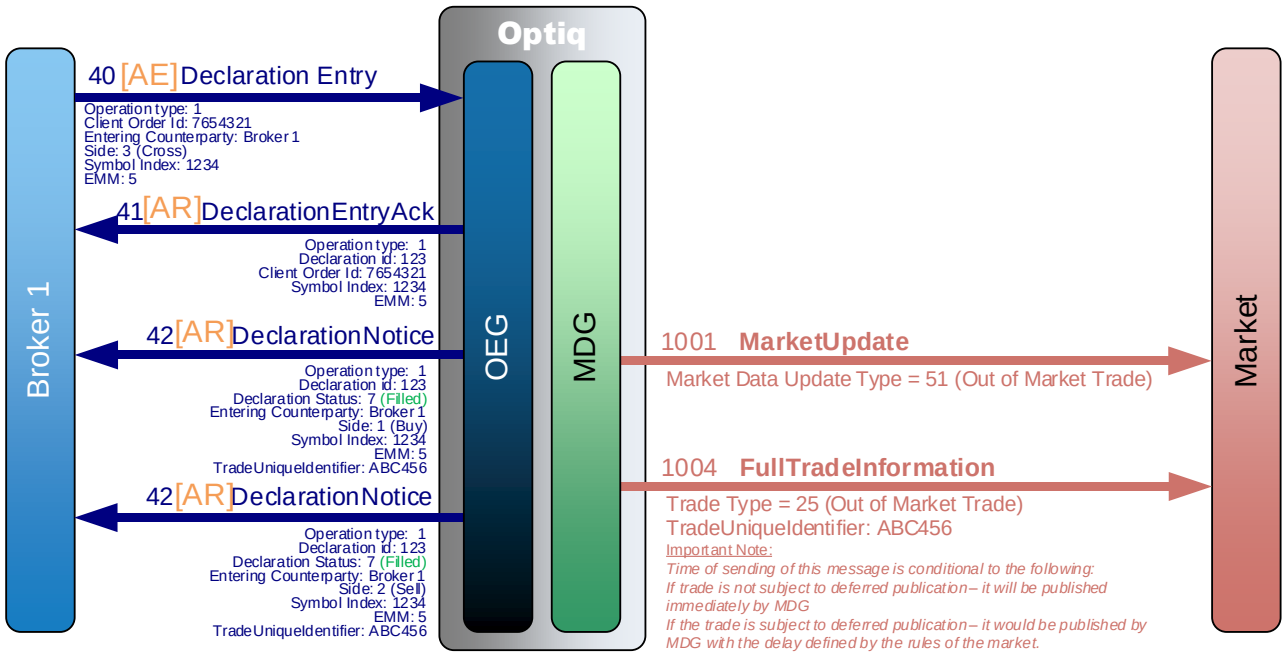
All following Declaration Notice messages carry the same Declaration ID value.

If the characteristics of the Declarations do not match, then the DeclarationEntryAck sent back to Broker 2 gets a new Declaration ID, and the declaration is entered into the book as another "entering" declaration and remains in the system awaiting other potential matches.

9.2 SUCCESSFUL CROSS DECLARATION

The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 5; and 7) use the same kinematics when applicable.

Important Note: Funds are not eligible to Cross Declaration in TCS.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Cross declaration.

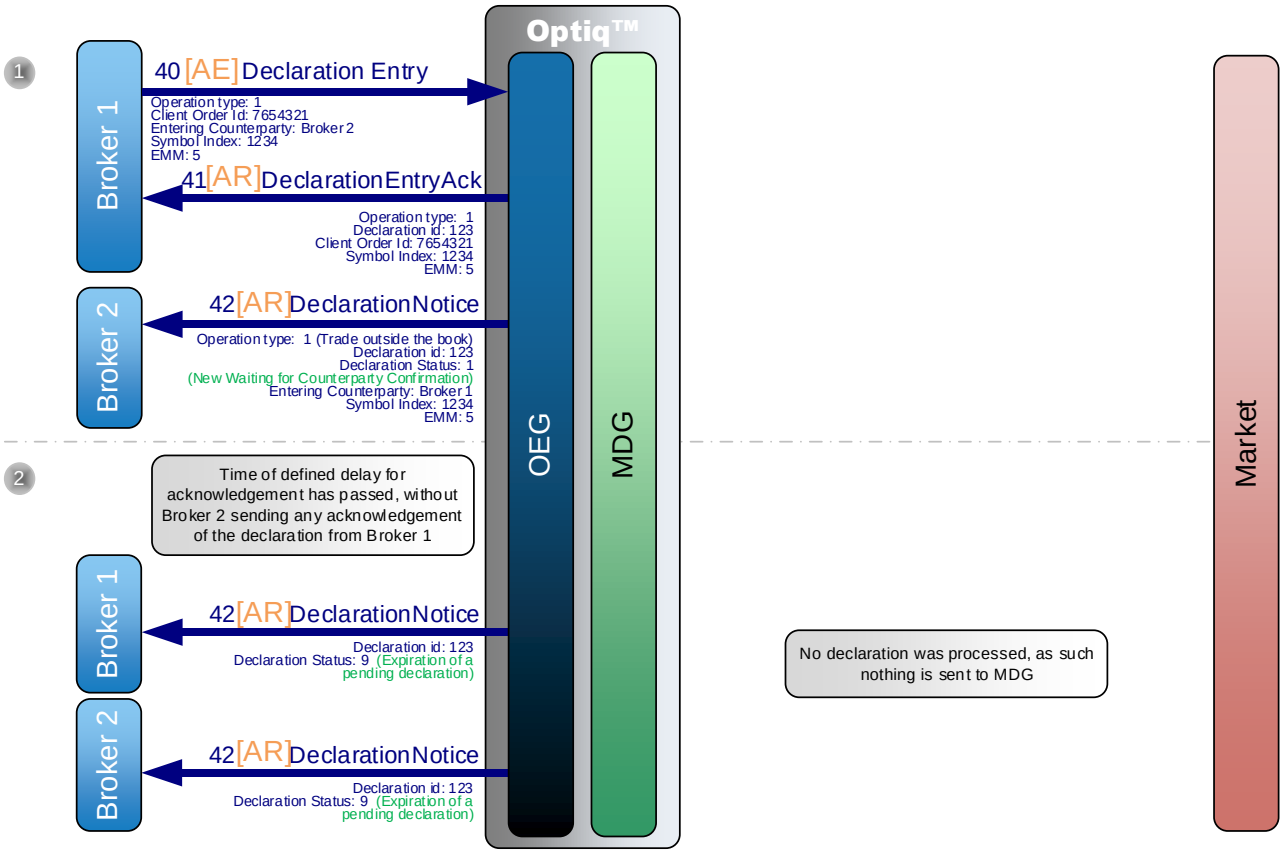
   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

   Then OEG sends to Broker 1 two **DeclarationNotice** (42) message with the status "Filled" fore each side of the Cross declaration.

   Public **MarketUpdate** (1001) and **FullTradeInformation** (1004) messages are sent to the market for the trade.

9.3 SUCCESSFUL DECLARATION WITH EXPIRATION ON TIME BASIS

The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 5; and 7) use the same kinematics when applicable.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Buy declaration.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

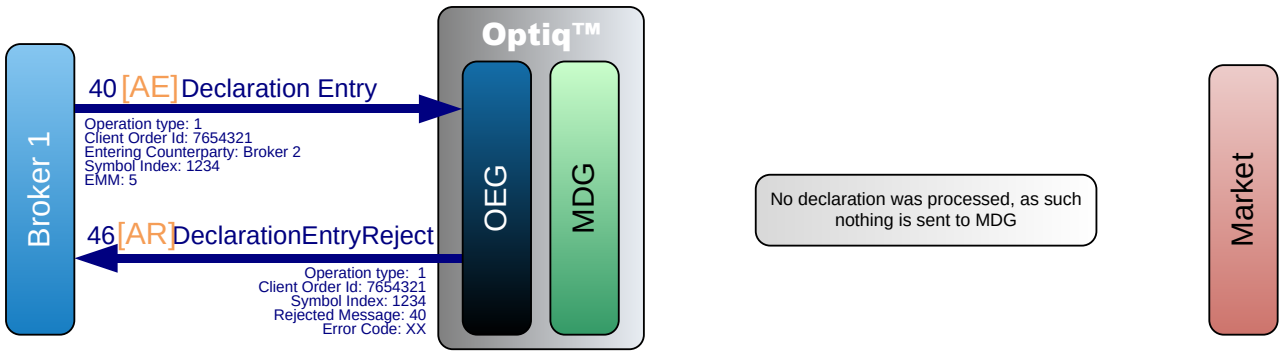
   The OEG sends to the counterparty, Broker 2, a **DeclarationNotice** (42) message with the status "New, waiting for counterparty Confirmation".

2) After the time of defined delay has passed without a confirmation of the counterparty, the declaration is expired.

   OEG sends two private **DeclarationNotice** (42) messages to each broker for the expiration.

