Euronext Derivatives Markets – Optiq MDG Client Specifications

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1.6.0

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16 Jan 2019

Number of pages
165

SBE Template Version
7

PREFACE

PURPOSE

The purpose of this document is to describe all the specifications of Optiq™ Market Data Gateway.

TARGET AUDIENCE

This document must be read by Euronext's clients developing a Market Data Feed Handler.

SCOPE

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

Products	
Equities	✘
Funds	✘
Fixed Income	✘
Warrants and Certificates	✘
Options	✓
Futures	✓
Commodities	✓
Indices	✘
Trade Reporting and Publication	✘

ASSOCIATED DOCUMENTS

Please read the following documents along with these specifications:

Title	Description
Euronext Derivatives Market - UTP to Optiq MDG Transition Kinematics Specifications	Description of the message kinematics for Derivatives

Title	Description
Euronext Cash and Derivatives - File Specifications	Description of the files for Cash and Derivatives
Total Return Futures Conversion Parameters Files	Description of the files for Total Return Futures
Euronext File Services: User Guide	Description of the Euronext File Service (EFS)
Euronext Optiq Market Data Gateway Production Environment	Description of the Production feed configuration
Euronext Optiq™ Market Data Gateway External User acceptance Environment	Description of the External User Acceptance feed configuration

Please visit www.euronext.com/optiq.

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WHAT'S NEW?

The following lists only the most recent modifications made to this version. For the Document History table see the Document History in appendix**.**

Version	Date	SBE Version	Change Description
1.6.0	16 Jan 19	7	**The following sections have been removed:** §2.1.3.5 – Real Time Channels for Off-Exchange Off-Book Trades §2.1.3.10 – Snapshots Channels for Off-Exchange Off-Book Trades **The following section has been updated:** §2.8 – Book and Trades Retransmission §3.2 – Market Data Packet Header **The following messages have been updated (from SBE Template):** **Technical Notification:** Added | **Trade Retransmission Start:** Removed | **Trade Retransmission End:** Removed | **Exchange Announcement:** Removed | **Order Update:** Removed |**Timetable:** Removed | **Standing Data:** Removed | **APA Quotes:** Removed | **APA Standing Data:** Removed | **APA Full Trade Information:** Removed | **FullTradeInformation:** Updated *SymbolIndex* presence from Mandatory to Optional ; Updated *TradeQualifier* presence from Optional to Mandatory ; Added one empty repeating section at the end of the message | **StrategyStandingData:** Removed SinceVersion attribute for *ContractSymbolIndex, CFI* |**ContractStandingData:** Removed SinceVersion attribute for *TickValueDecimals, PricingAlgorithm, UnderlyingSubType, MotherStockISIN, ReferenceFutureContractSecGrp, InstrumentTickSizeLong* ; Removed Deprecated attribute for *InstrumentTickSize* ; Update *InstrumentTickSizeLong* presence from Mandatory to Optional |**OutrightStandingData:** Removed SinceVersion attribute for *UnderlyingInstrumentTradingCode, DaysToExpiry* **The following fields have been updated (from SBE Template):** *TechnicalNotificationType:* Added | *ScheduledEvent:* Renamed value '1' from 'Unhalt' to 'Reopening' ; Renamed value '3' from 'Uncrossing' to 'Resumption of Trading' ; Added value '12' | *StatusReason:* Removed values '1', '2', '3', '6', '17', '18', '19' ; Renamed value '7' from 'Automatic Unhalting by Matching Engine' to 'Automatic Reopening', Renamed value '20' from 'Suspension Post Creation' to 'New Listing', Renamed value '21' from 'Suspension due to underlying' to 'Due to underlying', Renamed value '23' from 'Technical Suspension' to 'Technical' |*MarketDataPriceType:* Removed value '11' ; Added value '31' | *MarketDataUpdateType:* Removed values '20', '21', '22', '23', '47', '62', '68', '69' ; Added values '79', '80', '81' ; Removed SinceVersion attribute for values '82', '83', '84' | EMM: Removed value '50', '254' ; Added value '99' | *OrderEntryQualifier:* Removed value '4' | *TradeType:* Removed values '21', '35' ; Added values '37', '38', '39', '40' ; Removed SinceVersion attribute for values '42', '43', '44' | *OptiqSegment:* Added values '11', '12, '13' ; Removed SinceVersion attribute for value '10' | *ExerciseStyle:* Added values '2', '3', '4' | *TradeQualifier:* Renamed bit '1' from 'Opening Trade' to 'First Trade Price' |*GuaranteeIndicator:* Removed | *EfficientMMTMarketMEchanism:* Removed | *EfficientMMTTradingMode:* Removed | *EfficientMMTTransactionCategory:* Removed | *EfficientMMTNegotiationIndicator:* Removed | *EfficientMMTAgencyCrossTradeIndicator:* Removed | *EfficientMMTModificationIndicator:* Removed | *EfficientMMTBenchmarkIndicator:* Removed | *EfficientMMTSpecialDividendIndicator:* Removed | *EfficientMMTOffBookAutomatedIndicator:* Removed | *EfficientMMTContributiontoPrice:* Removed | *EfficientMMTAlgorithmicIndicator:* Removed | *EfficientMMTPublicationMode:* Removed | *EfficientMMTPostTradeDeferral:* Removed | *EfficientMMTDuplicativeIndicator:* Removed | *TaxCode:* Removed | *TypeOfMarketAdmission:* Removed | *PhaseID:* Removed | *OrderType:* Removed | *QuoteUpdateType:* Removed | *RepoIndicator:* Removed | *StrikeCurrencyIndicator:* Removed | *TradingCurrencyIndicator:* Removed | *MarketDataActionType:* Removed | *MarketModel:* Removed

FURTHER INFORMATION

- For additional product information please visit: www.euronext.com/optiq
- For updated capacity figures and details of IP addresses please visit: www.euronext.com/optiq

CONTENTS

1. EURONEXT OPTIQ MARKET DATA GATEWAY SOLUTION

1.1 INTRODUCTION

The Euronext Optiq Market Data Gateway (MDG) provides high-speed, real-time market data for Euronext markets.

The data feed has the following high-level features:

- **Multicast technology**
- **Ultra-low latency**
- **MiFID II compliance**
- **Cash & Derivatives message harmonization**
- **Optimized feed for each type of connectivity**
- **High availability**
- **Reliable network solution**
- **High level of scalability**
- **Access to a wide range of European market data sets**

This document provides detailed information about the features of the feed to support the development of client applications.

1.2 MIFID II

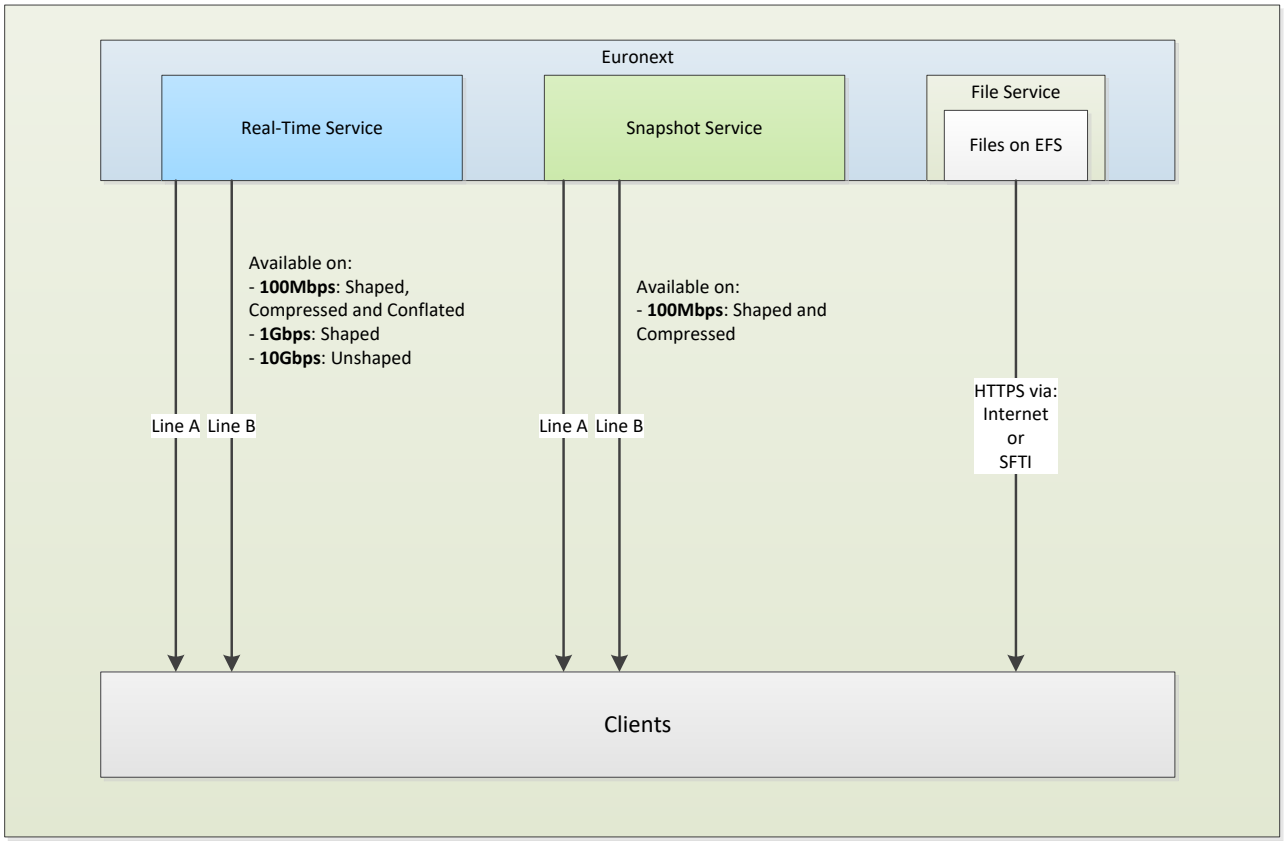
Markets in Financial Instruments Directive 2 (MiFID II) is a European Commission set of new regulations to reduce systemic risk and guarantee more transparency for clients.

Euronext Optiq Market Data Gateway is MiFID II compliant by offering:

- **Market Data channel disaggregation** Each multicast channel published by MDG is disaggregated as follows: asset class, currency and country. Additionally, there are dedicated channels for pre-trade and post-trade.
- **Higher Transparency** The Full Trade Information message (1004) delivered by Optiq MDG will carry MMT Trade flags and other fields as required by MiFID II.

1.3 ACCESS TO MARKET DATA

The following diagram presents the Optiq MDG services:



Clients access Market Data as follows:

- **Real-Time service** Clients connect to multicast UDP/IP channels to receive Market Data messages in real-time
- **Snapshot service** Clients connect to multicast UDP/IP channels to receive unsolicited Snapshots sent periodically on dedicated multicast channels to recover from packet loss or for intraday starts.
- **File service** Clients connect to a file server
  - Every morning to download XML files containing static and daily data (Standing Data, Timetables, Tick Tables, XML SBE template, Pattern IDs and Feed Configurations)
  - During the trading day to download the Full Trade Information files containing all the trades of the day

Market Data are available in the following modes:

- **Unshaped** All messages are sent as fast as possible (service only available on 10 Gbps lines)
- **Shaped** Allow optimized emission of Market Data with low latency, optimized bandwidth use and packet loss prevention (service available on the 100 Mbps and 1 Gbps lines)

- **Conflated** During high market activity (and if messages begin to queue), the conflation mechanism helps to optimize bandwidth usage and minimize Market Data latency (service available only on 100 Mbps lines)
- **Compressed** Messages are compressed in order to reduce the use of bandwidth (available on 100 Mbps lines)

Two recovery mechanisms are available:

- **Line arbitration** Identical packets are sent on two lines (line A and line B). Clients are strongly invited to use this first recovery mechanism in case of message loss
- **Snapshot service** If messages are lost on both lines or if a client connects intra-day

1.4 MESSAGING PROTOCOL AND PUBLISHING MODEL

Real-time and Snapshot Market Data are message-based over the UDP/IP protocol with SBE (Simple Binary Encoding).
This binary encoding is optimized for low latency encoding and decoding while keeping bandwidth utilization reasonably small, and is used across all asset classes.

Using the push-based publishing model, data will be published as soon as it is available.

1.5 TRANSITION PHASE

Following customer feedback, the migration to Optiq will start with the Market Data module for both Cash and Derivatives. The new Optiq MDG will be connected to the Cash and Derivatives UTP matching engines in phase 1, and then to the Optiq matching engines for Cash (phase 2) and then Derivatives (phase 3).

This document relates to the specifications of the new Optiq MDG linked to UTP-Cash and UTP-Derivatives matching engines (phase 1) and provides the target specifications for MDG linked to the Optiq Matching Engines for Cash (phase 2).

- MiFID II data will only be published in Phase 2 for Cash and Phase 1 for Derivatives. Therefore, for phase 1, all the below MiFID II fields will be set to Null only for Cash:
-
- MiFID Price Notation
- MiFID Qty in Msrmt Unit Notation
- MiFID Quantity Measurement Unit
- MMT Market Mechanism
- MMT Trading Mode
- MMT Transaction Category
- MMT Negotiation Indicator
- MMT Agency Cross Trade Indicator
- MMT Modification Indicator

- MMT Benchmark Indicator
- MMT Special Dividend Indicator
- MMT Off Book Automated Indicator
- MMT Contribution to Price
- MMT Algorithmic Indicator
- MMT Post Trade Deferral
- MMT Duplicative Indicator
- Venue of Publication
- MMT Publication Mode
  - Except values Immediate Publication (‘-‘) and Non Immediate Publication (‘1’)

2. MARKET DATA GATEWAY FEATURES

2.1 TYPE OF MARKET DATA CHANNELS

2.1.1 Market Data Channels

Euronext offers real-time and snapshot Market Data through different channels that clients can subscribe to. Each channel is linked to a unique IP multicast group address and a unique port.

Channels are split according to the following criteria:

- **Asset Class** MiFID II requirement
- **Country of issue** MiFID II requirement
- **Currency** MiFID II requirement
- **Real-time or Snapshot** Real-time and snapshot messages are sent through different channels
- **Types of data:**
  - Full Order Book Market Update (FBMU) channel provides full order book depth and BBO using the Market Update message.
  - Full Order Book Order Update (FBOU) channel provides full order book depth using the Order Update message and BBO with Market Update.
  - Best Bid and Offer (BBBO) channel will only provide the best limits when they are updated.
  - Reference Data and Full Trade Information channel (REFT) provides all instrument characteristics, scheduled phases, market administration messages and MiFID II compliant trade messages. Index messages are included in this channel only for Bourse de Luxembourg (BdL).
  - Reference Data and Index Package channel (REFI) provides all instrument characteristics, scheduled phases, market administration messages and Index messages.

- **Shaping** Channels are either unshaped, shaped to 1 Gbps or shaped to 100 Mbps.
- **Scalability** For performance reasons, a channel can be split into several channels. It is also possible for an instrument to move from one channel to another, although intraday changes will not occur.