9.4 DECLARATION REJECTED DUE TO A MISSING VALUE

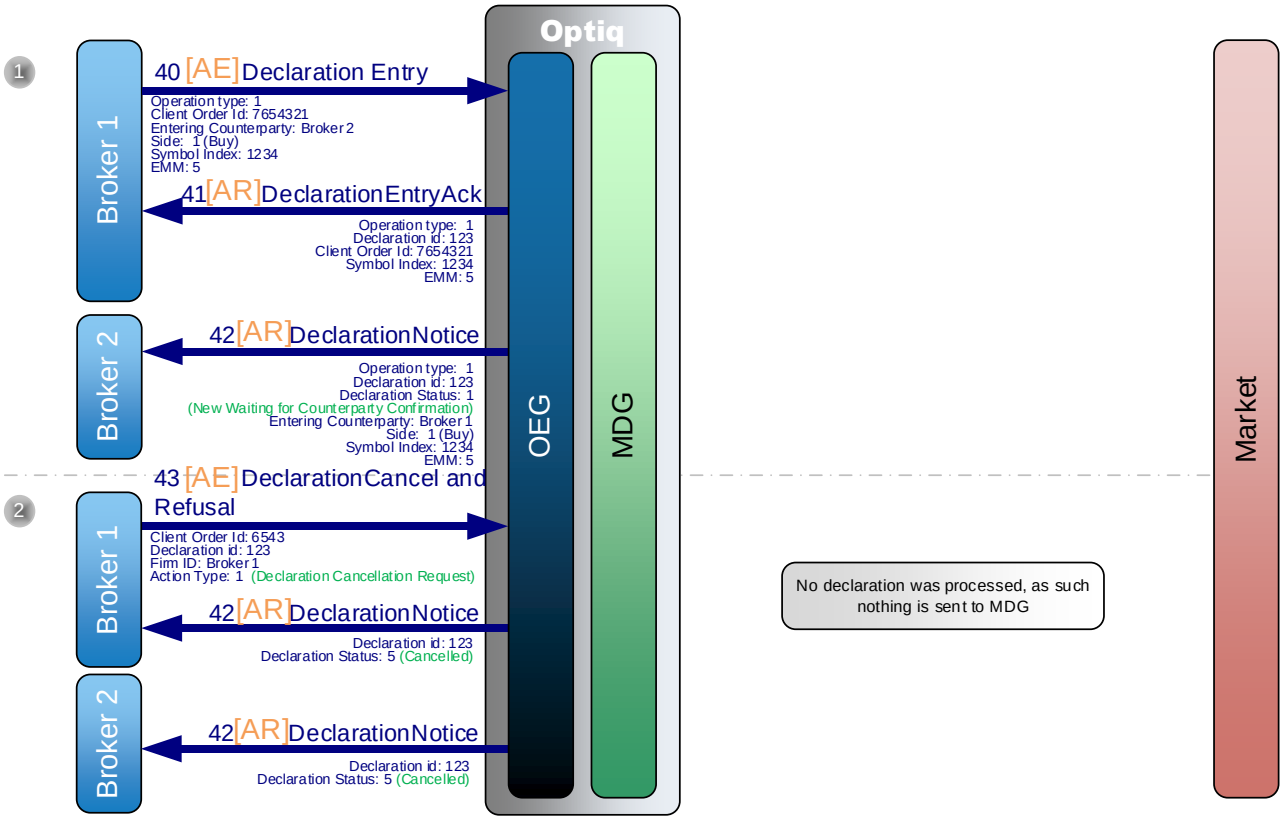
The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 4; 5; 6 and 7) use the same kinematics when applicable.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new declaration.
   OEG sends back a private **DeclarationEntryReject** (46) message to reject the declaration as a mandatory value is missing.

9.5 CANCELLATION OF A DECLARATION BEFORE MATCHING (BUY OR SELL)

The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 5; and 7) use the same kinematics when applicable.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Buy declaration.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

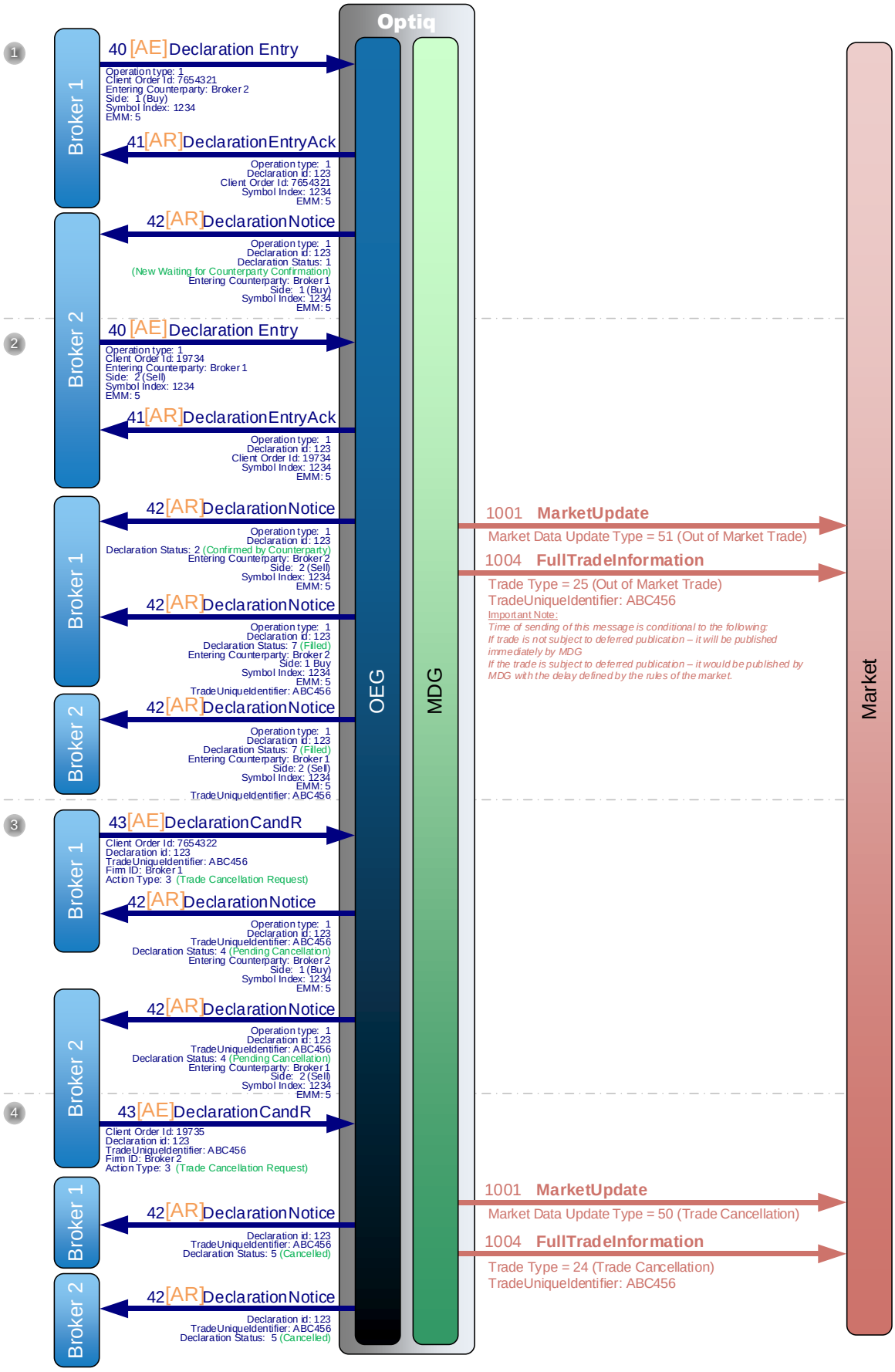
   The OEG sends to the counterparty, Broker 2, a **DeclarationNotice** (42) message with the status "New, waiting for counterparty Confirmation".

2) Broker 1 sends a private **DeclarationCandR** (43) message to request the cancellation of its declaration not yet confirmed by the counterparty.

   OEG sends two private **DeclarationNotice** (42) messages to each counterparty for the cancellation of the declaration.

9.6 CANCELLATION OF A MATCHED DECLARATION

The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 5; and 7) use the same kinematics when applicable.


Optiq
OEG
MDG
Market
Broker 1
Broker 2
1
2
3
4
40 [AE] Declaration Entry
Operation type: 1
Client Order Id: 7654321
Entering Counterparty: Broker 2
Side: 1 (Buy)
Symbol Index: 1234
EMM: 5
41 [AR] DeclarationEntryAck
Operation type: 1
Declaration id: 123
Client Order Id: 7654321
Symbol Index: 1234
EMM: 5
42 [AR] DeclarationNotice
Operation type: 1
Declaration id: 123
Declaration Status: 1
(New Waiting for Counterparty Confirmation)
Entering Counterparty: Broker 1
Side: 1 (Buy)
Symbol Index: 1234
EMM: 5
40 [AE] Declaration Entry
Operation type: 1
Client Order Id: 19734
Entering Counterparty: Broker 1
Side: 2 (Sell)
Symbol Index: 1234
EMM: 5
41 [AR] DeclarationEntryAck
Operation type: 1
Declaration id: 123
Client Order Id: 19734
Symbol Index: 1234
EMM: 5
42 [AR] DeclarationNotice
Operation type: 1
Declaration id: 123
Declaration Status: 2 (Confirmed by Counterparty)
Entering Counterparty: Broker 2
Side: 2 (Sell)
Symbol Index: 1234
EMM: 5
42 [AR] DeclarationNotice
Operation type: 1
Declaration id: 123
Declaration Status: 7 (Filled)
Entering Counterparty: Broker 2
Side: 1 Buy
Symbol Index: 1234
EMM: 5
TradeUniqueIdentifier: ABC456
42 [AR] DeclarationNotice
Operation type: 1
Declaration id: 123
Declaration Status: 7 (Filled)
Entering Counterparty: Broker 1
Side: 2 (Sell)
Symbol Index: 1234
EMM: 5
TradeUniqueIdentifier: ABC456
43 [AE] DeclarationCandR
Client Order Id: 7654322
Declaration id: 123
TradeUniqueIdentifier: ABC456
Firm ID: Broker 1
Action Type: 3 (Trade Cancellation Request)
42 [AR] DeclarationNotice
Operation type: 1
Declaration id: 123
TradeUniqueIdentifier: ABC456
Declaration Status: 4 (Pending Cancellation)
Entering Counterparty: Broker 2
Side: 1 (Buy)
Symbol Index: 1234
EMM: 5
42 [AR] DeclarationNotice
Operation type: 1
Declaration id: 123
TradeUniqueIdentifier: ABC456
Declaration Status: 4 (Pending Cancellation)
Entering Counterparty: Broker 1
Side: 2 (Sell)
Symbol Index: 1234
EMM: 5
43 [AE] DeclarationCandR
Client Order Id: 19735
Declaration id: 123
TradeUniqueIdentifier: ABC456
Firm ID: Broker 2
Action Type: 3 (Trade Cancellation Request)
42 [AR] DeclarationNotice
Declaration id: 123
TradeUniqueIdentifier: ABC456
Declaration Status: 5 (Cancelled)
42 [AR] DeclarationNotice
Declaration id: 123
TradeUniqueIdentifier: ABC456
Declaration Status: 5 (Cancelled)
1001 MarketUpdate
Market Data Update Type = 51 (Out of Market Trade)
1004 FullTradeInformation
Trade Type = 25 (Out of Market Trade)
TradeUniqueIdentifier: ABC456
Important Note:
Time of sending of this message is conditional to the following:
If trade is not subject to deferred publication – it will be published immediately by MDG
If the trade is subject to deferred publication – it would be published by MDG with the delay defined by the rules of the market.
1001 MarketUpdate
Market Data Update Type = 50 (Trade Cancellation)
1004 FullTradeInformation
Trade Type = 24 (Trade Cancellation)
TradeUniqueIdentifier: ABC456

1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Buy declaration.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

   The OEG sends to the counterparty, Broker 2, a **DeclarationNotice** (42) message with the status "New, waiting for counterparty Confirmation".