The unshaped channels are only available for the Full Order Book channels and for the following Asset Classes:

- Equities France
- Equities Netherlands
- ETF's
- Equity and Index Futures France
- Equity and Index Futures Netherlands

- Index Options France
- Index Options Netherlands

The table below shows the MiFID II disaggregation of Asset Class + Currency + Country:

Asset Class	Currency	Country Split
Equities	All	Netherlands
		France
		Belgium
		Portugal
		UK
ETFs	All	All
Best of Book (BoB)	All	All
Fixed Income	All	All
Warrants and Certificates	All	All
Bourse de Luxembourg	All	All
Equity Options	All	Netherlands
		France
		Other (Belgium and Portugal)
Equity and Index Futures	All	Netherlands
		France
		Other (Belgium and Portugal)
Index Options	All	Netherlands
		France
		Other (Belgium and Portugal)
Currency Options	All	All
Currency Futures	All	All
Commodity Derivatives	All	All
AtomX (for Flex Contracts)	All	All
Indices	All	All

Example of Market Data Channels:

- Equities – France – All currency – Unshaped – Real-time – Full order book
- Equity and Index Futures – Netherlands – All currency – Shaped (100 Mbps) – Snapshot – Best Bid and Offer

2.1.2 Client Connectivity

The subscription to a set of channels depends on the type of client connectivity. For example, if a client has a 100 Mbps line, then he cannot subscribe to the unshaped channels which are only offered on 10 Gbps lines nor subscribe to the shaped BBO channels, which are only available on 1 Gbps lines. 1 Gbps clients cannot subscribe to the unshaped data, which is only available on 10 Gbps lines. Conversely, a client with a 10 Gbps line can subscribe to all available channels like the Full Order Book channels (either unshaped (10 Gbps) or shaped (1 Gbps)) as well as to the compressed, conflated and shaped channels (100 Mbps).

2.1.3 Market Data Messages per Channel

Optiq MDG will provide the Full Order Book (FOB) in two different ways based on instrument type:

- **Market by Order** The Order Update (1002) message will be disseminated for each new order, modification or cancellation, and is available for Cash Equities, ETF's and Fixed Income.

  Important note: As mentioned above, this type of FOB is used for the Cash markets only. Any future references to Market by Order in this version of the document should be disregarded.

- **Market by Limit** Aggregated price limits are published using the Market Update (1001) message, and are available for Warrants & Certificates, BoB, Equity, Index/Currency and Commodity Derivatives.

The following table provides an overview of all Optiq MDG messages. The aim is to provide a better understanding of the message types per channel table.

Message Name	Message type	Description
Start Of Day	1101	First message of the day sent by the Market Data Gateway
End Of Day	1102	Last message of the day sent by the Market Data Gateway
Health Status	1103	Heartbeat message sent at regular intervals throughout the day
Technical Notification	1106	Identifies the start or the end retransmission
Market Status Change	1005	Indicates the change in the state of an instrument (either scheduled or manually processed)
Contract Standing Data	1013	Provides characteristics for all contracts on Derivatives
Outright Standing Data	1014	Provides characteristics for all instruments on Derivatives
Strategy Standing Data	1012	Provides characteristics for all strategies on Derivatives
Market Update	1001	Provides information generated by market events, including limit updates and trades
Price Update	1003	Provides all updated reference prices
Full Trade Information	1004	Contains trade information, including all MiFID II regulatory fields
Real Time Index	1008	Provides all Index-related statistics
Statistics	1009	Provides statistics on prices and volumes on an instrument
Index Summary	1011	Provides index level summaries in closing phases
Start Of Snapshot	2101	Identifies the beginning of a snapshot sequence

Message Name	Message type	Description
End Of Snapshot	2102	Identifies the end of a snapshot sequence

The following table explains which message types are available for each real-time channel:

2.1.3.1 Real Time Channels for Cash, Warrants excluded

This is composed of: Bourse de Luxembourg (BdL), Equities, Funds and Fixed Income.

	10 Gbps Unshaped Only available for Equities France and Netherlands and ETF's	1 Gbps Shaped		100 Mbps Shaped, Compressed and Conflated		
	Pre-Trade					Post-Trade
	Full Order Book Order Update	Full Order Book Order Update	Full Order Book Market Update	Full Order Book Order Update	Full Order Book Market Update	Reference Data[1] and Full Trade Information
Start Of Day (1101)	X	X	X	X	X	X
End Of Day (1102)	X	X	X	X	X	X
Health Status (1103)	X	X	X	X	X	X
Technical Notification (1106)	X	X	X	X	X	X
Timetable (1006)						X
Market Status Change (1005)	X	X	X	X	X	
Standing Data (1007)						X
Contract Standing Data (1013)						
Outright Standing Data (1014)						
Strategy Standing Data (1012)						
Market Update (1001)	X[2]	X[2]	X	X[2]	X	
Order Update (1002)	X	X		X		
Price Update (1003)	X[5]	X[5]	X[5]	X[5]	X[5]	X[6]
Full Trade Information (1004)						X
Real Time Index (1008)						
Statistics (1009)						X
Index Summary (1011)						

[1] Reference Data represents: all instruments characteristics, scheduled phases and market administration messages.

[2] This message will not provide: New Bid (3)/New Offer (4), Updated Bid (5) /Updated Offer (6), New Bid With Liquidity Provider (58)/New Offer With Liquidity Provider (59), Updated Bid With Liquidity Provider(60)/ Updated Offer With Liquidity Provider (61), New Bid RLP (Retail Liquidity Provider) (16)/ New Offer RLP (Retail Liquidity Provider) (17) and Updated Bid RLP Retail Liquidity Provider) (18)/ Updated Offer RLP (Retail Liquidity Provider) (19).

[5] This message will only provide: Indicative Matching Price (14)

[6] This message will not provide: Indicative Matching Price (14)

2.1.3.2 Real Time Channels for BoB

	1 Gbps Shaped	100 Mbps Shaped, Compressed and Conflated
	Pre-Trade	
	Full Order Book BoB	Full Order Book BoB
Start Of Day (1101)	X	X
End Of Day (1102)	X	X
Health Status (1103)	X	X
Technical Notification (1106)	X	X
Timetable (1006)		
Market Status Change (1005)		
Standing Data (1007)		
Contract Standing Data (1013)		
Outright Standing Data (1014)		
Strategy Standing Data (1012)		
Market Update (1001)	X[3]	X[3]
Order Update (1002)		
Price Update (1003)		
Full Trade Information (1004)		
Real Time Index (1008)		
Statistics (1009)		
Index Summary (1011)		

[3] This message will provide only: New Bid RLP (Retail Liquidity Provider) (16)/ New Offer RLP (Retail Liquidity Provider) (17), Updated Bid RLP Retail Liquidity Provider) (18)/ Updated Offer RLP (Retail Liquidity Provider) (19) or Clear-Book (254).

2.1.3.3 Real Time Channels for Warrants and Derivatives

This is composed of: Options, Futures, Warrants & Certificates.

	10 Gbps Unshaped Only available for Equity and Index Futures and index Options for France and Netherlands	1 Gbps Shaped		100 Mbps Shaped, Compressed and Conflated		
	Pre-Trade					Post-Trade
	Full Order Book Market Update	Full Order Book Market Update	Best Bid and Offer	Full Order Book Market Update	Best Bid and Offer	Reference Data[1] and Full Trade Information
Start Of Day (1101)	X	X	X	X	X	X
End Of Day (1102)	X	X	X	X	X	X
Health Status (1103)	X	X	X	X	X	X
Technical Notification (1106)	X	X	X	X	X	X
Timetable (1006)						X (only for Warrants)
Market Status Change (1005)	X	X	X	X	X	
Standing Data (1007)						
Contract Standing Data (1013)						X
Outright Standing Data (1014)						X
Strategy Standing Data (1012)						X
Market Update (1001)	X	X	X[2]	X	X[2]	
Order Update (1002)						
Price Update (1003)	X[5]	X[5]	X[5]	X[5]	X[5]	X[6]
Full Trade Information (1004)						X
Real Time Index (1008)						
Statistics (1009)						X
Index Summary (1011)						

[1] Reference Data represents: all instruments characteristics, scheduled phases and market administration messages.

[2] This message will not provide: New Bid (3)/New Offer (4), Updated Bid (5) /Updated Offer (6), New Bid With Liquidity Provider (58)/New Offer With Liquidity Provider (59), Updated Bid With Liquidity Provider(60)/ Updated Offer With Liquidity Provider (61), New Bid RLP (Retail Liquidity Provider) (16)/ New Offer RLP (Retail Liquidity Provider) (17) and Updated Bid RLP Retail Liquidity Provider) (18)/ Updated Offer RLP (Retail Liquidity Provider) (19).

[5] This message will only provide: Indicative Matching Price (14)

[6] This message will **not** provide: Indicative Matching Price (14)

2.1.3.4 Real Time Channels for Indices

	100 Mbps Shaped, Compressed and Conflated
	Indices
	Reference Data and Index Package
Start Of Day (1101)	X
End Of Day (1102)	X
Health Status (1103)	X
Technical Notification (1106)	
Timetable (1006)	
Market Status Change (1005)	
Standing Data (1007)	X
Contract Standing Data (1013)	
Outright Standing Data (1014)	
Strategy Standing Data (1012)	
Market Update (1001)	
Order Update (1002)	
Price Update (1003)	
Full Trade Information (1004)	
Real Time Index (1008)	X
Statistics (1009)	X
Index Summary (1011)	X

2.1.3.5 Snapshot Channels for Cash, Warrants excluded

This is composed of: Bourse de Luxembourg (BdL), Equities, Funds and Fixed Income.

	Compressed and Shaped		
	100 Mbps		
	Full Order Book Order Update	Full Order Book Market Update	Reference Data[1] and Full Trade Information
Start Of Day (1101)	X	X	X
End Of Day (1102)	X	X	X
Health Status (1103)	X	X	X
Start Of Snapshot (2101)	X	X	X
End Of Snapshot (2102)	X	X	X
Technical Notification (1106)			
Timetable (1006)			X
Market Status Change (1005)	X	X	
Standing Data (1007)			X
Contract Standing Data (1013)			
Outright Standing Data (1014)			
Strategy Standing Data (1012)			
Market Update (1001)	X[2]	X	
Order Update (1002)	X		
Price Update (1003)	X[5]	X[5]	X[6]
Full Trade Information (1004)			X
Real Time Index (1008)			
Statistics (1009)			X
Index Summary (1011)			

[1] Reference Data represents: all instruments characteristics, scheduled phases and market administration messages.
[2] This message will not provide: New Bid (3)/New Offer (4), Updated Bid (5) /Updated Offer (6), New Bid With Liquidity Provider (58)/New Offer With Liquidity Provider (59), Updated Bid With Liquidity Provider(60)/ Updated Offer With Liquidity Provider (61), New Bid RLP (Retail Liquidity Provider) (16)/ New Offer RLP (Retail Liquidity Provider) (17) and Updated Bid RLP Retail Liquidity Provider) (18)/ Updated Offer RLP (Retail Liquidity Provider) (19).
[5] This message will only provide: Indicative Matching Price (14)
[6] This message will **not** provide: Indicative Matching Price (14)

2.1.3.6 Snapshot Channels for BoB

	100 Mbps Shaped, Compressed Full Order Book BoB
Start Of Day (1101)	X
End Of Day (1102)	X
Health Status (1103)	X
Start Of Snapshot (2101)	X
End Of Snapshot (2102)	X
Technical Notification (1106)	
Timetable (1006)	
Market Status Change (1005)	
Standing Data (1007)	
Contract Standing Data (1013)	
Outright Standing Data (1014)	
Strategy Standing Data (1012)	
Market Update (1001)	X[3]
Order Update (1002)	
Price Update (1003)	
Full Trade Information (1004)	
Real Time Index (1008)	
Statistics (1009)	
Index Summary (1011)	

[3] This message will provide only: New Bid RLP (Retail Liquidity Provider) (16)/ New Offer RLP (Retail Liquidity Provider) (17), Updated Bid RLP Retail Liquidity Provider) (18)/ Updated Offer RLP (Retail Liquidity Provider) (19) or Clear-Book (254).

2.1.3.7 Snapshot Channels for Warrants and Derivatives zzzpourquoi pas de contract standingdata

This is composed of: Options, Futures, Warrants & Certificates.

	Compressed and Shaped		
	100 Mbps		
	Full Order Book Market Update	Best Bid and Offer	Reference Data[1] and Full Trade Information
Start Of Day (1101)	X	X	X
End Of Day (1102)	X	X	X
Health Status (1103)	X	X	X
Start Of Snapshot (2101)	X	X	X
End Of Snapshot (2102)	X	X	X
Technical Notification (1106)			
Timetable (1006)			X
Market Status Change (1005)	X	X	
Standing Data (1007)			
Contract Standing Data (1013)			
Outright Standing Data (1014)			X
Strategy Standing Data (1012)			X
Market Update (1001)	X	X[2]	
Order Update (1002)			
Price Update (1003)	X[5]	X[5]	X[6]
Full Trade Information (1004)			X
Real Time Index (1008)			
Statistics (1009)			X
Index Summary (1011)			

[1] Reference Data represents: all instruments characteristics, scheduled phases and market administration messages.
[2] This message will not provide: New Bid (3)/New Offer (4), Updated Bid (5) /Updated Offer (6), New Bid With Liquidity Provider (58)/New Offer With Liquidity Provider (59), Updated Bid With Liquidity Provider(60)/ Updated Offer With Liquidity Provider (61), New Bid RLP (Retail Liquidity Provider) (16)/ New Offer RLP (Retail Liquidity Provider) (17) and Updated Bid RLP Retail Liquidity Provider) (18)/ Updated Offer RLP (Retail Liquidity Provider) (19).
[5] This message will only provide: Indicative Matching Price (14)
[6] This message will **not** provide: Indicative Matching Price (14)

2.1.3.8 Snapshot Channels for Indices

	Compressed and Shaped 100 Mbps Reference Data and Index Package
Start Of Day (1101)	X
End Of Day (1102)	X
Health Status (1103)	X
Start Of Snapshot (2101)	X
End Of Snapshot (2102)	X
Technical Notification (1106)	
Timetable (1006)	
Market Status Change (1005)	
Standing Data (1007)	X
Contract Standing Data (1013)	
Outright Standing Data (1014)	
Strategy Standing Data (1012)	
Market Update (1001)	
Order Update (1002)	
Price Update (1003)	
Full Trade Information (1004)	
Real Time Index (1008)	X
Statistics (1009)	X
Index Summary (1011)	X

2.2 SNAPSHOTS

Snapshot is a service providing an image of the market data at a giving time of the day to allow clients to recover from packet loss or for intraday starts. Customers can ‘hop on’ (connect) and ‘hop off’ the Snapshot multicast channels as needed.

Each real time channel has a matching snapshot channel. Real time channels giving the same information through different bandwidth speed share the same snapshot channel. An image contains all instruments broadcasted on this channel.

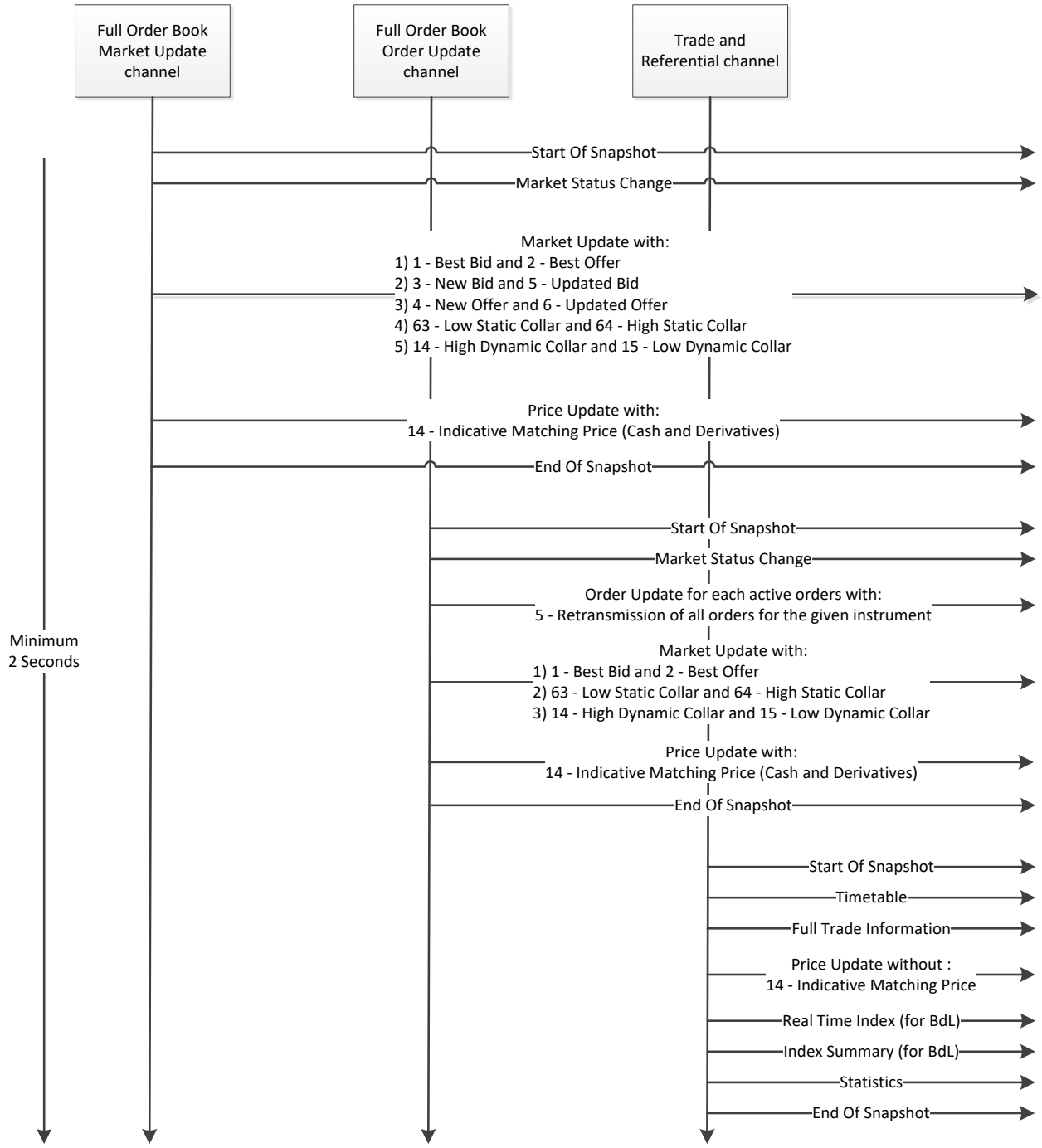
An image sent in the snapshot is linked to real time with the Last Market Data Sequence Number from the real time channel.

This broadcasted image of all channels of an aggregator (see section on Market Data Sequence Number) is a snapshot sequence and cannot be sent more than 1 every 2 seconds. The order of each channel images in a snapshot sequence is fixed for a day but can change from 1 day to another.

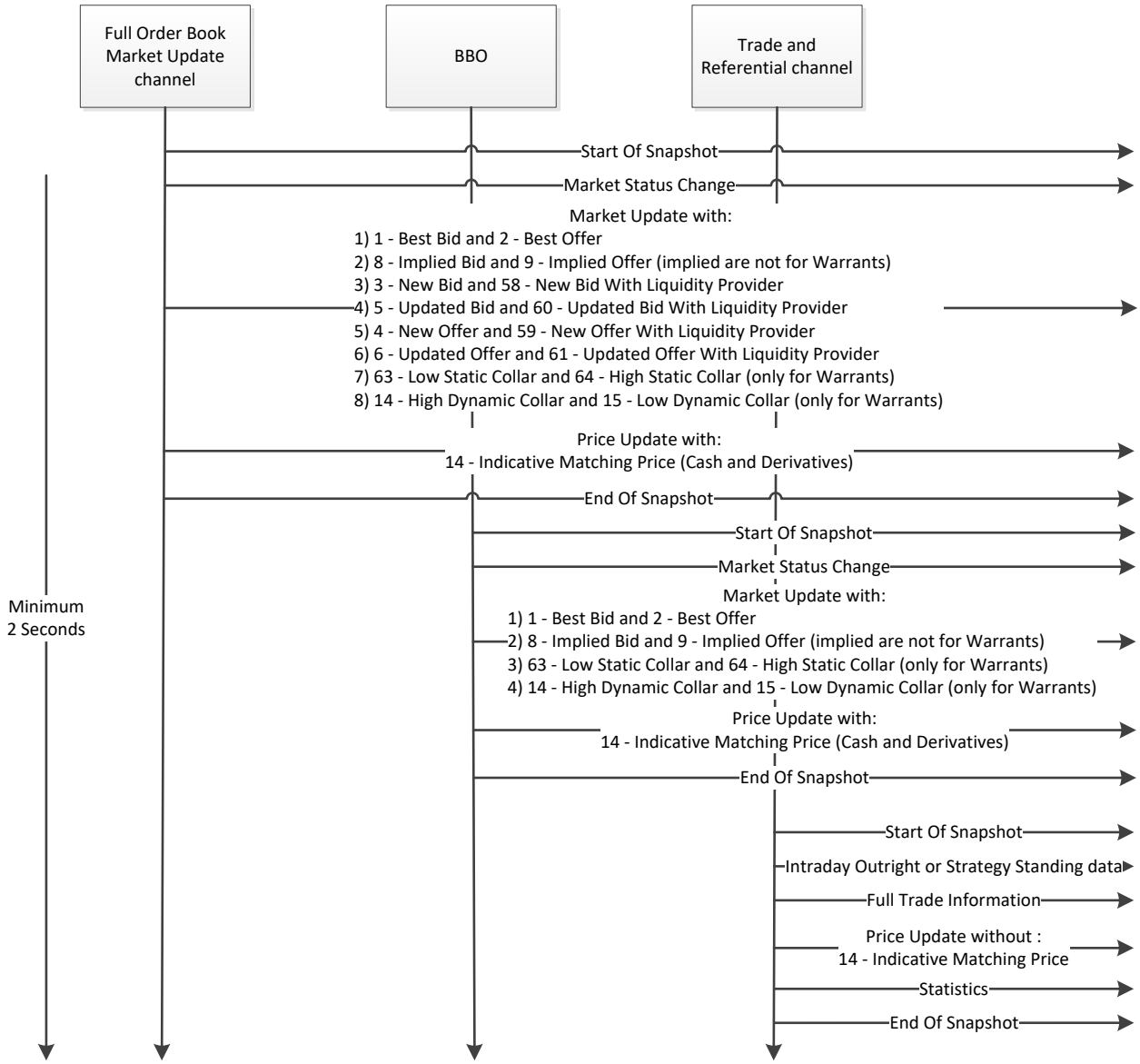
They will use the same messages as real time messages with Rebroadcast indicator set to 1.

Here are the snapshot sequences for Cash, Derivatives, Indices, Best of Book (BoB).

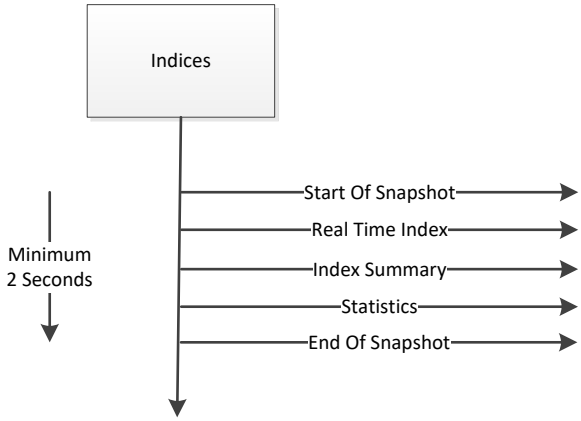
- Snapshot sequence for Cash:



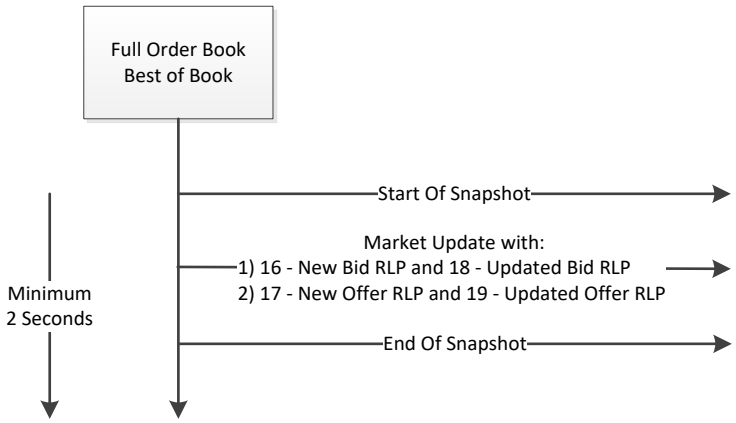
- Snapshot sequence for Derivatives and Warrants:



- Snapshot sequence for Indices:



- Snapshot Sequence for BoB:



Both “Start Of Snapshot” and “End Of Snapshot” messages contain the last “Market Data Sequence Number” of the last real-time message taken into account by the snapshot (see Sequence Numbers and Snapshot Sequence behaviour for explanations on the “Market Data Sequence Number”). This last MDSN has been sent on each channel speed.

In the 2 following situations:

- Late connection to the exchange
- Loss of packets on both lines A and B

Members have to process as follow:

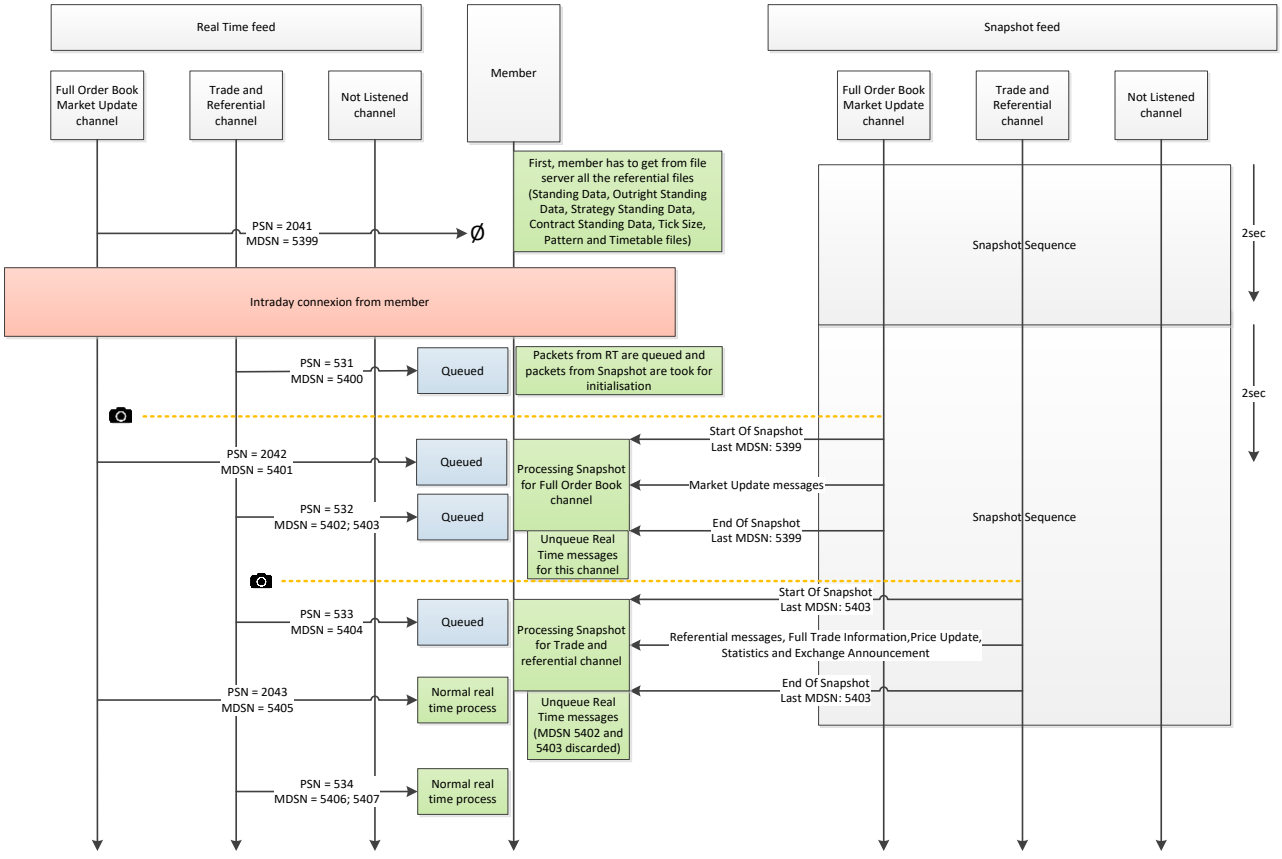
- Clear all the market data sent on this channel.
- Listen to the real time channel and start queuing all messages.
- Identify the lowest MDSN from real time feed.
- Wait for a Start Of Snapshot with a “Last Market Data Sequence Number” that is higher or equal to the MDSN identified just before on real time. Otherwise the Snapshot might not contain all the missing messages.
- Listen to the entire snapshot image until the End Of Snapshot.

- Discard all the real time messages with a MDSN lower or equal than the Last Market Data Sequence Number of the Start or End Of Snapshot message.
- Integrate all the remaining real time messages into the snapshot image.
- Keep listening real time as normal.

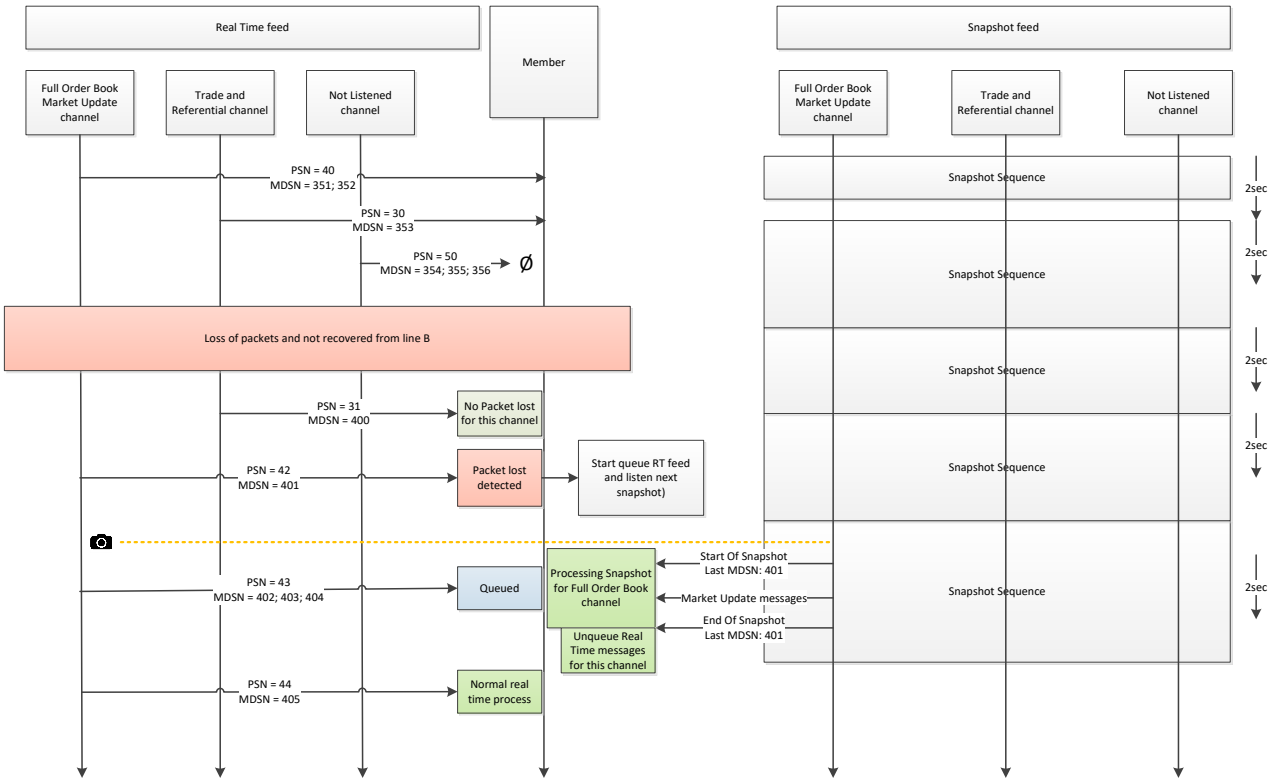
If in the snapshot a packet is missing, then try to get this packet from the second line. If it has not been retrieve with the second line then use the next snapshot for this channel.