2) Broker 2 sends a private **DeclarationEntry** (40) message to confirm the declaration by entering a new Sell declaration.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

   The entering declaration immediately matches the first declaration and OEG sends back a private a **DeclarationNotice** (42) to Broker 1 for the confirmation of its counterparty, and two private **DeclarationNotice** (42) messages to each broker for the execution.

   Public **MarketUpdate** (1001) and **FullTradeInformation** (1004) messages are sent to the market for the trade.

3) Broker 1 sends a private **DeclarationCandR** (43) message to request the declaration cancellation. As both *DeclarationID* and *TradeUniqueIdentifier* fields are filled, the *DeclarationID* field is ignored by Optiq and only *TradeUniqueIdentifier* field is used to proceed to the cancellation.

   OEG sends two private **DeclarationNotice** (42) messages to each broker with the status "Pending Cancellation".

4) Broker 2 sends a private **DeclarationCandR** (43) message to confirm the declaration cancellation.

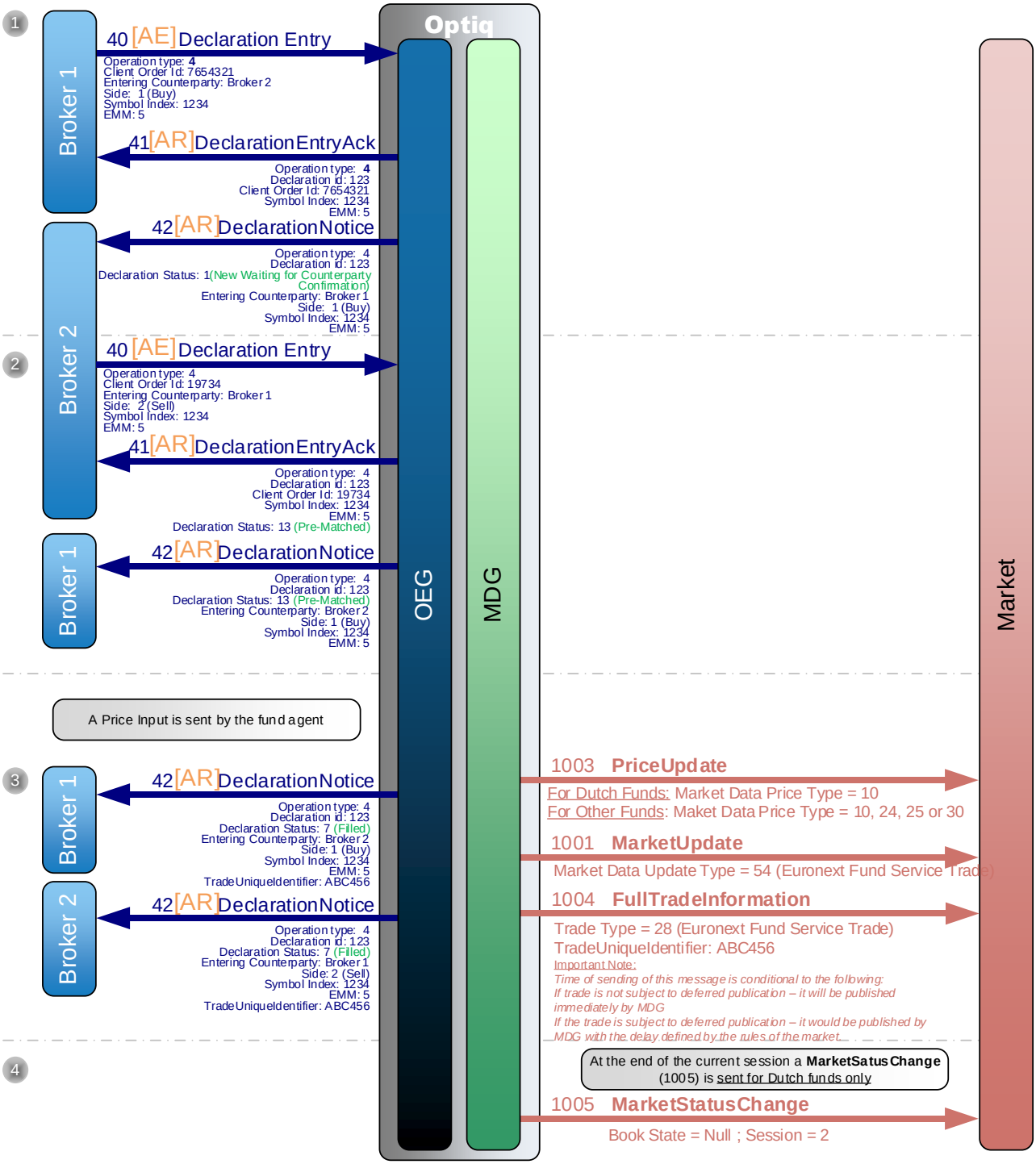
   OEG sends two private **DeclarationNotice** (42) messages to each broker for the declaration cancellation.

   Public **MarketUpdate** (1001) and **FullTradeInformation** (1004) messages are sent to the market for the cancellation of the trade previously sent.

9.7 SUCCESSFUL DECLARATION FOR THE FUNDS

The kinematics below use the Operation Type set to 4, but any of the operation types supported by TCS for Funds (4 and 6) use the same kinematics when applicable. The example is provided only for Dutch

Funds, additional notes are provided for other funds services.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Buy declaration on a Dutch Fund.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

   The OEG sends to the counterparty, Broker 2, a **DeclarationNotice** (42) message with the status "New, waiting for counterparty Confirmation".

2) Broker 2 sends a private **DeclarationEntry** (40) message to confirm the declaration by entering a new Sell declaration.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing and the pre-matching of the request.

   OEG sends back a private a **DeclarationNotice** (42) to Broker 1 for the confirmation of its counterpartyand for the Pre-Matching of the declaration.

   No public message is generated.

3) After the reception of a price input from the fund agent, on fixing a **PriceUpdate** (1003) message is sent to communicate the price, after this trades are broadcast via a **MarketUpdate** (1001) message followed by a **FullTradeInformation** (1004) message.

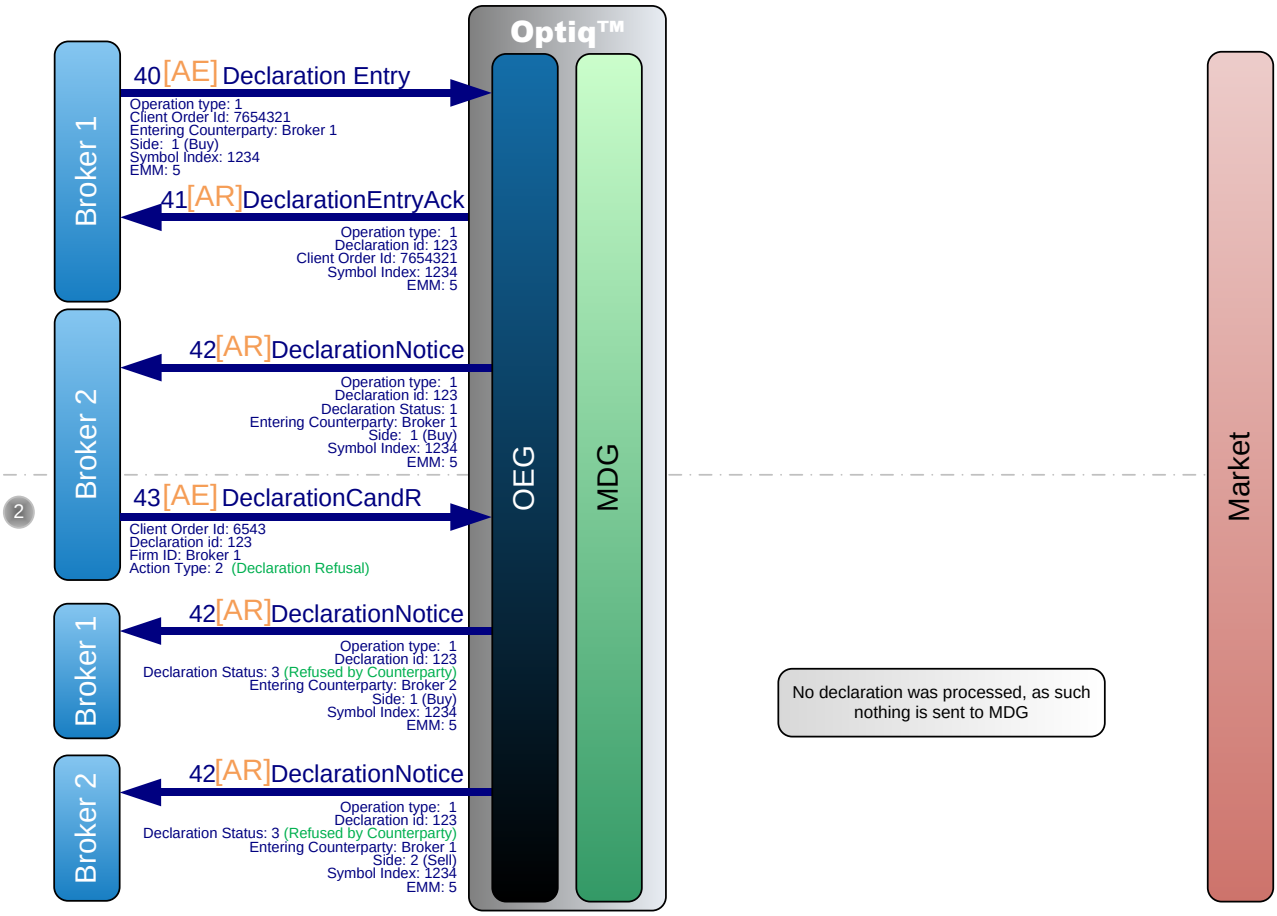
4) At the end of the current session (cut-off) a **MarketStatusChange** (1005) message is sent with Session set to '2'. This is sent for Dutch funds only.