It is important to note that since the Market Data Sequence Number of snapshot channels does not necessarily increment by 1, the sequence number in the start or end snapshot messages might belong to another channel, and was in fact not actually lost. In order to correctly identify which packets are indeed lost, please refer to section Gap Detection and Line Arbitration.

- Example of a late connection to the exchange:



- Example of a packet loss:



- How to use information type

MDG offers another mechanism in the snapshot to resynchronize only for a subset of the information whatever the Symbol Index.
These information are functionally gathered into information type:

- For Market Update, the information types are BBO, Implied Limits, Full Depth, Collars and Full Depth BoB (Please refer to the table below in this section to have all the Market Data Update Type for each Information Type)
- For the other messages, every message type is in a single information type (ex: all the order update messages are in the information type “Order Update”)

For example, if members are only interested into the information type BBO and they have lost a packet in the realtime and they have to use the snapshot to recover, they can detect if the lost packet was containing BBO information.

To do so, members have to look at the Market Data Sequence Number (MDSN) of snapshotted messages. If for one information type, the MDSN in a snapshot message is lower or equals to the MDSN of a message received in real time (for this information type), it means that no messages have been lost for this information type.

The following table provides the exact mapping between Market Data Update Types and Information Types.

Market Data Update Type	Information Type
1 - Best Bid (Cash and Derivatives)	BBO
2 - Best Offer (Cash and Derivatives)	
8 - Implied Bid (Derivatives Only)	Implied Limits

Market Data Update Type	Information Type
9 - Implied Offer (Derivatives Only)	
3 - New Bid (Cash and Derivatives)	Full Depth
4 - New Offer (Cash and Derivatives)	
5 - Updated Bid (Cash and Derivatives)	
6 - Updated Offer (Cash and Derivatives)	
58 - New Bid With Liquidity Provider (Cash Only)	
59 - New Offer With Liquidity Provider (Cash Only)	
60 - Updated Bid With Liquidity Provider (Cash Only)	
61 - Updated Offer With Liquidity Provider (Cash Only)	
14 - High Dynamic Collar (Cash Only)	Collars
15 - Low Dynamic Collar (Cash Only)	
63 - Low Static Collar (Cash Only)	
64 - High Static Collar (Cash Only)	
70 - Low LP Collar (Cash Only)	
71 - High LP Collar (Cash Only)	
16 - New Bid RLP (Retail Liquidity Provider) (Cash Only)	Full Depth BoB
17 - New Offer RLP (Retail Liquidity Provider) (Cash Only)	
18 - Updated Bid RLP (Retail Liquidity Provider) (Cash Only)	
19 - Updated Offer RLP (Retail Liquidity Provider) (Cash Only)	

Members that connect late just have to take the full snapshot and synchronize with real-time.

Example 1:

If the member have the following from the real time:
MDSN for BBO = 98
MDSN for Full Depth = 80
MDSN for Collars = 45

And if in snapshot the Last Market Data Sequence Number is 100 with:
MDSN for BBO = 100 (meaning all the Market Data Update Type with a value that matches BBO Information Type have a MDSN equal to 100)
MDSN for Full Depth = 80
MDSN for Collars = 45

It means that member need to recover all the BBO Information Type but not Full Depth and Collars.

Example 2:

If the last MSC message sent had MDSN 80, then all MSC messages in snapshot have MDSN 80

Example 3:

If the last Best Bid sent has MDSN 1000 in the realtime channel, then all Market Update message for Best Bid and Best Ask updates (types 1 and 2) will have MDSN 1000 in the snapshot too.

2.3 CONFLATION

Performance analysis studies will be conducted in order to assess the need and the type of bandwidth optimization.

2.4 COMPRESSION

Optiq MDG will use LZ4 compression in block mode with no headers. It will be available for real-time market data used on low bandwidth connections (100Mbps) and for all snapshots. Only the body of the Market Data packets will be compressed, excluding the packet header. It should be noted that a compressed market data packet can contain several different messages, which are all compressed into a single packet.

On compressed channels, it is possible to have compressed and uncompressed packets. The compression flag in the packet header defines if the packet is compressed or not.

The maximum extracted packet size cannot be greater than 8192 bytes.

Please see Appendix A: Disclaimers for LZ4 disclaimers.

2.5 SHAPING

■ Optiq MDG Traffic Shaping

Optiq MDG Traffic shaping is used for 1Gbps connections on real-time market data and for 100Mbps connections on real-time and snapshot market data. Traffic shaping by Optiq MDG is used to:

- Optimize the use of available bandwidth on 1 Gbps and 100 Mbps connections
- Prevent packet loss: Optiq MDG will keep track of what is being sent out per millisecond and will use this information to guarantee packets will be sent respecting the available bandwidth
- Guarantee performance available on 1 Gbps and 100 Mbps connections
- Minimize latency

■ Optiq MDG unshaped

Optiq MDG will provide unshaped real-time market data for clients on 10 Gbps connections. Unshaped means that messages are sent out without any restrictions and this is made available for:

- Cash Regulated Markets - Equities - France and the Netherlands
- Cash Regulated Markets – ETF
- Derivatives – Equity and Index Futures - France and the Netherlands
- Derivatives - Index Options - France and the Netherlands

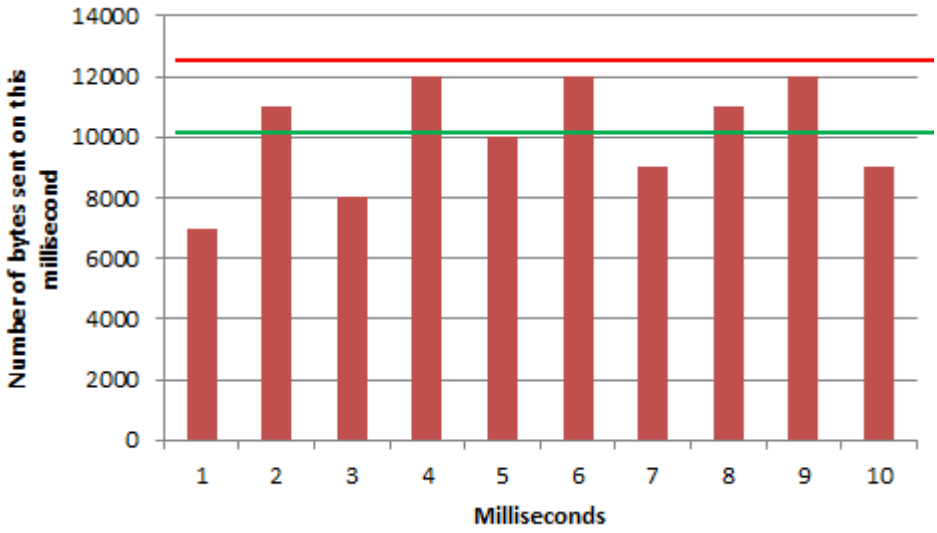
The following simplified examples illustrate how a shaped channel behaves when no shaping happens and in case of shaping.

This shows the number of bytes to emit for each millisecond. Hence on a 100Mbps channel, we have a maximum bandwidth capacity per millisecond of 12 500 bytes (100 000 000 bits / 8 (to get bytes) / 1 000 (to get milliseconds)).

With the following set of data (no shaping):

Millisecond number	Number of bytes to send on this millisecond	Remaining from previous millisecond
1	7 000.00	0
2	11 000.00	0
3	8 000.00	0
4	12 000.00	0
5	10 000.00	0
6	12 000.00	0
7	9 000.00	0
8	11 000.00	0
9	12 000.00	0
10	9 000.00	0

We have this in the feed:

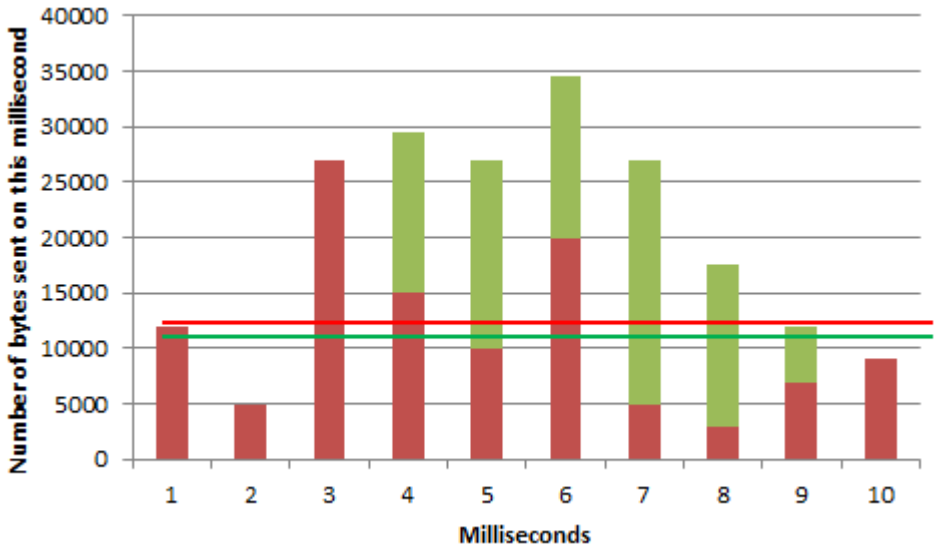


We can see that nothing uses more than the bandwidth acceptance (red line) and the average use of the bandwidth (green line) is lower (10 100 bytes per millisecond).

Now if we take the following set of data (shaping):

Millisecond number	Number of bytes to send on this millisecond	Remaining from previous millisecond
1	12 000.00	0
2	5 000.00	0
3	27 000.00	0
4	15 000.00	14 500.00
5	10 000.00	17 000.00
6	20 000.00	14 500.00
7	5 000.00	22 000.00
8	3 000.00	14 500.00
9	7 000.00	5 000.00
10	9 000.00	0

We will have shaping:



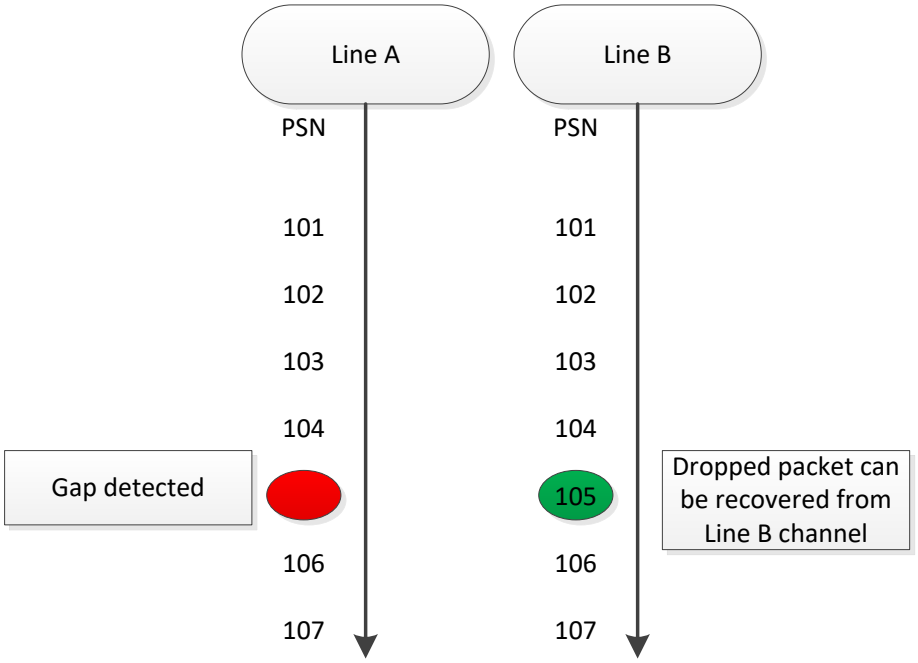
In green the packet that will be sent the next millisecond since it was not possible to send it immediately.

Hence on the feed the emission will be the following for this second:

Millisecond number	Bandwidth use per millisecond
1	12 000.00
2	5 000.00
3	12 500.00
4	12 500.00
5	12 500.00
6	12 500.00
7	12 500.00
8	12 500.00
9	12 000.00
10	9 000.00

2.6 GAP DETECTION AND LINE ARBITRATION

The Packet Sequence Number (please see Market Data Packet Header) should be used to detect gaps in the transmission of packets.



Using this method, a lost packet can be recovered from the second line. In case of packet loss on both lines, then the snapshot mechanism should be used.

UDP packets can potentially arrive unordered and potentially sent twice. As such, systems should be able to reorder the packets and detect duplicate packets.

2.7 SYSTEM FAILURES

- High Availability

The High Availability (HA) functionality of Optiq MDG is set up to ensure that there is no loss of service during an outage on the primary publisher, such as a hardware failure. Failover to a secondary publisher can be identified by the change of sequence in the Packet headers (the Packet Sequence Number restarts to “0” and bits between 1 and 3 in the “Packet Flags” field increase by “1”.Keep in mind that these 3 bits can overflow and it wills result with a “0” again). The HA failover is designed to be as transparent as possible, and multicast groups and ports will not change. However, there are specific details that must be considered.

When a market data source restarts and is not able to keep its sequential behaviour, the Market Data Gateway initiates a new start sequence for this source. The Market Data Gateway then sends an order book retransmission sequence, and a list of corrected trades asynchronously inside the real-time channel used for trades. These messages are flagged as a retransmission (rebroadcast Indicator set to “1”).
As the system is asynchronous, some trades might be lost in case of a matching engine failure. Therefore, the trade retransmission should be used to update the status of each trade that is resent, to complete trades not already taken into account, and even in certain cases, to indicate that some trades should be removed.
Please refer to Book and Trades Retransmission to have all details on how are retransmitted books and trades.

In case of a MDG restart:

- Clients have to use the "Packet Flags" field (bits 1 to 3) to maintain a unique Packet Sequence Number for the trading day.
- On real-time channels the Market Data Sequence Number (MDSN) is reset to 0 and first functional message that MDG receives gets MDSN 0 and higher.
- On snapshot channels the Market Data Sequence Number (MDSN) of the messages that have to be present in snapshots but are not resent on real-time will have a MDSN set to '0' (so several messages inside a snapshot can share the same MDSN).
- Clients need to take into account that the Last Market Data Sequence Number (LMDSN) in Start and End Of Snapshot messages are set to '0' and not set to 'null' as at start-up of MDG.

■ Disaster Recovery Site

In order to mitigate any serious outage in the primary data centre, a secondary data centre is online in standby mode.

Clients should ensure that all configurations surrounding the secondary data centre are included, as described in the **Euronext Optiq™ Market Data Gateway Production or External User Acceptance Environment** document.

■ Client System Failure

Real-time and snapshot market data will be available on two different multicast groups, and will allow clients the possibility to set up more than one receiving system processing the same data. In case of client system failure, the backup client system should continue to process the real-time and snapshot data sent on the second multicast group.

2.8 BOOK AND TRADES RETRANSMISSION

Retransmission is the process used by the Market Data Gateway to retransmit data in real-time to ensure trades and full book consistency. This is used each day to retransmit order books at the start of the day but can also be used intraday to recover from an Exchange failure.

2.8.1 Clear the Book

Before any market retransmission, Optiq MDG will send a clear book request.

- For the first clear book, at the beginning of the day, customers are expected to clear any stored information for any Market Data Update Type received the previous day.
- For any intraday clear book request, customers are expected to clear only the Market Data Update Types related to the specific order book, listed below, and keep all other Market Data Update Type unchanged.

  1 - Best Bid (Cash and Derivatives)

2 - Best Offer (Cash and Derivatives)
3 - New Bid (Cash and Derivatives)
4 - New Offer (Cash and Derivatives)
5 - Updated Bid (Cash and Derivatives)
6 - Updated Offer (Cash and Derivatives)
8 - Implied Bid (Derivatives Only)
9 - Implied Offer (Derivatives Only)
14 - High Dynamic Collar (Cash Only)
15 - Low Dynamic Collar (Cash Only)
16 - New Bid RLP (Retail Liquidity Provider) (Cash Only)
17 - New Offer RLP (Retail Liquidity Provider) (Cash Only)
18 - Updated Bid RLP Retail Liquidity Provider) (Cash Only)
19 - Updated Offer RLP (Retail Liquidity Provider) (Cash Only)
58 - New Bid With Liquidity Provider (Cash Only)
59 - New Offer With Liquidity Provider (Cash Only)
60 - Updated Bid With Liquidity Provider (Cash Only)
61 - Updated Offer With Liquidity Provider (Cash Only)
63 - Low Static Collar (Cash Only)
64 - High Static Collar (Cash Only)
70 - Low LP Collar (Cash Only)
71 - High LP Collar (Cash Only)

- For market by orders, clients will receive an Order Update (1002) with Market Data Action Type set to "3 - Deletion of all orders for the given instrument", quantity set to '0' (zero) and all other fields set to null according to the SBE protocol.

2.8.2 Book Retransmission

Book retransmission consists of resubmitting the depth of the book on the real-time channels. This book retransmission occurs:

- Every morning at the start of the day.
- Intraday to recover in case of MDG message loss.

2.8.2.1 Morning Book Retransmission

For Derivatives, the broadcasting sequence is the following:

Then for each instrument:

1. Market Update (1001)
   - Market Data Update Type: 254 – Clear Book
   - Rebroadcast Indicator: 1
2. Full depth book in Market Update (1001)
   - Market Data Update Type: 3 - New Bid and 4 - New Offer
   - Rebroadcast Indicator: 1
3. BBO in Market Update (1001)
   - Market Data Update Type: 1 - Best Bid and 2 - Best Offer
   - Rebroadcast Indicator: 1
4. Technical Notification (1106)
   - Technical Notification Type: 3 – Instrument Book Retransmission End

- Rebroadcast Indicator: 1

2.8.2.2 Intraday Book Retransmission

A Market Update (1001) or Order Update (1002) message will be sent for each instrument, respectively filled with Market Data Update Type = “254 - Clear Book” or Market Data Action Type = “3 - Deletion of all orders for the given instrument”. Then the full book depth will be resent with “Rebroadcast Indicator” set to “1”.

For Market Update messages (1001): limits will be aggregated and the Market Data Update Type field will be “5 - Updated Bid” or “6 - Updated Offer” (or “Updated Bid/Offer RLP” etc.).

For Order Update messages (1002): each order will be resent with Market Data Action Type = “5 - Retransmission of all orders for the given instrument”.

In order to differentiate a book retransmission from real time messages, the Rebroadcast Indicator is set to “1”. Rebroadcast Indicator is also set to 1 for snapshots and this has no impact since they are not on the same channels.

2.8.3 Trade Retransmission

Trade retransmission will only be used in case of internal MDG message loss and will be sent on the real-time channels. The retransmission will always start with the “Technical Notification” message (1106) with “Technical Notification Type”: “Trade Retransmission Start” (10) and contains the “Retransmission Start Time” and the “Retransmission End Time” fields. These times define a time window: all trades previously received with an “Event time” included in this time window must be considered invalid. A new “Full Trade Information” message (1004) with the “Rebroadcast Indicator” field set to “1” will be sent. The trade retransmission ends with the “Technical Notification” message (1106) and “Technical Notification Type”: “Trade Retransmission End” (11).

Note: if for a time window that contains trade(s) on real-time feed but no “Full Trade Information” (1004) are rebroadcasted in between the “Technical Notification” (1106) messages, then members have to remove the trade(s) received in real-time.

2.9 CANCELLATIONS

2.9.1 Trade Cancellation

The trade will be cancelled with all the details of the trade in:

- Market Update (1001) message with Market Data Update Type “50 – Trade Cancellation”. It will not be possible from this message to make the link with the original trade.
- Full Trade Information (1004) with Trade Type “24 – Trade Cancellation”. All other fields will be set with original trade details including the MiFID Execution ID field which allows client to easily identify the trade cancelled for this Symbol Index.

2.9.2 Order Cancellation with Order Update message

The order will be updated with a "2 - Deletion of order identified by Previous Priority" (the Previous Priority will be replaced by Order Priority in phase 2) with the Previous Priority set to identify the order to remove from the book. Price will be set to the null value according to the SBE protocol and quantity set to '0'.

2.9.3 Limit Cancellation

In the Market Update message, if there is no more volume for a given price, the limit will be updated with an "Updated Bid" or "Updated Ask" with the quantity set to '0'.

If the BBO has no more volume, then it will be updated with a "Best Bid" or "Best Offer" with Price set to null according to the SBE protocol and quantity set to '0'.

2.10 HEALTH STATUS MECHANISM

The Health Status messages will be broadcasted on all channels repeatedly during the day, from the time the Standing Data messages (for phase 2 it will be the Timetable messages) are broadcasted until the End of Day messages are sent. The Market Data Sequence Number for this message will be the last Market Data Sequence Number of the message sent by the aggregator of this channel (please be advised that this message can have been sent on another channel managed by this aggregator).

Please for aggregators and detailed description, refer to: the Market Data Sequence Number.

For Snapshot, please refer to: Technical messages in Snapshot channels.

2.11 START AND END OF DAY

"Start Of Day" (1101) messages are sent on each channel once the Market Data Gateway starts. These messages will be sent periodically until another MDG message is sent on any channel of an aggregator (please refer to The Market Data Sequence Number paragraph for aggregator description). After the Start of Day messages, the "Health Status" messages (1103) will be sent periodically.

This mechanism guarantees that "Start Of Day" (1101) messages are the first messages sent by MDG.

At end of day, MDG will stop sending messages (including "Health Status" (1103)) and will periodically send "End Of Day" (1102) messages during a specified period before shutting down.

2.12 PRODUCTION TIMETABLE

This **Timetable** is an overview of the events during a trading day that impact market data activity. Clients should also refer to the "Timetable" message (1006) in the specifications for full details.

Event	Time (CET) for Cash	Time (CET) for Derivatives	Comment
File Download (except for Indices)	2:00 am CET		Clients will connect via HTTPS to download: XML SBE templates, Standing Data files, Timetable files, Tick tables, Feed configuration files and Pattern ID files
Application start-up	2:00 am CET		Sending Start Of Day message (1101) and frequently repeated (with Rebroadcast Indicator set to "1") until the beginning of the Standing Data emission in the morning. In phase 2 it will be the Timetable emission in the morning.
Standing Data and Timetables in the feed (except for Indices)	3:00 am CET		The Exchange will send Standing Data messages (1007) for each instrument and on all markets, followed by the Timetable message (1006) for Cash markets only. In phase 2 it will be the opposite: Timetable first followed by the Standing Data messages.
Book Retransmission	4:00 am CET		Retransmission of books and associated messages from previous day. This will contain Market Update message (1001) or Order Update message (1002) and for some instruments the Price Update message (1003).
Indices files and messages sent	6:00 am CET		Clients will have access to Indices standing data on EFS and received them in the feed.
Broadcast Indices	7:00 am CET		Start of Indices emission in the feed.
Market Pre-Open Time	7:15 am CET	7:00 am CET	This is announced with a Market Status Change message (1005)
Market Open Time	Warrants and Certificates: 8:00 am CET ETFs: 9:05 am CET All other cash: 9:00 am CET	8:00 am CET	This is the opening time as scheduled in the Timetable message (1006) and announced with a Market Status Change message (1005)
Settlement	NA	Between 5:30 and 9:58 pm CET	
Market Closing Time	All except Warrants and Certificates: 5:40 pm CET Warrants and Certificates: 6:30 pm CET	10:00 pm CET	It should be noted that the shutdown of the application depends on the dissemination of the Timetable (1006) and Market Status Changes message (1005). These two messages can provide scheduled or non-scheduled extended trading hours.
Optiq MDG system close	11:00 pm CET		The market closes on the End Of Day message (1102) emission. It will be sent for 15 minutes with snapshot messages. No other messages will follow for a given trading Day.

2.13 MULTICAST GROUP UNJOINING

The process of subscribing to a multicast group ID is also known as "joining" a multicast group. Upon session termination, the client's host system should issue an "unjoin" message. This will terminate delivery of data to that host's local network. If a client application terminates without issuing an "unjoin" message, the

network will eventually issue a “timeout” for the multicast group subscription that will automatically terminate delivery of the multicast packets to the host’s local network.

The “join” and “unjoin” processes are standard functions. No specific instructions are provided here, as they are specific to the user’s operating system and programming language.

3. MESSAGING PROTOCOL

3.1 OVERVIEW

MDG messages will be sent within a Market Data Packet that will be broadcast using multicast UDP/IP standards. A Market Data Packet will be composed of N complete messages. A single message will never spread across multiple packets.

The maximum length of a packet is 1400 bytes and does not include UDP/IP protocol fields.

Each message is enriched with a "Frame" field followed by a SBE header. The "Frame" field contains the length of the message including the length of the "Frame" and "SBE header" fields. The following diagram shows the structure of a packet:

Packet												
Packet Header	Message 1			Message 2			…			Message N		
	Frame	SBE Header	Msg	Frame	SBE Header	Msg	…	…	…	Frame	SBE Header	Msg
16 bytes	2 bytes	8 bytes	n_1 bytes	2 bytes	8 bytes	n_2 bytes	…	…	…	2 bytes	8 bytes	n_N bytes

Client applications should check that the length of the Market Data Packet (indicated in the UDP datagram) matches $16\ bytes\ (Packet\ Header\ size) + \sum message\ size\ (indicated\ in\ the\ Frame\ field)$. If not, then the packet should be considered corrupted.

A message can contain *n* repeating sections for a trading event but clients should not base algorithms on repeating sections since these repeating sections can also be in *n* messages.

3.2 MARKET DATA PACKET HEADER

The packet header is described below:

Field	Description	Length	Values
Packet Time	Time when the packet is pushed to the clients (Time in number of nanoseconds since 01/01/1970 UTC).	8 bytes	From 0 to 2^64-1
Packet Sequence Number (PSN)	Each channel has its own PSN sequence. Starting from 1 at every MDG start and increasing by step of 1. In case of overflow (over 4.2 billon) Packet Flags will increase for bits 4-6. With this mechanism the PSN has 35 bits available.	4 bytes	From 0 to 2^32-1
Packet Flags	Used to flag information:	2 bytes	From 0 to 2^16-1

	- Bit 0: Compression - 0 = body of the packet is not compressed (the body is the packet without the packet header) - 1 = body of the packet is compressed - Bit 1 to 3: will be set to 0 every morning and incremented for each restart of MDG in the same day (wrapping to 0 if the field overflows) - Bit 4 to 6: used if the Packet Sequence Number (PSN) goes over (2^32)-1. They are PSN high weight bits. - Bit 7 : is set to 1 when in the packet there is a Start Of Snapshot (2101) message, 0 otherwise - Bit 8 : is set to 1 when in the packet there is a End Of Snapshot (2102) message, 0 otherwise - Bit 9 : is set to 1 when in the packet there is a Health Status (1103) message, Start Of Day (1101) message or End Of Day (1102) message, 0 otherwise - Bit 10 to 15 : for future use		
Channel ID	Identifies the channel.	2 bytes	From 0 to 2^16-1

Client applications should check that the length of the Market Data Packet Body matches the sum of message sizes (indicated in the Frame field). If not, then the packet has to be considered corrupted.

The Market Data Packet Body size is also the:

- UDP datagram size minus 16 bytes for Packet Header size
- Uncompressed body size if the packet was compressed

Note: The Packet Header will not be compressed in compressed messages.

3.3 SBE MESSAGE STRUCTURE

A Market Data message is composed of the following parts:

SBE Message Structure													
Frame	SBE Header	Block	Repeating Section 1					...	Repeating Section N				
			Repeating Section Header	Rep. Sec. 1.a	Rep. Sec. 1.b	...	Rep. Sec. 1.n	...	Repeating Section Header	Rep. Sec. N.a	Rep. Sec. N.a	...	Rep. Sec. N.a
2 bytes	8 bytes	n bytes	2 bytes	x_1 bytes	x_1 bytes	...	x_1 bytes	...	2 bytes	x_N bytes	x_N bytes	...	x_N bytes

The maximum length of a message is 1384 bytes (maximum packet length (1400 bytes) minus the packet header length (16 bytes)).

The SBE Header is defined as follows:

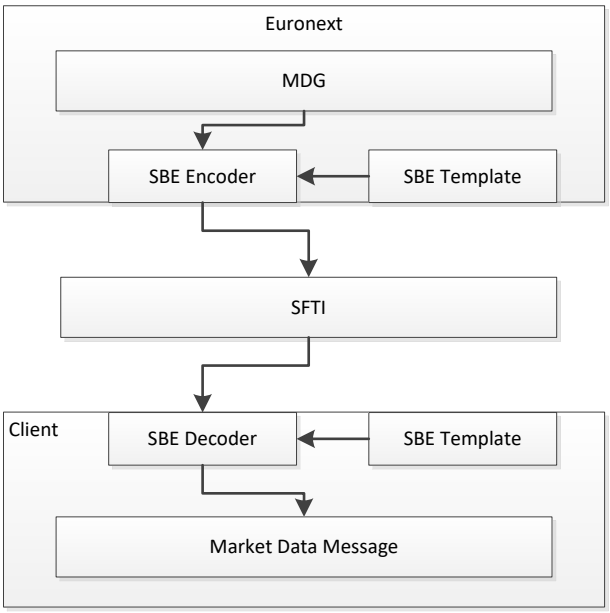
Field	Description	Length	Values
Block Length	Length of the block. The Block is the message without the repeating sections. This is useful for new message versions in case the exchange adds fields at the end of the block. Clients will be able to process the block fields and identify where the repeating sections starts.	2 bytes	From 0 to 2^16-2
Template ID	Identifier of the message template. This is the **message type** of the Market Data messages.	2 bytes	From 0 to 2^16-2
Schema ID	Identifier of the message schema that contains the template. Used to differentiate exchange Specifications.	2 bytes	From 0 to 2^16-2
Schema version	Version of the message schema in which the message is defined. Used to add messages and/or modify some others.	2 bytes	From 0 to 2^16-2

The Repeating Section Header is defined as follows:

Field	Description	Length	Values
Repeating section header	Defines how many times the repeating section is repeated and the length in bytes of a repeating section. It is set to “0” if there is no repeating section.	2 bytes (the first byte for the length and the second byte for the count)	From 0 to 254 for both

A Schema ID is composed of Template IDs (or message types) and each Template ID has its own Schema version (message version).

The Exchange provides SBE Template XML files that contain all message types supported by MDG. Client systems can decode SBE messages from MDG using the schema and template files as below:



The aim of backward and forward SBE compatibility is to allow members to choose to update to the latest SBE version or remain in previous versions.

To do so, the main element is the SBE version provided in SBE Template file. This SBE version is in the attribute: “version”. In addition, each change on message, field or possible value (for enumerated or bitmap) in the SBE Template file, are flagged with attributes:

- sinceVersion for additions
- deprecated for removals

Each of the above attributes will be set with the value of the SBE version from when the change occurred. So their value cannot be greater than the SBE version.

It is crucial for members to check each new SBE Template if the compatibility is ensured. It will also inform of the latest version in case an update is necessary.

Compatibility however cannot be ensured for the following situations:

- A new field addition except at the end of the block or the repeated section
- An existing field length changed
- A field, message or possible value name changed

The following describes the mechanism for each compatibility:

- New field compatibility

Consider SBE version is set to 5.