Note: One **PriceUpdate** (1003) message is sent per instrument, which may result in multiple trade messages.

Please note that **MarketStatusChange** (1005) is sent for Dutch Funds only.

9.8 REFUSAL OF DECLARATION BY RECEIVING BROKER

The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 4; 5; 6 and 7) use the same kinematics when applicable.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Buy declaration.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

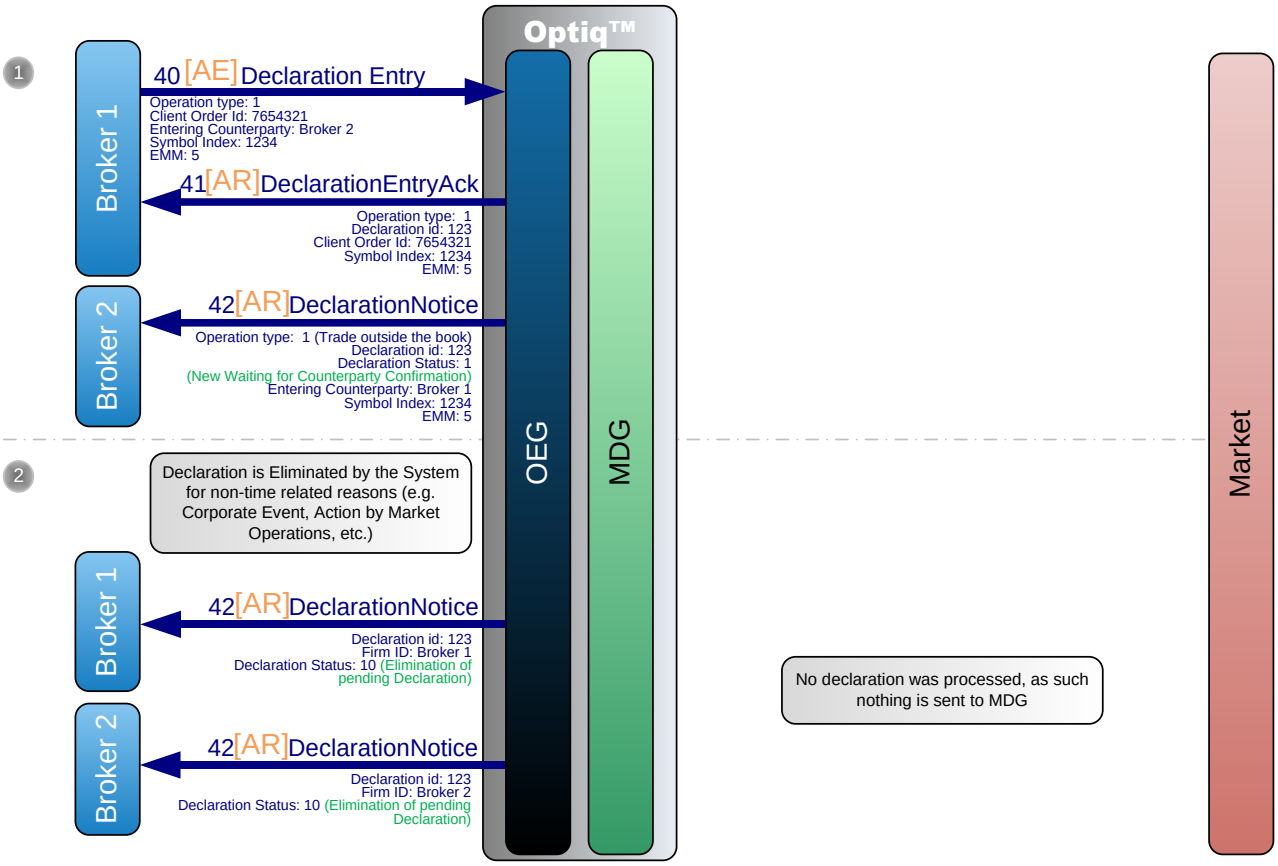
   The OEG sends to the counterparty, Broker 2, a **DeclarationNotice** (42) message with the status "New, waiting for counterparty Confirmation".

2) In case Broker 2 is unwilling or for whatever reason unable to confirm the declaration, Broker 2 sends a private **DeclarationCandR** (43) message to refuse the declaration, with Action Type set to "Declaration Refusal".

   In this case OEG sends two private **DeclarationNotice** (42) messages to each broker for the refusal of the declaration.

9.9 ELIMINATION OF DECLARATION BY THE SYSTEM

The kinematics below use the Operation Type set to 1, but any of the operation types supported by TCS for declarations (1; 4; 5; 6 and 7) use the same kinematics when applicable.



1) Broker 1 sends a private **DeclarationEntry** (40) message to enter a new Buy declaration.

   OEG sends back a private **DeclarationEntryAck** (41) message to confirm the successful receipt and technical processing of the request.

   The OEG sends to the counterparty, Broker 2, a **DeclarationNotice** (42) message with the status "New, waiting for counterparty Confirmation".

2) If before the time of defined delay has not yet passed a non-time related event may occur that would cause elimintation of the declaration. Such an even could be, but is not limited to, occurrence of a Corporate Event, or an action by the Market Operations.

   In this case OEG sends two private **DeclarationNotice** (42) messages to each broker for the elimination of the declaration.

10. ISSUING AND TENDER OFFER KINEMATICS (EQUITY)

The following section describes the OEG - MDG kinematics specific to the Italian Equity Issuing and Tender Offer operations.

In term of MDG messages, for the IPO market model, more specifically for Tender Offer, due to the fact that:

- It is hosted on Equities Optiq Segment;
- Has a huge volumetry;
- And due to the very specific functional rules concerning the price and matching;

despite the fact that existing Market Data messages are re-used, there are dedicated kinematics.

The table below summarises the MDG messages applicable or not to the Equity Issuing or Tender Offer instruments:

Messages	Message Types	MDG Message For Equity-Issuing	MDG Message For Equity-Tender Offer
Technical Messages	Start of Day (1101)	Yes	Yes
	End of Day (1102)	Yes	Yes
	Health Status (1103)	Yes	Yes
	Technical Notification (1106)	Yes	Yes
Referential Messages	Timetable (1006)	Yes	Yes
	Standing Data (1007)	Yes	Yes
	Contract Standing Data (1013)	N/A	N/A
	Outright Standing Data (1014)	N/A	N/A
	Strategy Standing Data (1012)	N/A	N/A
	APA Standing Data (1027)	N/A	N/A
	BF Instrument Reference (1201)	N/A	N/A
Application Messages	Market Update (1001)	No	Yes
	Order Update (1002)	No	Yes
	Long Order Update (1015)	No	Yes
	Price Update (1003)	No	Yes
	Full Trade Information (1004)	No	Yes
	APA Quotes (1026)	N/A	N/A
	APA Full Trade Information (1028)	N/A	N/A
	BF Trade (1202)	N/A	N/A
	BF NAV (1203)	N/A	N/A
	LIS Package Structure (1016)	N/A	N/A
	Market Status Change (1005)	Yes	Yes
	BF Instrument Suspension (1204)	N/A	N/A
	Statistics (1009)	No	Yes
	Real Time Index (1008)	N/A	N/A
	Index Summary (1011)	N/A	N/A

Below are the detailed explanation (When the MDG Message is applicable/allowed):

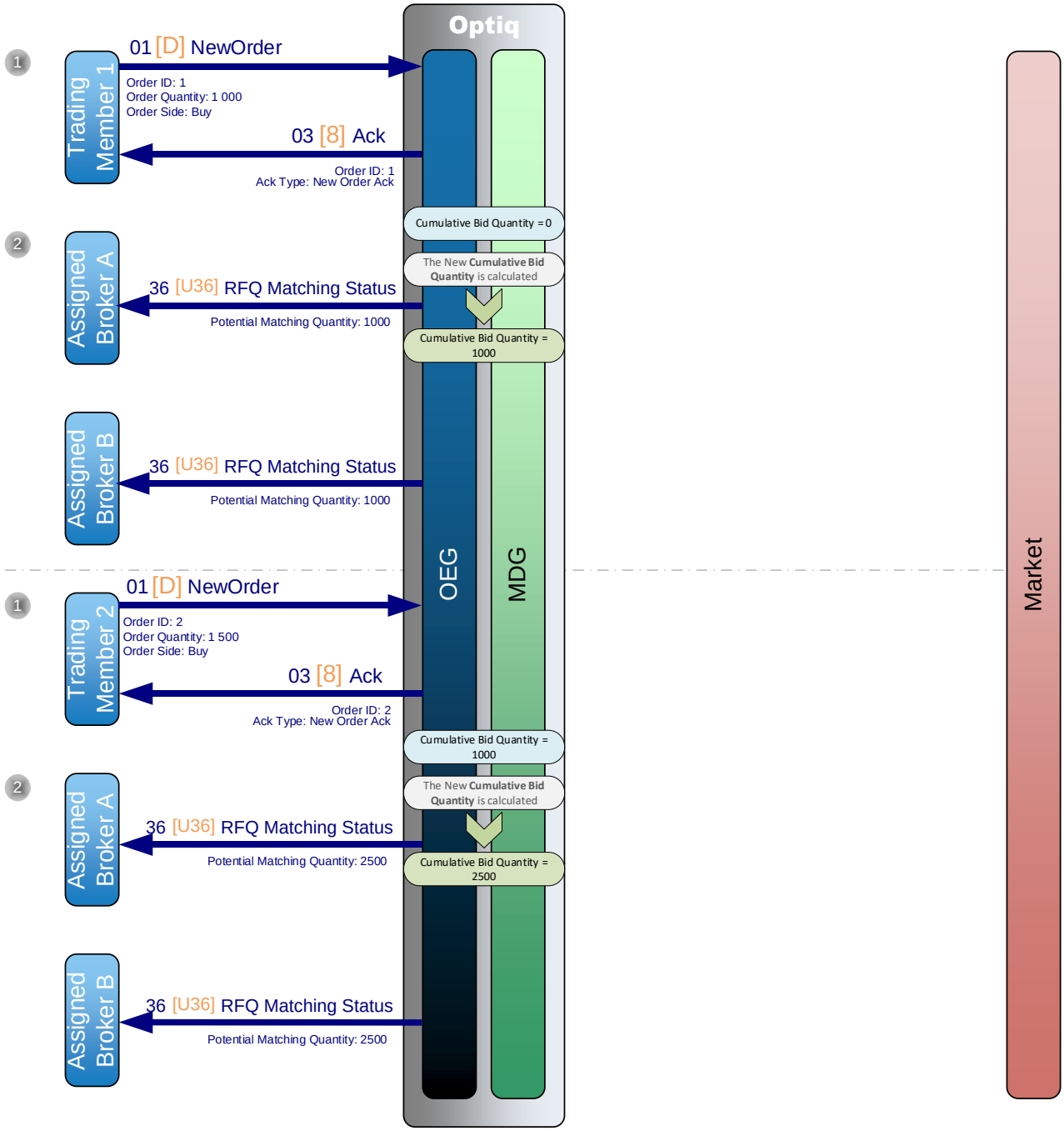
- **General rules:**
  - Referential messages and technical messages will be sent as of today for any equity instrument;
  - If the Last Adjusted Closing Price (LACP) gets updated by the Euronext Market Surveillance (EMS), then a Price Update (1003) is sent out with the new value;
  - Each time there is a phase change or instrument state change, then Market Status Change (1005) is sent.
- Initialisation of a new trading day: **StartOfDay** (1101) is sent followed by **Timetable** (1006) messages providing all the trading patterns that are used across all the instruments. **StandingData** (1007) messages are sent for every