If in a message a field has been added at the end of the block and before the repeated section with “sinceVersion = 5” then members that are not interested by this new field can ignore it.

To ignore it, members can continune to use the SBE Version 4 (or lower) which omits this field already. The block length in the SBE header does not include the field added in version 5. When processing the new

message the SBE Decoder will process all fields inside the block length in SBE version 4 and ignore the new fields in version 5 to continue processing the message with the repeated section header.

The same logic is used for field added at the end of the repeated section. The length of the repeated section is in the Repeated Section Header and it is not the same size between version 4 and 5.

- New possible value compatibility

If a new possible value is added in SBE version 5, it will be flagged with “sinceVersion = 5”. Members that are not interested by this new possible value will potentially receive this new value but will have to define a specific behaviour. They can for example ignore it.

- New message compatibility

In case a new message is created and until the member wants to use it by updating the SBE version, this message will be ignored.

- Removals

The field will still be sent with a coherent value in order to ensure the compatibility, and will be flagged with the attribute “deprecated”.

4. MESSAGE OVERVIEW

4.1 TECHNICAL FORMAT FIELDS

The field formats contained in the messages will adhere to these rules:

- Binary data are in Intel byte order (Little-Endian).
- All integers are unsigned numeric or signed binary using two's complement method.
- All message fields will be sent for every message. Only their value will be broadcasted (field names in this document are only for reference purpose).
- All field sizes are fixed and constant.
- Segmentation of messages across packets will not be supported, so a message will never straddle a packet boundary.
- Even if it is not always mandatory to be able to process last message version (Schema Version), it is mandatory to check each update for important or regulation updates.

If a mandatory field is received with a null value, then the member has to process this as an error.

NULL VALUES

- SBE allows optional fields with a null value. The applicable NULL value is defined in the SBE Template file. In message and field specifications, only the not null values are indicated in the "Values" column.
- All text fields (Text and Alphanumerical Id that have more than 1 character) have a specific null value that is not defined in SBE Template. This null value is binary 0 (/0) for each character.
- All "Alphanumerical ID" and "Text" fields are alphanumeric based on UTF-8, left aligned and null padded (\0).

Format fields	Description	Null value
Alphanumerical ID	String type identifying an element, left aligned and completed with null padding (\0).	Each character is a UTF-8 null code point (\0)
Amount	Signed or unsigned numerical field representing the price multiplied by the quantity. See the description in Price, Quantity, Ratio And Amount Formats.	Null value defined in SBE Template
Bitmap	Array of bits, each bit specifying whether an optional value is present (set to "1") or not (set to "0") (in Little-Endian). E.g. For the Trade Qualifier bitmap field if its bit in position zero (0) is set to one (1) then it defines the trade as an Uncrossing Trade. In the same time bit in position one (1) can also be set to one (1) which will in this case indicates that this is also an Opening Trade.	No null value
Boolean	This field acts as an enumerated field with the possible values 0 (false), 1 (true) or null value.	Null value defined in SBE Template
Date	Date of an event (in number of days since 01/01/1970 UTC - 01/01/1970 is the day "0").	Null value defined in SBE Template
Decimal Places	Number of decimals associated to a numerical field. See the description in Price, Quantity, Ratio And Amount Formats.	Null value defined in SBE Template

Format fields	Description	Null value
Enumerated	Information having a delimited set of possible values.	Null value defined in SBE Template Note: The null value here depends on the technical type which can be unsigned integer or character.
Epoch Time in Nanoseconds	UTC Timestamp indicating the number of nanoseconds since epoch (January the 1st 1970).	Null value defined in SBE Template
Intraday Time in Seconds	UTC Timestamp indicating the number of seconds since the beginning of the day.	Null value defined in SBE Template
Numerical	Generic numerical field on unsigned integer.	Null value defined in SBE Template
Numerical ID	Numerical field identifying an element.	Null value defined in SBE Template
Price	Signed numerical field representing a price. See the description in Price, Quantity, Ratio And Amount Formats.	Null value defined in SBE Template
Quantity	Unsigned numerical field representing a quantity of elements (for example a number of shares). See the description in Price, Quantity, Ratio And Amount Formats.	Null value defined in SBE Template
Sequence	See the description in §4.3 - Sequence Numbers.	Null value defined in SBE Template
Signed Numerical	Generic numerical field on signed integer.	Null value defined in SBE Template
Text	Text in UTF-8, left aligned and completed with null padding (\0).	Each character is a UTF-8 null code point (\0)

4.2 DATE AND TIME CONVENTIONS

Times and Timestamps are expressed in UTC (Universal Time, Coordinated) and are synchronised using Precision Time Protocol (PTP). They are defined in number of nanoseconds since 01/01/1970 UTC based on Unix Epoch or number of seconds since the beginning of the day.

Phase Time is expressed in an unsigned integer 32 to define a time in hhmmss. Thus this time is in the range 0 to 235 959. Each time 60 (seconds) is reached, it increments the hundreds by 1 and seconds are reset to 0. The same apply every 60 minutes (or for each increments of a second when we have 59 minutes and 59 seconds), it increments the 10 thousands by 1 and reset all the inferior figures to 0.

Example: if we have 25959 (2h 59m 59s), the next second will be 30000 (3h 0m 0s).

Dates are defined in number of days since 01/01/1970 UTC (01/01/1970 is the day “0”).

Dates and Times formatted for ESMA reporting (MiFID II) are defined with a 27 bytes character string following ISO 8601:

YYYY-MM-DDThh:mm:ss.dddddd**Z**.

Where:

- "YYYY" is the year.
- "MM" is the month.
- "DD" is the day.
- "T" is a constant letter used as a separator between "YYYY-MM-DD" and "hh:mm:ss.dddddd**Z**".
- "hh" is the hour.
- "mm" is the minute.
- "ss.dddddd" is the second and its fraction of a second.
- "Z" is a constant letter standing for UTC time.
-

> *Note: Until the Optiq Matching Engine migration, timestamps will have a microsecond precision.*

-

4.3 SEQUENCE NUMBERS

The feed contains two sequence numbers:

4.3.1 The Packet Sequence Number (PSN)

The Packet Sequence Number (PSN) is part of the packet header and should be used for UDP gap detection and packet ordering. Each channel has its own PSN sequence.

4.3.2 The Market Data Sequence Number

Aggregators are MDG internal components that are dealing with a set of channels. The Market Data Sequence Numbers are managed at the aggregator level. Each one of them has its own sequence, starting from 0 and incrementing by step of 1 along the day. Since clients may listen to only a subset of the channels managed by one aggregator, they won't see all the Market Data Sequence Numbers in the messages they get from the channels they listen to. Therefore on one channel the Market Data Sequence Numbers will increment all along the day but not necessarily by step of 1.

The behaviour of the Market Data Sequence Numbers for the following messages is different. Please refer to their message definition for further explanations:

- "Start Of Day" (1101)
- "End Of Day" (1102)
- "Health Status" (1103)

Reminder: For gap detection: please use the Packet Sequence Number (PSN).

4.4 PRICE, QUANTITY, RATIO AND AMOUNT FORMATS

All prices must be processed with two values: the price value in an integer and its scale code. Each instrument must be linked to the associated Price / Index Level Decimals from the Standing Data message or file.

Prices must be calculated according to the following formula:

$$\text{Price} = \frac{Integer}{10^{\,Price/Index\ Level\ Decimals}}$$

For example, a price of 27.56 can be represented by an Integer of 275600 and a Price / Index Level Decimals of 4.

Note 1: The same mechanism is used for:

- All quantities with Quantity Decimals
- All ratios and percentages with Ratio / Multiplier Decimals
- All amounts with Amount Decimals

Note 2: Prices, quantities and amounts for MiFID 2 do not follow this Price / Index Level Decimals behaviour. The complete format is described in the Field Description.

4.5 INSTRUMENT TICKS

- For Cash instruments:
  - A Tick Size Index Identifier, within the Standing Data message (1007) and Cash Tick Size Referential File, will link the instrument to a tick table (only in file). This tick table gives a security the “Tick Size Index ID” to apply the base range of the entered price.
  - A Fix Price Tick indicates the tick to apply for this instrument (regardless of the amount)

- For Derivatives instruments:

The Instrument Decimals Ratio field is a numeric value indicating how to convert a price, which is denoted in absolute number, to a displayable price. It represents the number of absolute ticks after a decimal point.

Note that Instrument Decimals Ratio and Instrument Tick Size are available in the Contract Standing Data message and in XML file.

The same logic applies on EDSP (Exchange Delivery Settlement Price) with the Instrument EDSP Tick Size and on the Settlement Prices (at maturity) with Instrument Settlement Tick Size.

4.6 INSTRUMENT IDENTIFIERS

An instrument is identified by its Symbol Index and the AMR.

4.6.1 Symbol Index

The Symbol Index is assigned by the exchange and will not change over the lifetime of the instrument, nor used again after instrument expiration.

Any Corporate Action leading to a change of ISIN will lead to change of Symbol Index. These Corporate Actions are generally part of the mandatory reorganisation events; the most frequent ones being stock split, reverse stock split, change of name / denomination. However the ISIN change is not systematic and will be in any case communicated upfront through the Euronext Corporate Action notices.

The following rules apply to the Symbol Index:

Symbol Index value	Used for	Comment
From 1 to 99,999	Indices	
From 100,000 to 1,109,999	Bourse de Luxembourg instruments	In this range: - From 100,000 to 109,999: Indices - From 110,000 to 1,109,999: Shares and Fixed Income
From 1,110,000 to 9,999,999	Cash	This range is specific for Equities, Fixed Income, Warrants and ETF.
From 10,000,000 to 4,289,999,999	Derivatives	In this range: - 5 right digits for the Expiry or Outright or Strategy related to the contract. o 00000 uniquely identifies the contract o From 1 to 49,999 for Expiry and Outrights o From 50,000 to 99,999 for Strategies. - All remaining left digits are for the contracts. 42,800 contracts are possible. (4,290,000,000-10,000,000 = **4,280,0**00,000)

The standard security identifier (for example ISIN), mnemonic, tick size, instrument name and other instrument characteristics are carried only in the Standing Data message (1007), Outright Standing Data (1014), Strategy Standing Data (1012), Contract Standing Data (1013) and in the Standing Data files on servers. As such, the client applications must link the Symbol Index which is sent in all messages, with other instrument characteristics present in the Standing Data messages or files.

4.6.2 Automated Market Reference (AMR)

AMR Code is built from the following template and only applicable for Derivatives:

Instrument Attribute	Description	Examples
Exchange Code	Code used to identify the Market Place upon which the product is listed	P: Paris Equity J: Paris Index
Generic Contract Type	Code to identify the type of contract	F: Futures O: Options

Instrument Attribute	Description	Examples
Contract Code	Code assigned to identify the contract	FCE: CAC40 Index TO1: Total SA
Expiry	Expiry date indicating the expiry Format for standard contract: Year & Month (YYMM) Format for flexible contracts: Year & Month & Day (YMDD) with: - "Y" is the last number of the year - "M" is the month code (as defined in the table below) - "DD" is the exact business day of the month	
Exercise Price	Exercise (Strike) price assigned to the option (Option only)	
Instrument Type	Code to identify type of Derivative Instrument	F: Futures C: Call P: Put

The following table provides the Month codes:

Month	Month Code
January	F
February	G
March	H
April	J
May	K
June	M

Month	Month Code
July	N
August	Q
September	U
October	V
November	X
December	Z

EXAMPLES:

Standard contracts:

POTO1250404300C Total Call Option – April 2025 – Strike 43€
JFFCE250500000F CAC 40 Index Future – May 2025

Flexible contract:

POTO15Q2102500C Total Call Option – 21st of August 2025 – Strike 25€

AMR & MAX STRIKE PRICE LIMIT

Exercise price field in the AMR is 5 characters long. In order to represent strikes with decimals, and that require more than 5 characters to be represented, Euronext uses a rule for encoding the strikes, which takes Strike Price Decimals Ratio into calculation as described below.

For contract of type option:

- Compute price = Exercise price/ 10^Strike Price Decimals Ratio
- If the exercise price is strictly less than 10000:
  - the 5 characters are the price left padded with '0'
- If the exercise price is greater or equal than 10000:
  - the first character is a character representing a multiple of 10000 (10->A, 11->B,....35->Z)

- the last 4 characters, are the price modulo 10000 left padded with '0'

4.7 HOW TO …

4.7.1 … Determine the message type

Each message has a type that uniquely defines its structure and its content, and is represented by a numeric identifier. For example the message "Market Update" has the type "1001". In the SBE message header the "Template ID" field contains this type (see 3.3 - SBE Message Structure).

4.7.2 … Determine the number of repeating sections in a message

The number of repeating sections is defined in the second byte of the "Repeating Section Header" (see SBE Message Structure).

4.7.3 … Determine the length of a message

The length of a message (including the length of the "Frame" and "SBE header" fields) is in the field "Frame" (see 3.1 - Overview).

4.7.4 … Manage a new version of a message if the client has not implemented the new fields

Please refer to the explanations in the paragraph SBE Message Structure.

4.7.5 … Look for a trade

This is possible by checking in Full Trade Information message (1004) the MiFID Execution ID field. It is the association of Symbol Index, EMM and Execution ID completed with null on the right to complete until the 52 bytes of the field are filled.

4.7.6 … Look for an order

For a given Symbol Index and EMM, the order can be found using its Previous Priority that uniquely identifies an order. This value is given in the "Ack" message sent by Order Entry Gateway.

4.7.7 … Resynchronize with snapshot after packet loss

Please refer to the explanations on the Snapshot: Snapshots.

4.7.8 … Manage BBO

Best Bid and Offer (BBO) updates are sent with a price and a quantity to indicate the best limit on bid or offer side. When the Best Bid or Best Offer changes, a new Best Bid or Best Offer update is sent out and replaces the previous sent Best Bid or Best Offer. If a side of the book becomes empty, then a Best Bid or Best Offer is sent with quantity set to 0 and price set to null to clear the Best Bid or Best offer.

4.7.9 … Manage Implied Prices

Implied (out) prices are sent out in case the Implied bid or Implied offer price is the same or better price than the Best Bid or Best Offer. When the Implied Bid or Implied Offer price changes, a new Implied Bid or Implied Offer update is sent out and replaces the previous sent Implied Bid or Implied Offer. When the Implied Bid or Implied Offer is no longer valid, an Implied Bid or Implied Offer update is sent out with quantity set to 0 and price set to null to clear the Implied Bid or Implied offer.

4.7.10 … Build the book

Optiq Market Data provides market by limits (with Market Update messages (1001)) or by orders (with Order Update messages (1002)) depending on the instrument type.

- For markets built using aggregated limits (Market Update (1001)), clients have to order the limits by prices (only one price by line):
  - On a new bid or ask, clients must add the new limit
  - On an updated bid or ask, clients must replace the current limit with the new limit
  - On a limit deletion, clients will receive an update with quantity set to '0' and the price matching the limit to delete.
- For markets built using Order Updates (1002), clients have to order each order by its Order Priority (the higher the Order Priority, the lower its priority):
  - On a New Order, clients must add the new order
  - On an order modification, clients must replace the order identified by its Previous Priority (in phase 2 it will be the Order Priority field) and order the modified order with its new Order Priority
  - On an order cancelation, clients must remove the order identified by its Previous Priority (in phase 2 it will be the Order Priority field).

Clients should not process both the BBO and limits to construct the book. If Best Bid and Offer updates are sent as a part of the same message, then they should be processed as one update to the BBO and not individually. Otherwise, the order book might appear crossed.

4.7.11 … Determine a Closing Price

The Closing Price is determined using the last trade price once the Phase Id becomes “Closed”.

If no trade took place during the day, the Last Adjusted Closing Price should be used as the closing price. The Last Adjusted Closing Price is sent every morning in the reference data. It is the previous day’s last trade price, adjusted for corporate events (if applicable).