single instrument. **MarketStatusChange** (1005) messages are sent for every single instrument, with *Book State* set to 'Inaccessible', *Trading Period* set to 'Opening' and *Rebroadcast Indicator* set to '0'.

- **Market Data Outside of the Uncrossing phase:**
  - Both Order Update (1002) and Market Update (1001) messages will be disseminated upon order reception, modification, cancellation.
- **Market Data During the Uncrossing phase:**
  - For each trade a Market Update (1001) will be sent with the dedicated Market Data Update Type – 104 = Issuing Or Tender Offer Trade;
  - Full Trade information (1004) will be sent for each trade;
  - Statistics (1009): The statistics message will be sent, as today, each time one of the indicators listed below is updated - Stats update type:
    - 5 Daily High;
    - 6 Daily Low;
    - 7 Yearly High;
    - 8 Yearly Low;
    - 9 Lifetime High;
    - 10 Lifetime Low;
    - 14 Variation Last Price;
    - 15 Open Price;
    - 16 Trade Count;
    - 17 Last Traded Price;
    - 18 Percent Variation Previous Close;
    - 21 On Book Auction Cumulative Quantity;
    - 23 On and Off Book Cumulative Quantity.
- **At the end of the Uncrossing:**
  - In order to allow the market participants to update limits and clean the book:
    - Market Update (1001) with Market Data Update Type – 254 = Clear Book;
    - Order Update (1002) with Market Data Change Type – 3 = Deletion Of All Orders By Side.
  - And, in case of Trade Cancellation:
    - Market Update (1001) will be sent with the Market Data Update Type – 50 = Trade Cancellation;
    - Full Trade Information (1004) will be sent with the Trade Type set to 24 = Trade Cancellation.

10.1 ISSUING KINEMATICS

10.1.1 Incoming Order With No Matching – Call Phase



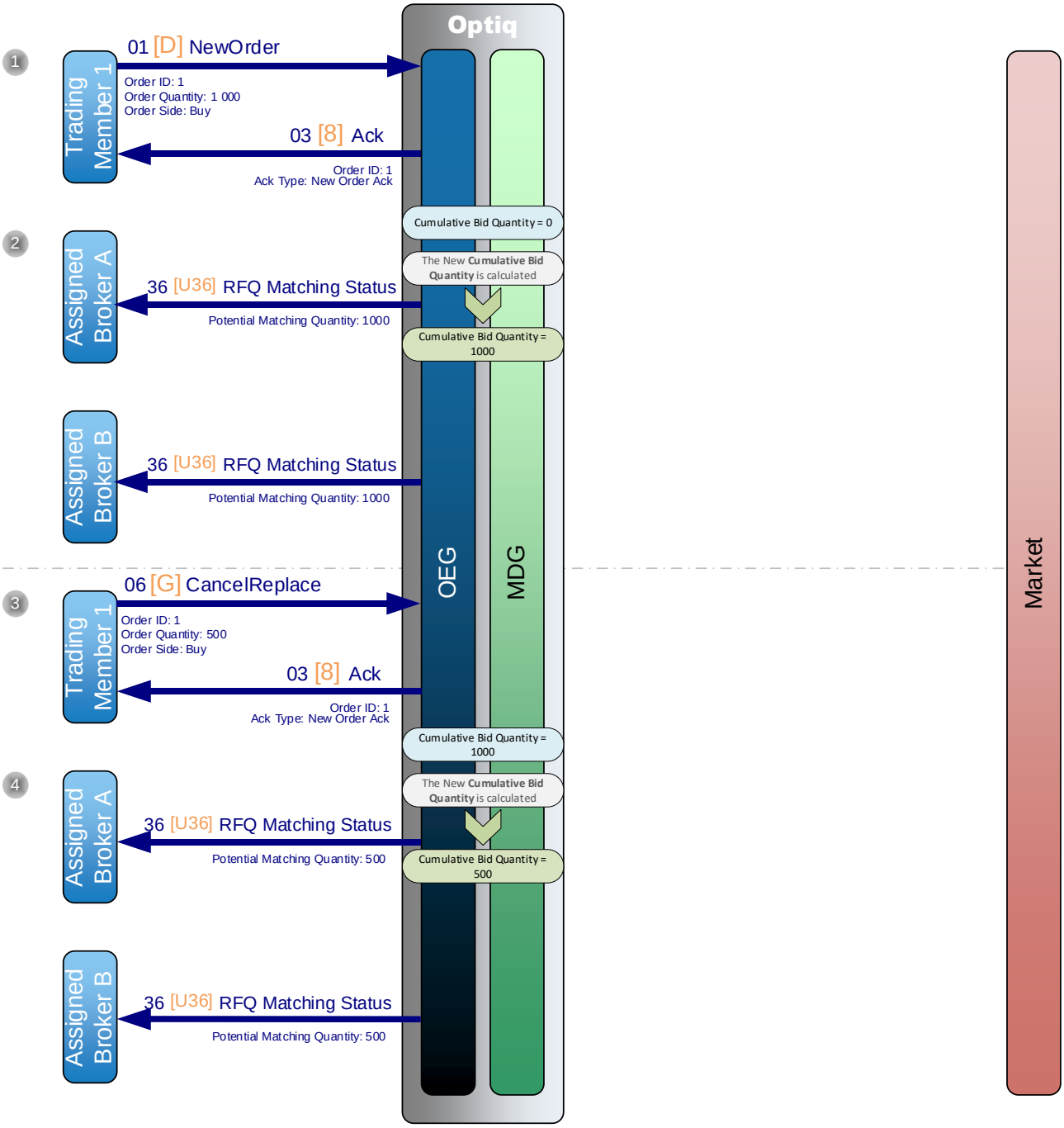
1) A Trading Member (Non Assigned Broker Firm) sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 1,000.

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

2) The **Cumulative Bid Quantity** is calculated and sent to all the Assigned Brokers linked to the Issuing instrument through a private **RFQ Matching Status** (36) (FIX U36) message, so that they are always aware of the state of the demand.

Notes: Even if the 'Cumulative Bid Quantity' feature is activated, no **RFQ Matching Status** (36) (FIX U36) message is sent when an order is received from an Assigned Broker Account Type.

10.1.2 Modifying An Unmatched Order



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

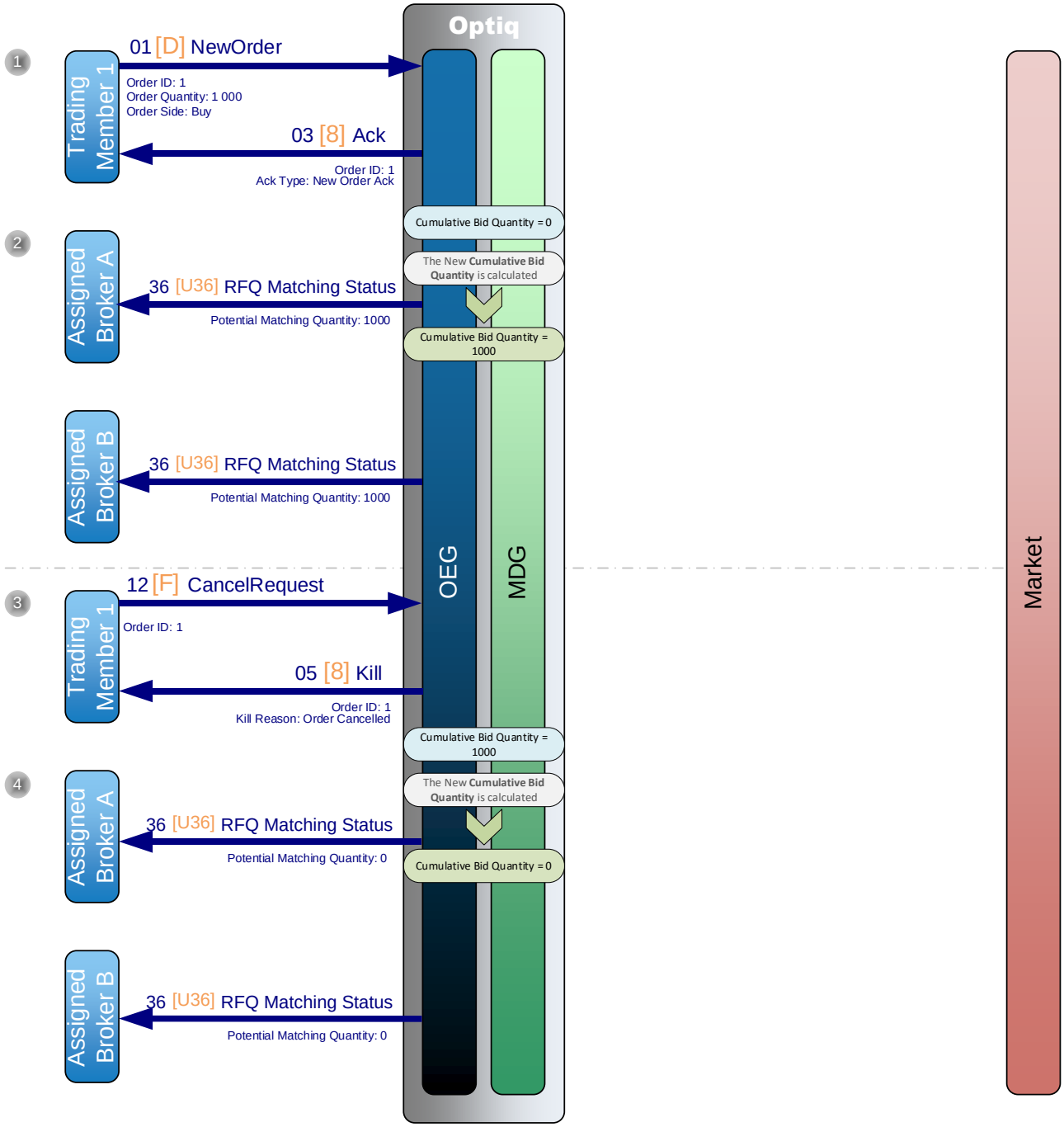
2) The **Cumulative Bid Quantity** is calculated and sent to all the Assigned Brokers linked to the Issuing instrument through a private **RFQ Matching Status** (36) (FIX U36) message, so that they are always aware of the state of the demand.

3) The same Trading Member sends a private **CancelReplace** (06) (FIX G) message to modify the order by decreasing the quantity to 500.
   OEG sends back a private **Ack** (03) (FIX 8) message to confirm the successful receipt and technical processing of the order modification.

4) The Cumulative Bid Quantity is calculated and sent to all the Assigned Brokers linked to the Issuing instrument through a private **RFQ Matching Status** (36) (FIX U36) message.

Notes: Even if the 'Cumulative Bid Quantity' feature is activated, no **RFQ Matching Status** (36) (FIX U36) message is sent when an Assigned Broker Account Type requests the update of an order.

10.1.3 Cancelling An Unmatched Order



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

2) The **Cumulative Bid Quantity** is calculated and sent to all the Assigned Brokers linked to the Issuing instrument through a private **RFQ Matching Status** (36) (FIX U36) message, so that they are always aware of the state of the demand.

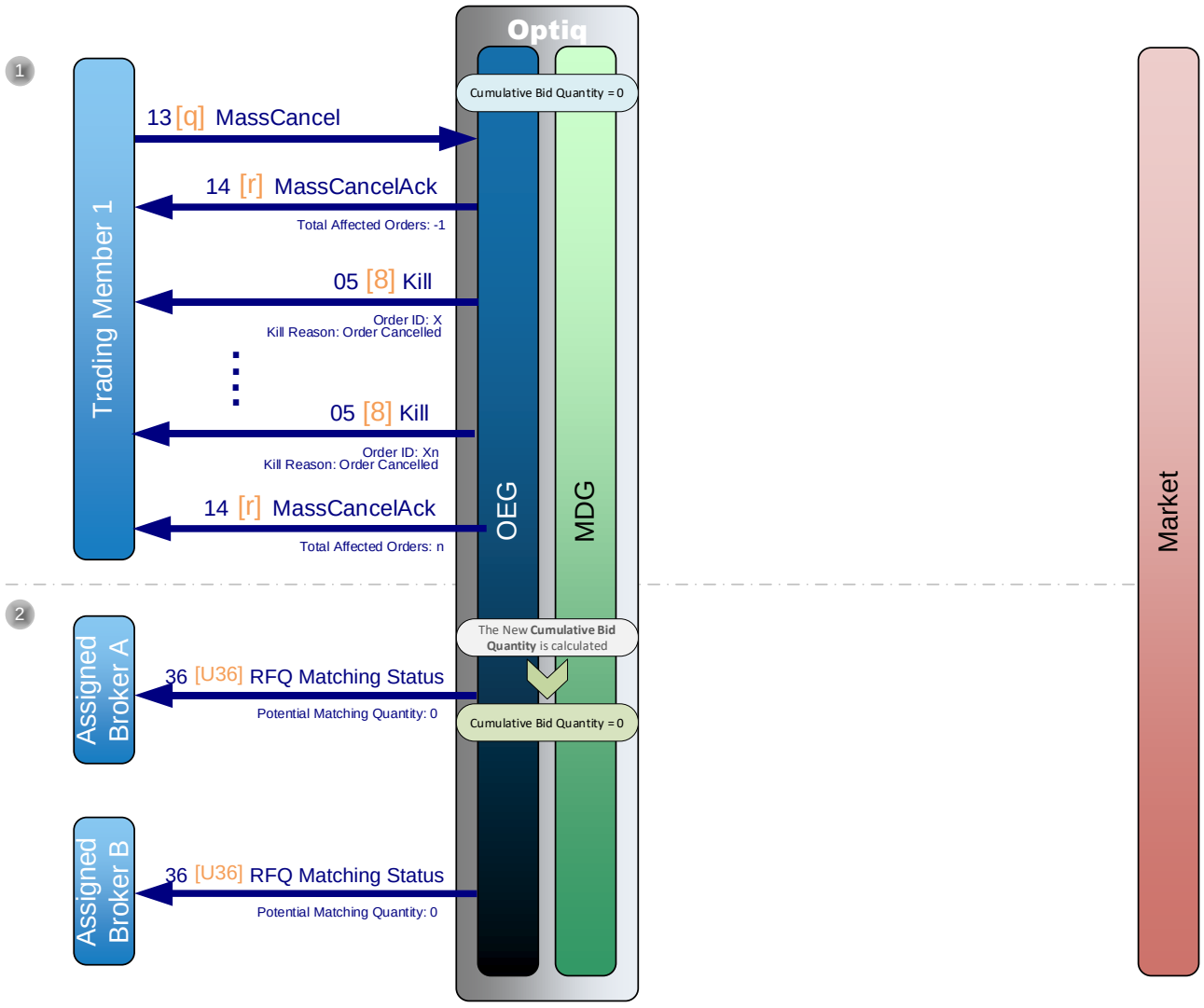
3) Later, the same Trading Member sends a private **CancelRequest** (12) (FIX F) message to cancel the previously entered order.

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

4) The Cumulative Bid Quantity is calculated and sent to all the Assigned Brokers linked to the Issuing instrument through a private **RFQ Matching Status** (36) (FIX U36) message.

Notes: Even if the 'Cumulative Bid Quantity' feature is activated, no **RFQ Matching Status** (36) (FIX U36) message is sent when an Assigned Broker Account Type requests the cancellation of an order.

10.1.4 Mass Cancellation



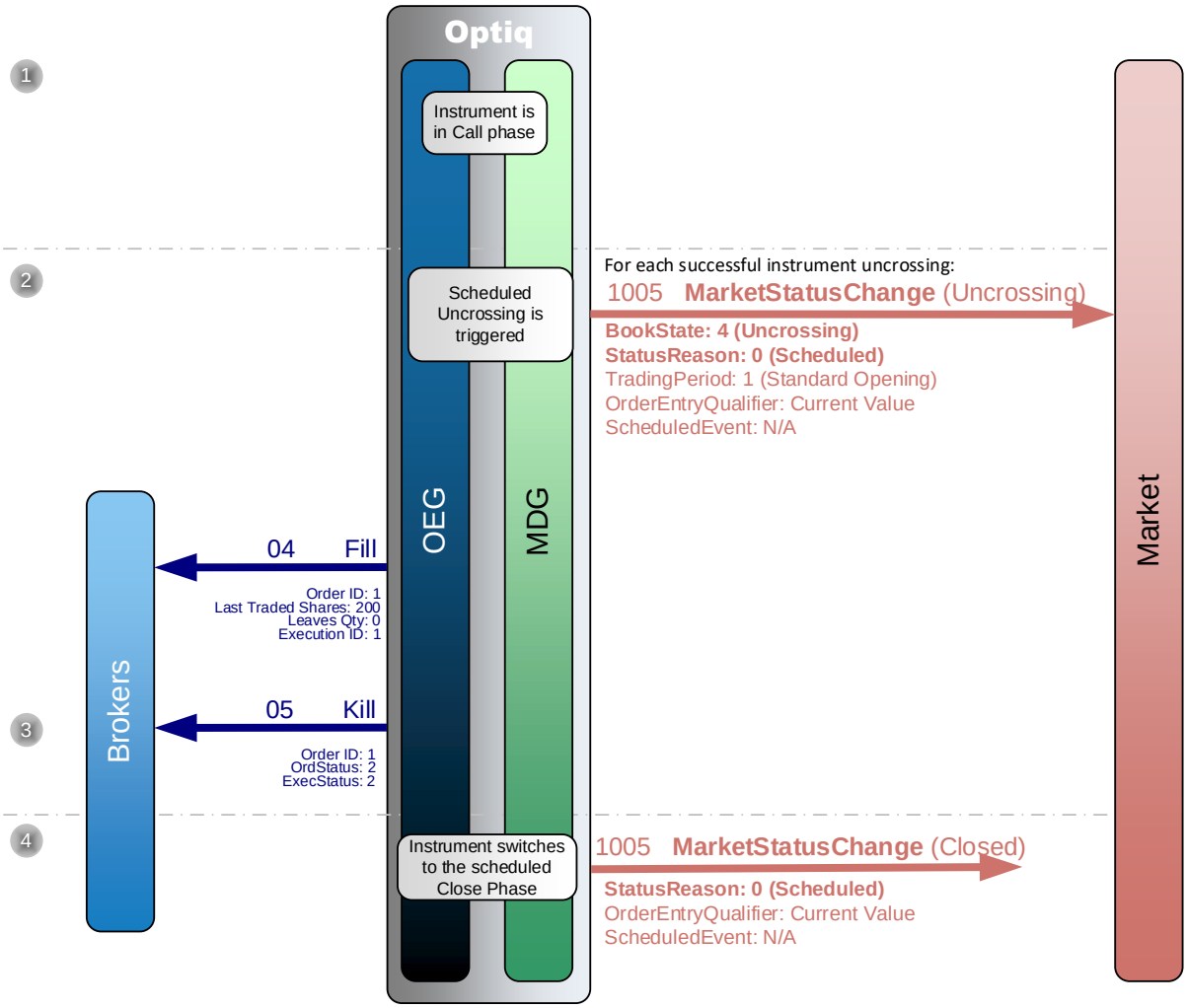
1) A Trading Member sends a private **MassCancel** (13) (FIX q) message to cancel some of his orders matching specific criterions.