4.7.12 … Determine the option underlying expiry

It the Underlying Type is a Future (F) or a Commodity (C), the fields’ Underlying ISIN Code and Underlying Expiry at the contract level will be set to null and the AMR of the future will be provided at the outright level. This will allow customers to look-up the AMR to find the underlying future expiry.

5. MESSAGES

The message specification format is as follow:

Field	Description	Length
Block	The block is all the non-repeated fields.	Variable (in bytes)
Repeating section header	This is how many times the repeating section is repeated and the length of a repeating section. It will not been displayed in any below message. It is set to 0 if there is no repeating section.	2 bytes (1byte for the length 1byte for the count)
Repeating section	All the fields that are repeated. All these fields are in bold and green table borders	Variable (in bytes)

All field lengths are in bytes.

Field definition might not be exhaustive, please go to the Field Description section. Further details will be provided.

5.1 TECHNICAL MESSAGES

5.1.1 Start Of Day (1101)

“Start Of Day” (1101) messages are sent every 2 seconds on each channel once the Market Data Gateway starts. These messages will be sent periodically until another MDG message is sent on any channel of an aggregator. After the Start of Day messages, the “Health Status” messages (1103) will be sent periodically.

This mechanism guarantees that “Start Of Day” (1101) messages are the very first messages sent by MDG.

Note:

- Start Of Day Market Data Sequence Number will always be set to "0".

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Session Trading Day	Date of the current trading session (in number of days since the 1st of January 1970).	Date	2	From 0 to 2^16-2	Mandatory	148

5.1.2 End Of Day (1102)

At end of day, MDG will stop sending messages (including “Health Status” (1103)) and will send every 2 seconds “End Of Day” (1102) messages during 15 minutes before shutting down.

Note:

- The Market Data Sequence Number of all the “End Of Day” (1102) messages is the Market Data Sequence Number of the last message sent by the aggregator for this set of channels (be aware that this last message can have been sent on another channel managed by this aggregator).

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Session Trading Day	Date of the current trading session (in number of days since the 1st of January 1970).	Date	2	From 0 to 2^16-2	Mandatory	148

5.1.3 Health Status (1103)

The Health Status messages are broadcasted on all channels repeatedly all along the day as soon as the Standing Data messages are broadcasted and until End of Day messages are broadcasted. The Market Data Sequence Number for this message will be the last Market Data Sequence Number of the message sent by the aggregator of this channel (be aware that this message can be sent on another channel managed by this aggregator).

The Event time indicates the time of the generation of the Health Status message.

Message Sending Rules:

- Health Status are sent every 2 seconds even if there are market data messages sent on a channel.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Event Time	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148

5.1.4 Trade Retransmission Start (1104)

Trade retransmissions will only be used in case of internal MDG message loss and will be sent on the real-time channels. The retransmission will always start with the "Trade Retransmission Start" message (1104) that contains the "Trade Retransmission Start Time" and the "Trade Retransmission End Time" fields. These times define a time window: all trades previously received with an "Event time" included in this time window must be considered invalid. A new "Full Trade Information" messages (1004) with the "Rebroadcast Indicator" field set to "1" will be sent. The trade retransmission ends with the "Trade Retransmission End" message (1105).

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will be always set to '1'.	Boolean	1	0 = False 1 = True	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Trade Retransmission Start Time	All the trades previously received by the clients that have an "Event time" strictly lower than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Trade Retransmission End Time	All the trades previously received by the clients that have an "Event time" strictly higher than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148

5.1.5 Trade Retransmission End (1105)

The Trade Retransmission End message is sent to the market in case of recovery.

It must be processed along with the Trade Retransmission Start message to allow members to determine the trades, for a given Symbol Index, persisted by the Exchange.

Message Sending Rules:

- The retransmission will always end with the "Trade Retransmission End" message (1105).

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will be always set to '1'.	Boolean	1	0 = False 1 = True	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Trade Retransmission Start Time	All the trades previously received by the clients that have an “Event time” strictly lower than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Trade Retransmission End Time	All the trades previously received by the clients that have an “Event time” strictly higher than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148

5.1.6 Technical Notification (1106)

Technical Notification message is used to notify the beginning of Start and End Retransmissions.

Message Sending Rules:

- At the beginning of a book retransmission on a channel. Fields "Symbol Index" and "Retransmission End Time" will be set to null. All messages inside this retransmission, including the Technical Notification messages will have the field "Rebroadcast Indicator" set with the same value to differentiate the book retransmissions when several are happening at the same time on different channels.
- At the end of a book retransmission on a channel. Fields "Symbol Index" and "Retransmission Start Time" will be set to null.
- At the end of each instrument per instrument book retransmission (starts are provided by the clear book request in Order Update or Market Update message). Field "Symbol Index" will have the value of the instrument book sent. "Retransmission Start Time" will be set to null.
- At the beginning and end of a trade retransmission, providing the time window to clear previous trades and to be replaced by the resubmitted trades. Field "Symbol Index" will be set to null.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Optional	148
Technical Notification Type	Indicates the technical notification sent.	Enumerated	1	1 = Instrument Book Retransmission End 10 = Trade Retransmission Start 11 = Trade Retransmission End	Mandatory	**Error ! Bookmark not defined.**
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
Retransmission Start Time	Indicates when the retransmission starts. For trade retransmission, all the trades previously received by the clients that have an “Event time” strictly lower than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Optional	**Error ! Bookmark not defined.**
Retransmission End Time	Indicates when the retransmission ends. For trade retransmission, all the trades previously received by the clients that have an “Event time” strictly higher than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Optional	**Error ! Bookmark not defined.**
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Optional	148

5.2 REFERENTIAL MESSAGES

5.2.1 Contract Standing Data (1013)

The Contract Standing Data message provides characteristics for Derivatives contracts, valid for the current trading day.

Message Sending Rules:

- Every morning following the Session Start messages. Contract Standing Data will be sent first, followed by the Outright Standing Data and Strategy Standing Data.

Notes:

- Standing Data messages are also available in XML file.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Optiq Segment	An Optiq segment is a universe of instruments sharing common trading properties.	Enumerated	1	(See field description)	Mandatory	148
Partition ID	Identifies uniquely an Optiq partition across all the Exchange partitions.	Numerical ID	2	From 0 to 2^16-2	Mandatory	148
Contract Event Date	(in number of days since the 1st of January 1970).(in number of days since the 1st of January 1970).	Date	2	From 0 to 2^16-2	Optional	148
Exchange Code	Indicates the Market Place.	Enumerated	1	(See field description)	Mandatory	148
Exercise Style	Type of exercise of a derivatives instrument	Enumerated	1	(See field description)	Optional	148
Flex Indicator	Indicates whether a derivatives instrument can be defined using flexible terms, or not.	Boolean	1	0 = False 1 = True	Mandatory	148
Contract Name	Contract Name	Text	60	(See field description)	Mandatory	148
Contract Type	Generic Contract Type.	Enumerated	1	F = Future O = Option	Optional	148
Underlying Type	Defines the instrument type of the underlying.	Enumerated	1	(See field description)	Mandatory	148
Price / Index Level Decimals	Indicates the number of decimals for each Price / Index Level related to this Symbol Index	Decimal Places	1	From 0 to 2^8-2	Optional	148
Quantity Decimals	Indicates the number of decimals for each Quantity related to this Symbol Index	Decimal Places	1	From 0 to 2^8-2	Optional	148
Amount Decimals	Indicates the number of decimals for each Amount related to this Symbol Index	Decimal Places	1	From 0 to 2^8-2	Optional	148
Ratio / Multiplier Decimals	Indicates the number of decimals for each Ratio / Multiplier related to this Symbol Index	Decimal Places	1	From 0 to 2^8-2	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Main Depositary	Identifies the default (or main) depository organization of the instrument (between the possible 4 depositaries registered) used by priority for the settlement (for example: multi-listed instruments which have several depositories).	Alphanumerical ID	5	(See field description)	Optional	148
MIC	Identifies the market to which an instrument belongs by its MIC (Market Identification Code), segment MIC according to ISO 10383.	Alphanumerical ID	4	(See field description)	Optional	148
Country Of Exchange	Country of exchange is the Country associated to the MIC following ISO 3166 Alpha-3.	Alphanumerical ID	3	(See field description)	Optional	148
Product Code	Physical alphanumerical product code.	Alphanumerical ID	3	(See field description)	Mandatory	148
Underlying MIC	Identifies the market to which an instrument' underlying belongs by its MIC (Market Identification Code), according to ISO 10383. Refer to MIC field to have all the authorized values.	Alphanumerical ID	4	(See field description)	Optional	148
Underlying ISIN Code	Underlying ISIN.	Alphanumerical ID	12	(See field description)	Optional	148
Underlying Expiry	Expiry Date of the underlying (in number of days since the 1st of January 1970).	Date	4	From 0 to 2^32-2	Optional	148
Order Type Rules	Order types supported by the matching engine.	Bitmap	2	(See field description)	Optional	148
Settlement Method	Settlement method	Alphanumerical ID	1	(See field description)	Optional	148
Trading Currency	Code of the currency (ISO 4217-3A).	Alphanumerical ID	3	(See field description)	Mandatory	148
WhRFC Days Before Expiry	Wholesale RFC Days Before Expiry defines the number of days (0 to 99) from expiry from which the RFC will no longer be available. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.	Numerical	1	From 0 to 2^8-2	Optional	148
WhRFC Minutes Before Closing	Wholesale RFC Minutes Before Close allows the setup of the number of minutes (1 to 99) from market close from which the RFC will be deactivated.	Numerical	1	From 0 to 2^8-2	Optional	148
Minimum Quantity For Initiator	Wholesale RFC Minimum Quantity defines the minimum quantity required to submit an RFC as initiator. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.	Quantity	4	From 0 to 2^32-2	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Minimum Quantity For Reactor	Wholesale RFC Min Qty defines the minimum quantity required to submit a response to the RFC during the Improvement period. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.	Quantity	4	From 0 to 2^32-2	Optional	148
WhRFC Pick Up Perc	Defines the percentage of the RFC Initiator quantity that is available for RFC responses during the final execution at the RFC price. This pick up percentage is not relevant during the final execution with RFC responses improving the RFC Price. Available only for Wholesale Trade Type = 9.	Numerical	1	From 0 to 2^8-2	Optional	148
WhRFC Improvement Period	Wholesale RFC Improvement Period is the number of seconds that defines the duration of the RFC Improvement Period. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.	Numerical	1	From 0 to 2^8-2	Optional	148
Available Wholesale Trade Type	Wholesale trade type supported by the trading host.	Bitmap	4	(See field description)	Optional	148
Instrument Decimals Ratio	Default ratio used in Order Entry for prices computation.	Numerical	1	From 0 to 2^8-2	Mandatory	148
Instrument Tick Size	Default Tick Size value applicable for all series that belong to the contract - numerator	Numerical	1	From 0 to 2^8-2	Mandatory	148
Instrument Settlement Tick Size	Default Tick Size value applicable for all Settlement Prices - numerator.	Numerical	1	From 0 to 2^8-2	Mandatory	148
Instrument EDSP Tick Size	Specific Tick Size value applicable for EDSP - numerator	Numerical	1	From 0 to 2^8-2	Optional	148
Strike Price Decimals Ratio	Value used , only for the AMR code, to determine the number of decimals present in the Option contract strike price, as the strike price is disseminated in format of an integer.	Numerical	1	From 0 to 2^8-2	Optional	148
Delta Protect for MM	Delta Protection for Market Makers Level.	Enumerated	1	0 = Protection for Market Makers enabled at a contract level 1 = Protection for Market Makers enabled at a contract and expiry level.	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Vega Protect for MM	Vega Protection for Market Makers Level.	Enumerated	1	0 = Protection for Market Makers enabled at a contract level 1 = Protection for Market Makers enabled at a contract and expiry level.	Optional	148
Volume Protect for MM	Volume Protection for Market Makers Level.	Enumerated	1	0 = Protection for Market Makers enabled at a contract level 1 = Protection for Market Makers enabled at a contract and expiry level.	Optional	148
Contract Trading Type	Contract Trading Type.	Enumerated	1	1 = Traded as an outright 2 = Not traded, but listed in contract data. Traders may subscribe to it 3 = Traded as a simple inter-commodity spread 4 = Traded as an inter-commodity spread	Mandatory	148
Throttle for Incoming Orders	Defines the number of order messages that a session on the Order Entry Gateway can submit per second in a particular contract.	Numerical	2	From 0 to 2^16-2	Mandatory	148
Strike Price Flex Increment	Strike Price increment for flex contracts (To be calculated with Price / Index Level Decimals).	Numerical	4	From 0 to 2^32-2	Optional	148
Premium Pricing Tick Size	Specific Tick Size value applicable for the instrument for premium under the threshold defined in Premium Pricing Threshold field.	Numerical	1	From 0 to 2^8-2	Optional	148
Premium Pricing Threshold	Premium threshold defining the change of Tick Size to be applied from the default one provided in Instrument Tick Size field to the one provided in Premium Pricing Tick Size field.	Numerical	8	From 0 to 2^64-2	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Tick Value	Used to compute the Valuation Coefficient: allows the calculation of the amount in a currency which should be paid by the buyer to the seller for a given price, for a trading lot (to be calculated with the Tick Value Decimals).	Numerical	8	From 0 to 2^64-2	Optional	148
Outright LIS Trade Threshold	Wholesale LIS Trade Threshold checked for Order Cross submission.	Numerical	8	From 0 to 2^64-2	Optional	148
Strategy LIS Trade Threshold	Wholesale Strategy LIS Trade Threshold checked for Order Cross submission.	Numerical	8	From 0 to 2^64-2	Optional	148
Outright G.Cross Threshold	Wholesale Guaranteed Trade Threshold checked for Order Cross submission.	Numerical	8	From 0 to 2^64-2	Optional	148
Strategy G.Cross Threshold	Wholesale Strategy Guaranteed Cross Trade Threshold checked for Order Cross submission.	Numerical	8	From 0 to 2^64-2	Optional	148
Lot Size	For Cash, it defines a multiple of the tradable quantity and for derivatives, it represents the amount of underlying instrument per unit of a derivative contract (to be calculated with the Quantity Decimals).	Quantity	8	From 0 to 2^64-2	Mandatory	148
Instrument Unit Expression	Unit in which the instrument is quoted.	Enumerated	1	(See field description)	Optional	148
Tick Value Decimals	Indicates the number of decimals for Tick Value related to this Symbol Index	Decimal Places	1	From 0 to 2^8-2	Optional	148
Pricing Algorithm	Pricing Algorithm for the Contract.	Alphanumerical ID	3	(See field description)	Optional	148
Underlying Subtype	Defined the underlying sub-type associated to the underlying type.	Enumerated	1	(See field description)	Optional	148
Mother Stock ISIN	ISIN Code of the index underlying of the TRF contract.	Text	12	(See field description)	Optional	148
Reference Future Contract SecGrp	Exchange Code, Contract Type and Product code of the future contract.	Text	5	(See field description)	Optional	148
Instrument Tick Size Long	Default Tick Size value applicable for all series that belong to the contract - numerator	Numerical	2	From 0 to 2^16-2	Optional	**Error ! Bookmark not defined.**
Strategy Code	Exchange-recognized strategy code	Enumerated	1	(See field description)	Optional	148

5.2.2 Outright Standing Data (1014)

The Outright Standing Data message provides characteristics on Derivatives instruments, valid for the current trading day.

Message Sending Rules:

- Every morning following the Session Start messages. Contract Standing Data will be sent first, followed by the Outright Standing Data and Strategy Standing Data.
- On Derivatives instruments created intraday.