   OEG sends back a private **MassCancelAck** (14) (FIX r) message followed by a private **Kill** (05) (FIX 8) message for each affected order detailing the killed orders; the mass cancellation process is ended by a new private **MassCancelAck** (14) (FIX r) message notifying the total affected orders.

2) The **Cumulative Bid Quantity** is calculated and sent to all the Assigned Brokers linked to the Issuing instrument through a private **RFQ Matching Status** (36) (FIX U36) message, so that they are always aware of the state of the demand.

Notes: Even if the 'Cumulative Bid Quantity' feature is activated, no **RFQ Matching Status** (36) (FIX U36) message is sent when an Assigned Broker Account Type performs a Mass Cancellation.

10.1.5 Scheduled Uncrossing



1) The instrument is in a Call trading phase as defined in the **TimeTable** and by the pattern associated to this instrument. (Please note that all the scheduled state changes are notified and described in the pattern of the instrument.)

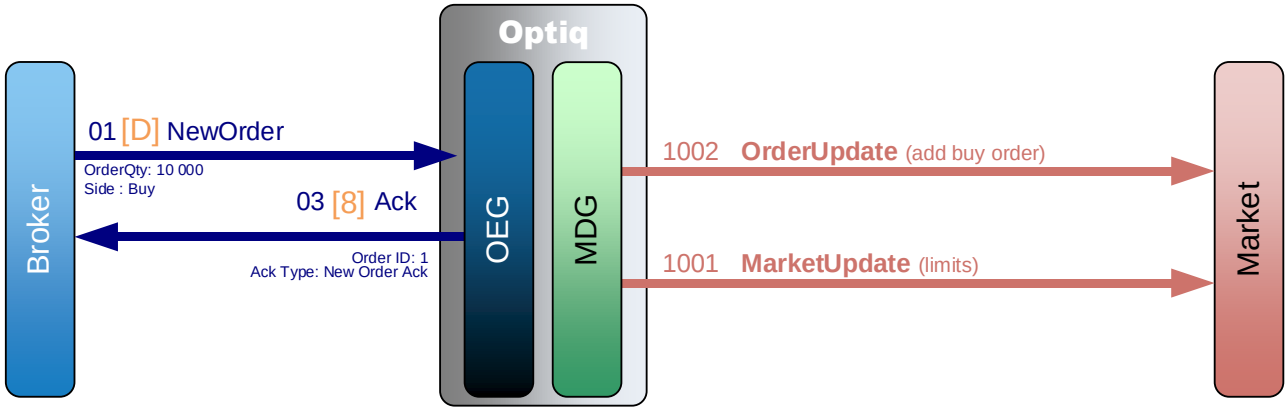
2) When the Uncrossing is triggered a **MarketStatusChange** (1005) message is disseminated to the market.

3) At the end of the uncrossing process a private **Kill** (05) (FIX 8) message will be sent for each expired order.

4) A public **MarketStatusChange** (1005) message is sent to the market to indicate that the instrument is now in a Close phase.

10.2 TENDER OFFER KINEMATICS

10.2.1 Incoming Order With No Matching – Call Phase

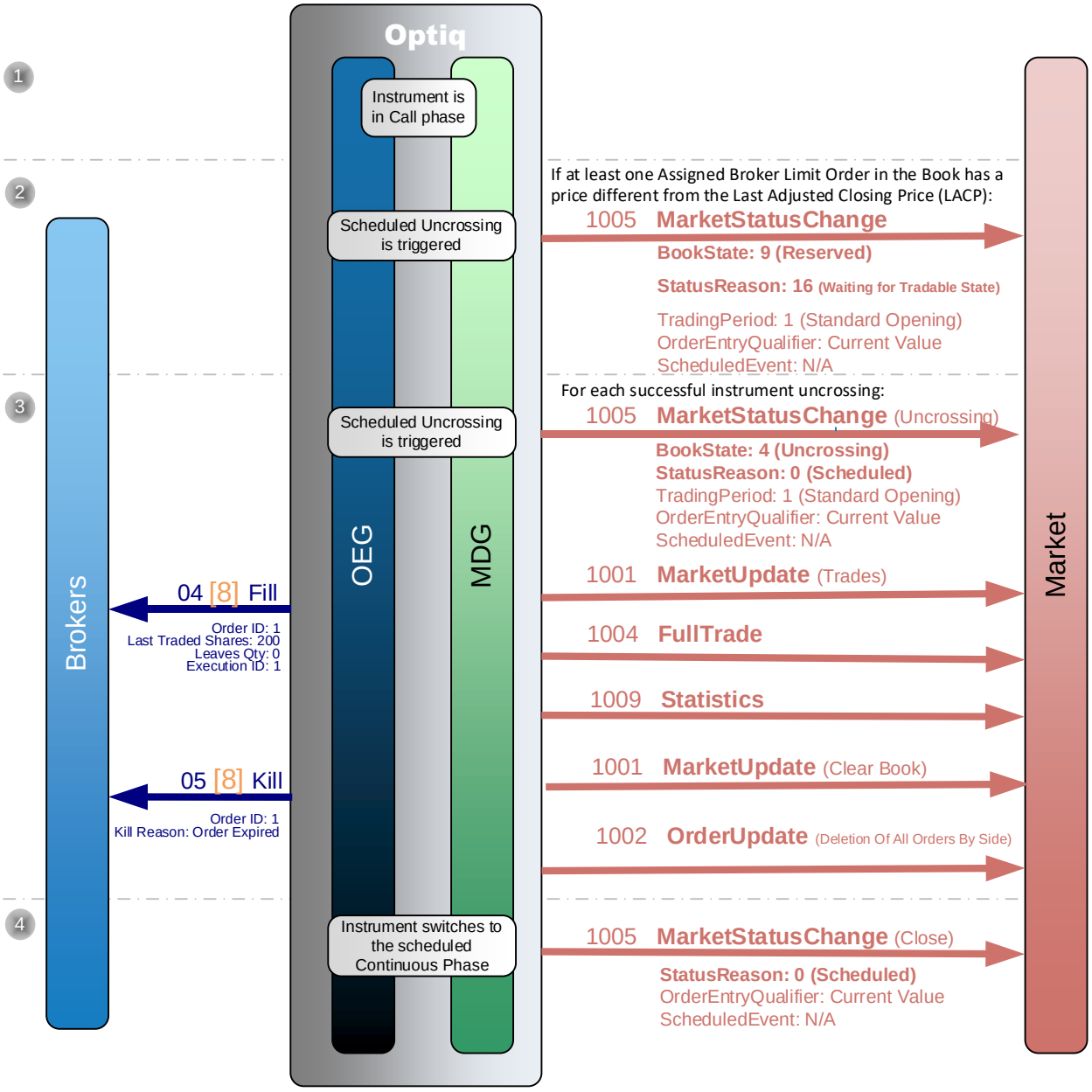


A Broker sends a private **NewOrder** (01) (FIX D) message to enter a new Buy order with a quantity of 10,000.

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 **OrderUpdate** (1002) message is sent to the market to add the order and a **MarketUpdate** (1001) message to update the limits.

10.2.2 Scheduled Uncrossing



1) The instrument is in a Call trading phase as defined in the **TimeTable** and by the pattern associated to this instrument. (Please note that all the scheduled state changes are notified and described in the pattern of the instrument.)

2) For IPO and/or Tender Offer, the Assigned Brokers are obliged to enter all limit orders with Order Price equal to the Last Adjusted Closing Price (LACP) in the book at the moment of the order submission. If an order doesn't respect that rule, it automatically gets rejected by the system. However, in the situation where the Euronext Market Surveillance (EMS) internally updates the LACP, it could happen that the order book is composed by orders with an Order price different than the LACP. In that condition, when the Uncrossing is triggered, the Book is reserved and a **MarketStatusChange** (1005) message is disseminated to the market with a Status Reason 'Waiting for Tradable State'.

3) When the Uncrossing is triggered, a public **MarketStatusChange** (1005) message is disseminated to the market.

   For each trade generated a public **MarketUpdate** (1001), a **FullTrade** (1004) message and a **Statistics** (1009) message are sent for the trade.

A private **Fill** (03) (FIX 8) message will be sent for each executed order.

At the end of the uncrossing process:

- A private **Kill** (05) (FIX 8) message will be sent for each expired order;
- A public **MarketUpdate** (1001) message is sent to clear the book;
- A public **OrderUpdate** (1002) message is sent for Deletion Of All Orders By Side.

4) A public **MarketStatusChange** (1005) message is sent to the market to indicate that the instrument is now in a Closed phase.

APPENDIX A: DOCUMENT HISTORY TABLE

VERSION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
1.0.0	27 Oct 2016	IT Solutions – BA team – LPI FLO	**First Version**
1.1.0	16 Mar 2017	IT Solutions – BA team – LPI BSA AVE	**The following global modifications have been performed:** - Updated fields names and values according to Optiq OEG and MDG specifications - Added details in the descriptions to improve readability **The following sections have been added:** - 2.6 OWNERSHIP REQUEST - 2.6.1 Ownership request for a specified order ID - 2.6.2 Ownership request for a Logical Access **The following sections have been updated:** - 1.2.5.1 Private and Public feed reconciliation - 2.1.1 Initialisation of a New Trading Day - 2.1.2 End Of Day - 2.3.8 Iceberg Order Refilled - 2.3.11 Breaching a Collar with Confirmation (No Halt)
1.2.0	16 Oct 2017	IT Solutions – BA team – LPI DCO	**The following global modifications have been performed:** - Updated messages, descriptions, fields names and values according to Optiq OEG and MDG specifications - Added details in the descriptions to improve readability - Removed reference to message Extended Response - Removed reference to Systematic Internalizer (SI) - Addition of Inaccessible book state **The following sections have been added:** - 2.2.2.2 Logon Rejection in FIX - 2.2.3.2 Logout in FIX - 2.5.4 Cancel on Disconnect Mechanism - 2.8 Indicative Price Inputs - 2.8.1 Valuation Trade by Liquidity Provider Price Input message - 4.2.1 Market Operations Update Instrument Order Entry Mode for a Specific Class (Class Level) - 4.2.4 Instrument Unhalted in Call phase (Instrument Level) - 5.2.9 Reactivating a Warrant (Quote Driven Warrant Market Model Kinematic) (Instrument Level) **The following sections have been updated:** - Associated documents: Added reference to OEG FIX 5.0 specifications - 1.2.1 Private Messages: Updated messages list table (removed unused messages) - 1.2.2 Public Messages: Updated messages list table (removed unused messages) - 1.2.5.1 Private and Public feed reconciliation: Added clarification on the Order Priority field - 2. Common Kinematics: Added note on repeating sections use in messages

VERSION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
			- 2.1.1 Initialisation of a New Trading Day: Update graph and description with Inaccessible book state - 2.1.2 End Of Day: Update graph and description with Inaccessible book state - 2.2 Admin Messages: Renamed from 'Admin Messages SBE' to 'Admin Messages' - 2.2.1 Successful Logon: Update graph and description with FIX specific details - 2.2.2 Logon Rejection: Added global logon description, updated SBE graph and description, added FIX dedicated graph and description - 2.2.3 Logout: Added global logon description, updated SBE graph and description, added FIX dedicated graph and description - 2.3.4 New Order Rejected: Updated FIX message reference in description - 2.4.1 Modifying an Unmatched Order: Side of the second order corrected from 'Buy' to 'Sell' in kinematics - 2.6.1 Ownership request for a specified order ID: Updated graph and description following the removal of Extended Response message, added kinematics for Drop Copy message sending - 2.6.2 Ownership request for a Logical Access: Updated graph and description following the removal of Extended Response message, added kinematics for Drop Copy message sending - 2.7.1 Market to Limit on Opening: Updated graph and description according to the latest message kinematics - 3.1.2 Automatic IMP Calculation: Updated note with indicative change in quantity case - 3.2.1 Reference Price Update: Updated graph and description with latest message kinematics - 3.2.3 Trade Cancellation: Removed PriceUpdate message sent after the trade cancellation - 4. Market Status Changes: Updated graph with latest repeating sections field values, added example in description - 4.2.2 Instrument suspended by Market Operations: Added note in description - 5.2.1 Beginning of a Bid Only Situation: Update description on FIX messages kinematics - 5.2.2 Beginning of an Offer Only Situation: Update description on FIX messages kinematics - 5.2.4 Knock-In by Issuer: Update section title - 5.2.5 Knock-Out by Issuer: Update section title - 5.2.10 Starting Payment After a Knock-Out Period: Update description on tick size changes and FIX ack **The following sections have been removed:** - 3.1.1 News and Announcements
1.2.1	17 Nov 2017	IT Solutions – BA team – LPI DCO	**The following global modifications have been performed:** - Correction of typos and replacement of references to "Euronext" with Optiq in kinematics diagrams

VERSION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
			- Correction of references to Halting with references to Suspension and Reservation - Correction of references to Class with references to Trading Group **The following sections have been updated:** - 1.2.5.1 Private and Public feed reconciliation: updated note on *Order Priority* definition - 5.2.3 End of a One Side Only Situation (LP Quote Driven Warrant Market Model): removed note on *Trading Side* **The following sections have been removed:** - 4.2.4 Class Auction (Class Level): it was a duplicate of section 4.1.1 Scheduled Uncrossing
1.3.0	31 Jan 2018	IT Solutions – BA team – LPI	**The following sections have been updated:** - 5.1.2 Request For Execution: corrected typo - 5.2.1 Beginning of a Bid Only Situation: added note for LP Collars dissemination - 2.3.8 Iceberg Order Refilled: updated note on iceberg randomisation
1.3.1	29 Mar 2018	IT Solutions – BA team – LPI	**The following sections have been updated:** - 2.2.1 End Of Day: corrected typo - 2.2.5 Test Request: split explanation for FIX and SBE - 2.2.2.2 - Logon Rejection in FIX: corrected typo - 2.3.11 Breaching a Collar with Confirmation (No Reservation): corrected typo
1.3.2	30 Oct 2018	IT- Solutions-BA team - LEL	**The following section have been added:** 6. RFQ specific messages
1.3.3	08 Nov 2018	IT- Solutions-BA team - LEL	**The following section have been added:** 7. Euronext Block specific messages
1.4.0	26 Feb 2020	IT- Solutions-BA team - IZE	**The following section has been updated:** 6. RFQ Specific messages: Kinematics have been updated by adding the new message "RFQ Audit" when it is required.
1.4.1	13 Mar 2020	IT- Solutions-BA team - IZE	**The following section has been updated:** Update in kinematics sections (6.2.1, 6.2.2 and 6.2.3) the RFQAudit message is received after the Fill and Kill messages. Update Support contact.
4.0.0	23 Mar 2020	IT- Solutions-BA team - IZE	**The following section has been updated:** ■ Update Kinematics (section 6.2). In case of RFQ matching , a Kill will be sent at the end to kill the RFQ. ■ Add What's New and Scope sections and change the name of "Purpose" section to "About This document". ■ In section 6.1.2, adding of MDG messages.
4.1.0	7 May 2020	IT Solutions-BA team - WMA	The following change has been made to this version of the document: ■ In Mass Cancel (13) added details for processing of mass cancellation.
4.2.0	13 May 2020	IT Solutions-BA team – FBO	■ Added Long Order Update (1015) message for FXI non-anonymous.
4.3.0	5 Aug 2020	IT Market Services – WMA	No impacts on Kinematics
4.3.1	20 Sep 2020	IT Market Services – WMA	The following change has been made to this version of the document: ■ Adding of Incoming Sweep Order Partially Matched with Dark Order

VERSION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
			■ In Market Update and Order Update a note is added (Execution Summary not in the documentation for readability purposes)
4.4.0	2 Nov 2020	IT Market Services – WMA	Introduction of SBE 304 – no impacts
4.5.0	4 Jan 2020	IT Market Services - FNS	The following section was added: ■ Adding of 7.2 New Indication of Interest Specific Behaviour
4.6.0	8 Feb 2020	IT Market Services – WMA	The following sections were added: ■ Adding of 3.2.5 Triggering of Stressed Market Conditions (SMC) ■ Adding of 3.2.6 Triggering of Exceptional Market Conditions (EMC)
4.6.1	11 March 2021	IT Market Services - FNS	The following section was rectified: ■ Adding of 7.2.5 New Indication of Interest leading to a potential matching situation
4.6.2	14 April 2021	IT Market Services - FNS	The following section was rectified: ■ Adding of 7.2.5 New Indication of Interest leading to a potential matching situation
4.6.3	2 August 2021	IT Market Services - FNS	Section 7.2.4 was Rectified: ▪ Order Price should be 100 and not 110 in step 5 of the explanation Section 7.2.5 was split in 2: ▪ 7.2.5 New Indication of Interest leading to a potential matching situation – initiator confirms his IOI 7.2.6 New Indication of Interest leading to a potential matching situation – initiator doesn't confirm his IOI
4.10.0	6 Oct 2021	IT Market Services - WMA	Introduction of SBE 310 – no impacts
4.11.0	24 Nov 2021	IT Market Services - WMA	Introduction of SBE 311 – no impacts
4.12.0	24 Dec 2021	IT Market Services - WMA	Introduction of SBE 312 – no impacts
4.13.0	24 Jan 2022	IT Market Services - WMA	Introduction of SBE 313. The following changes have been made to this version of the document: ■ References to Collar Breach Confirmation are removed because the feature is not used anymore - Renamed section: "Suspension" is replaced by "Reservation" ■ In Breaching a Collar with Confirmation (No Reservation): - Removed section: this feature is not used anymore in Euronext ■ In Breaching a Collar With Reservation: - Renamed section: "Suspension" is replaced by "Reservation"
5.16.0	1 Jun 2022	IT Market Services - WMA	The following changes have been made to this version of the document: ■ *Trade Unique Identifier* is added ■ In Initialisation of a New Trading Day: Reference to Order Price Control Collar is sent
5.17.0	1 Aug 2022	IT Market Services – SBE - WMA	The following changes have been made to this version of the document: ■ Section §8 - Euronext RiskGuard (ERG) is added, explaining RiskGuard Cash kinematics
5.18.0	19 Aug 2022	IT Market Services – SBE – WMA	The following changes have been made to this version of the document: ■ Sections 8.4 ERG: Activate OAL and 8.5 ERG: Deactivate OAL added, explaining Order Amount Limit kinematics

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			■ Section TCS Kinematics is added (Merged from ex-Optiq TCS Client Specifications) and updated to add the *TradeUniqueIdentifier* field
4.19.0		IT Market Services - WMA	Introduction of SBE 319 – no impacts
5.20.0	14 Nov 2022	IT Market Services – FLO – WMA - MKO	The following changes have been made to this version of the document: ■ Section 6.2 RFQ Specific Behaviour kinematics: Clarification on Market Data flows and introduction of Market Data Update Type = '105' RFQ Trade Addition of sections for MAQ and MES examples: - 6.2.4RFQ with MES – COB order and RFQ LP answer at the same price - 6.2.5RFQ with MES – COB order at a better price than RFQ LP answer - 6.2.6RFQ with MAQ – COB order and RFQ LP answer at the same price - 6.2.7RFQ with MAQ – COB order at a better price than RFQ LP answer The following section was added: ■ Addition of Issuing And Tender Offer Kinematics (Equity)
5.21.0	16 Dec 2022	IT Market Services – WMA	The following changes have been made to this version of the document: ■ Section added: Continuous Failover ■ Section added: Failover with Halt and Clear Book ■ Section added: Failover with Halt and Synchronization Time
5.31.0	1 Dec 2023	IT Market Services – NTDP	The following changes have been made to this version of the document: ■ Section 2.3.1 Incoming Dark Sweep Order Partially Matched with Dark Not Sweep Order and moving to Lit Book – title updated. Kinematic updated to reflect the new behaviour expected for Dark Pool, as well as the Kinematic scenario description.