Note:

- Standing Data messages are also available in XML file.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Contract Symbol Index	Identifies the contract of this instrument by its Symbol Index.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Instrument Event Date	(in number of days since the 1st of January 1970).(in number of days since the 1st of January 1970).	Date	2	From 0 to 2^16-2	Mandatory	148
ISIN Code	Instrument ISIN following ISO 6166.	Alphanumerical ID	12	(See field description)	Mandatory	148
CFI	Classification code of a financial instrument defined by the ISO-10962:2015 standard.	Text	6	(See field description)	Optional	148
Maturity Date	Maturity Date of the instrument (text formatted as YYYYMMDD).	Text	8	(See field description)	Mandatory	148
Option Type	Type of the option.	Enumerated	1	1 = Call 2 = Put	Optional	148
Instrument Trading Code	Is the AMR code on derivatives and the Trading Code on cash.	Alphanumerical ID	15	(See field description)	Mandatory	148

Field	Short Description	Format	Len	Values	Presence	Page
Lot Size	For Cash, it defines a multiple of the tradable quantity and for derivatives, it represents the amount of underlying instrument per unit of a derivative contract (to be calculated with the Quantity Decimals).	Quantity	8	From 0 to 2^64-2	Mandatory	148
Strike Price	The strike price of an option/warrant is the specified price at which the underlying can be bought (in the case of a call/right to buy) or sold (in case of a put/right to sell) by the holder (buyer) of the option/warrant contract, at the moment he exercises his right against a writer (seller) of the option/warrant.	Price	8	From -2^63+1 to 2^63-1	Optional	148
Last Trading Date	(in number of days since the 1st of January 1970).(in number of days since the 1st of January 1970).	Date	2	From 0 to 2^16-2	Optional	148
Underlying Instrument Trading Code	Is the underlying AMR code on derivatives and the Trading Code on cash.	Alphanumerical ID	15	(See field description)	Optional	148
Days To Expiry	Number of Calendar days until the Last Trading Day of the Expiry.	Numerical	2	From 0 to 2^16-2	Optional	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148

5.2.3 Strategy Standing Data (1012)

The Strategy Standing Data message provides the main characteristics of strategies.

The repeating section provides the details of each leg.

Message Sending Rules:

- Every morning following the Session Start Messages. Contract Standing Data will be sent first, followed by the Outright Standing Data and Strategy Standing Data.
- Intraday for the intraday creations of strategies.

Note:

- Standing Data messages are also available in XML file.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Instrument Trading Code	Is the AMR code on derivatives and the Trading Code on cash.	Alphanumerical ID	15	(See field description)	Mandatory	148
Exchange Code	Indicates the Market Place.	Enumerated	1	(See field description)	Mandatory	148
Maturity Date	Maturity Date of the instrument (text formatted as YYYYMMDD).	Text	8	(See field description)	Mandatory	148
Strategy Code	Exchange-recognized strategy code	Enumerated	1	(See field description)	Mandatory	148
Contract Symbol Index	Identifies the contract of this instrument by its Symbol Index.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
CFI	Classification code of a financial instrument defined by the ISO-10962:2015 standard.	Text	6	(See field description)	Optional	148
Leg Symbol Index	MDG proprietary identification code of the instrument leg for the strategy.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Leg Price	Price of underlying leg for a delta neutral strategy (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Optional	148
Leg Ratio	Ratio of lots for the leg. For contingent trades, the delta (to be calculated with the Amount Decimals).	Quantity	4	From 0 to 2^32-2	Mandatory	148
Leg Buy or Sell	Leg Side.	Enumerated	1	B = Buy S = Sell	Mandatory	148

5.3 APPLICATION MESSAGES

5.3.1 Market Update (1001)

The Market Update Message provides valuable data to the market in order to build the limits for the order book (Cash and Derivatives).

The "Market Data Update Type" field indicates the type of price/volume update as follows:

- The Best Bid/Offer are the best explicit buy or sell limit price and aggregated volume at the best limit price. When best orders are Market Orders or Market To Limit orders, the Best Bid/Offer is sent out with a price set to null and a quantity equal to the aggregated volume of Market Order (MO) and Market To Limit (MTL).
- When there is no more Limit on a book side, last BBO is sent with quantity set to '0' and Price set to null value.
- The Bid/Offer updates are the explicit buy or sell price and aggregated volume at any price level. When the Bid/Offer is the best price, both the Bid/Offer and the Best Bid/Offer will be sent.
- Implied Bid/Offer prices are sent on derivatives for a given outright series when either:
  - An implied out buy/sell price can be calculated, and is better than or equal to the best explicitly quoted price
  - A previously transmitted implied buy/sell price or volume changes, or can no longer be implied.
- A Request for Quote (RFQ) notifies market participants that a member has an interest for the specified instrument. A RFQ may have an associated volume, but no price.
- A Request for Size (RFS) notifies market participants that a member has an interest at the specified instrument price, but no quantity is indicated.
- A Clear Book requests clients to clear the entire book for a given Symbol Index. Quantity will be '0' and Price set to null value.

Trades will also be notified using the Market Update message.

On Warrants, all updates with a "Liquidity Provider" flag, with a limit will contain at least one liquidity provider order. "Liquidity Provider" limits contain one or several liquidity provider orders along with zero to several non-liquidity provider orders.

This message is available for all the markets.

Iceberg

The disclosed quantity of an iceberg order means the quantity of a Security that a Member wishes to be disclosed to the market. It is the maximum quantity of a Security that will be visible to the market at any given time.

An iceberg order can be placed during order accumulation periods and during the main trading session.

On entry, the Member must specify a total volume and a peak volume (the disclosed quantity) which must be greater than a minimum size (ten times the trading unit). The initial peak is introduced into the Central Order Book with the original timestamp of the iceberg order according to price/time priority. When an iceberg order is executed for its disclosed quantity (the “peak”), that quantity is renewed automatically and the order is positioned behind orders at the same limit. For the execution of one entering opposite-side order, the displayed quantities of all orders at the same price first are executed on time priority and secondly the remaining iceberg orders are executed for their total amount according time priority. However, where the member is participating in the Internal Matching Facility and the order is in respect of an Eligible Financial Instrument, the quantity will not lose its time priority after execution of the disclosed quantity provided that

the iceberg order is executed pursuant to the Internal Matching Facility. The modification of the total quantity does not affect the order priority.

An iceberg order cannot be stipulated in an “at opening price” order (i.e. a market-to-limit order entered during order accumulation periods).

Execution Summary (for phase 2 only):

This feature will be available for phase 2.

The Market Data Update Type is providing the aggressor side. The Price field indicates the worth traded price and the Quantity fields provides the total traded quantity. It is followed by all the short trades, the updated orders if necessary, the updated BBO and the limits.

Peg Orders (for phase 2 only):

Peg orders will be communicated on its creation and for each update with:

- Aggregated volume at this limit
- Number Of Orders with the number of peg orders

On a BBO update peg order updates will be disseminated with the BBO message in different repeated sections.

If a peg order has the same limit as other orders quantity and Number Of Reference fields will always provide aggregated limit that is containing both peg and non-peg orders.

Wholesales RFC:

Wholesales Request for Cross starts with an update “26 = Request for Cross (RFC)” providing price and quantity.

At the end of the time-out period, MDG will send out the new update types “74 - New Bid on Wholesale RFC” or “75 - New Offer on Wholesale RFC” for all price levels in the RFC book. There will not be any update types “76 - Updated Bid on Wholesale RFC” or “77 - Updated Offer on Wholesale RFC”. All levels will be sent out as 74 and 75 even if Number of Orders is more than 1.

Immediately after, the RFC trades (“56 - Request for Cross Trade” / “57 - Request for Cross Strategy Leg Trade”) are sent out followed by the “78 - Clear Wholesale RFC”

In case a RFC is still ongoing and a new RFC arrives, it will be sent out as “25 - Request for Cross (RFC) Queued” (without price and quantity). Once the first RFC has finished, the one in the queue is sent again with: “26 - Request for Cross (RFC)” with a price and a quantity and the process repeats itself.

Market Data Update Types

The following table defines for each Market Data Update Type on which instruments it applies.

Market Data Update Type		Warrants & Certificates		Options and Futures		Commodities	
		Full Order Book (OU)	Full Order Book (MU)	Best Bid and Offer	Full Order Book (MU)	Best Bid and Offer	Full Order Book (MU)
BBO	1 - Best Bid (Cash and Derivatives)	X	X	X	X	X	X
	2 - Best Offer (Cash and Derivatives)						
	8 - Implied Bid (Derivatives Only)			X	X	X	X
	9 - Implied Offer (Derivatives Only)						
Full Depth	3 - New Bid (Cash and Derivatives)		X		X		X
	4 - New Offer (Cash and Derivatives)						
	5 - Updated Bid (Cash and Derivatives)						
	6 - Updated Offer (Cash and Derivatives)						
	58 - New Bid With Liquidity Provider (Cash Only)		X				
	59 - New Offer With Liquidity Provider (Cash Only)						
	60 - Updated Bid With Liquidity Provider (Cash Only)						
	61 - Updated Offer With Liquidity Provider (Cash Only)						
Wholesales RFC Full Depth	74 - New Bid on Wholesale RFC			X	X	X	X
	75 - New Offer on Wholesale RFC						
	76 - Updated Bid on Wholesale RFC						
	77 - Updated Offer on Wholesale RFC						
	78 - Clear Wholesale RFC						
Clear Book	254 - Clear Book (Cash and Derivatives)	X	X	X	X	X	X
Trades Types	7 - Total Traded Volume			X	X	X	X
	24 - Conventional Trade (Cash and Derivatives)	X	X	X	X	X	X
	30 - Guaranteed Cross Trade (Cash and Derivatives)						
	50 - Trade Cancellation (Cash and Derivatives)						
	35 - Dark Trade (Cash Only)						
	46 - BoB Trade (Cash Only)						
	51 - Out of Market Trade (Cash Only)	X	X				
	54 - Euronext Fund Service Trade (Cash Only)						
	55 - Secondary Listing Trade (Cash Only)						
	36 - Exchange for Physical Trade - Cash Leg (Cash Only)	X	X				
	52 - Delta Neutral Trade - Underlying Cash Leg (Cash Only)						
	65 - Market VWAP Operation Trade (Cash Only)						
	34 - Exchange for Swap Trade (Derivatives Only)			X	X	X	X
	37 - Strategy Leg Conventional Trade (Derivatives Only)						
	41 - Strategy Leg Against Actual Trade (Derivatives Only)						
	44 - Strategy Leg Exchange For Swap Trade (Derivatives Only)						
	53 - Delta Neutral Trade - Underlying Future Leg (Derivatives Only)						
	27 - Large in Scale (LiS) Trade (Derivatives Only)			X	X		
	28 - Basis Trade (Derivatives Only)						
	29 - Large in Scale (LiS) Package Trade (Derivatives Only)						
	32 - Asset Allocation Trade (Derivatives Only)						
	38 - Strategy Leg Large in Scale (LiS) Trade (Derivatives Only)						
	39 - Strategy Leg Basis Trade (Derivatives Only)						
	40 - Strategy Leg Guaranteed Cross Trade (Derivatives Only)						
	42 - Strategy Leg Asset Allocation Trade (Derivatives Only)						
	45 - Strategy Leg Exchange For Physical Trade (Derivatives Only)						
	48 - AtomX Trade (Derivatives Only)						
	31 - Against Actual Trade (Derivatives Only)					X	X
	56 - Request for Cross Trade (Derivatives Only)						
	57 - Request for Cross Strategy Leg Trade (Derivatives Only)						
	72 - ETF-MTF NAV Trade (price in basis points)						
	73 - ETF-MTF NAV Dark Trade (price in basis points)						
	79 - Guaranteed Cross – Negotiated deal NLIQ (Liquid)	X	X				
	80 - Guaranteed Cross – Negotiated deal OILQ (illiquid)						
	81 - Large in Scale (LIS) Trade (Cash)						
	82 - Large in Scale (LiS) Trade in basis points (Derivatives Only)			X	X		
	83 - Large in Scale (LiS) Package Trade in basis points (Derivatives Only)						
	84 - Strategy Leg Large in Scale (LiS) Trade in basis points (Derivatives only)						
Requests	86 - New Bid RFQ Answer						
	87 - New Offer RFQ Answer						
	88 - Updated Bid RFQ Answer						
	89 - Updated Offer RFQ Answer						
	10 - Request for Quote (Cash and Derivatives)			X	X	X	X
	11 - Request for Quote Bid (Cash and Derivatives)						
	13 - Request for Quote Offer (Cash and Derivatives)						
	12 - Request for Size (Cash and Derivatives)	X	X				
	66 - Request for Size Bid (Cash and Derivatives)						
	67 - Request for Size Offer (Cash and Derivatives)						
	25 - Request for Cross (RFC) Queued (Derivatives Only)					X	X
	26 - Request for Cross (RFC) (Derivatives Only)						
Collars	14 - High Dynamic Collar (Cash Only)						
	15 - Low Dynamic Collar (Cash Only)						
	63 - Low Static Collar (Cash Only)						
	64 - High Static Collar (Cash Only)						
	70 - Low LP Collar (Cash Only)	X	X				
	71 - High LP Collar (Cash Only)						
BoB	16 - New Bid RLP (Retail Liquidity Provider) (Cash Only)						
	17 - New Offer RLP (Retail Liquidity Provider) (Cash Only)						
	18 - Updated Bid RLP (Retail Liquidity Provider) (Cash Only)						
	19 - Updated Offer RLP (Retail Liquidity Provider) (Cash Only)						

[1] - only for negociated trade on Euronext Exchange

		Fixed Income		ETFs			Equities		
	Market Data Update Type	Full Order Book (OU)	Full Order Book (MU)	Best Bid and Offer	Full Order Book	BoB Full Order Book	Full Order Book (MU)	Full Order Book (OU)	BoB Full Order Book
BBO	1 - Best Bid (Cash and Derivatives)	X	X	X	X		X	X	
	2 - Best Offer (Cash and Derivatives)								
	8 - Implied Bid (Derivatives Only)								
	9 - Implied Offer (Derivatives Only)								
Full Depth	3 - New Bid (Cash and Derivatives)		X		X		X		
	4 - New Offer (Cash and Derivatives)								
	5 - Updated Bid (Cash and Derivatives)								
	6 - Updated Offer (Cash and Derivatives)								
	58 - New Bid With Liquidity Provider (Cash Only)								
	59 - New Offer With Liquidity Provider (Cash Only)								
	60 - Updated Bid With Liquidity Provider (Cash Only)								
	61 - Updated Offer With Liquidity Provider (Cash Only)								
Wholesales RFC Full Depth	74 - New Bid on Wholesale RFC								
	75 - New Offer on Wholesale RFC								
	76 - Updated Bid on Wholesale RFC								
	77 - Updated Offer on Wholesale RFC								
	78 - Clear Wholesale RFC								
Clear Book	254 - Clear Book (Cash and Derivatives)	X	X	X	X	X	X	X	X
Trades Types	7 - Total Traded Volume								
	24 - Conventional Trade (Cash and Derivatives)								
	30 - Guaranteed Cross Trade (Cash and Derivatives)	X	X	X	X		X	X	
	50 - Trade Cancellation (Cash and Derivatives)								
	35 - Dark Trade (Cash Only)						X	X	
	46 - BoB Trade (Cash Only)						X	X	
	51 - Out of Market Trade (Cash Only)	X	X	X	X		X	X	
	54 - Euronext Fund Service Trade (Cash Only)	X	X	X	X				
	55 - Secondary Listing Trade (Cash Only)						X	X	
	36 - Exchange for Physical Trade - Cash Leg (Cash Only)	X	X				X	X	
	52 - Delta Neutral Trade - Underlying Cash Leg (Cash Only)								
	65 - Market VWAP Operation Trade (Cash Only)	X[1]	X[1]	X[1]	X[1]		X	X	
	34 - Exchange for Swap Trade (Derivatives Only)								
	37 - Strategy Leg Conventional Trade (Derivatives Only)								
	41 - Strategy Leg Against Actual Trade (Derivatives Only)								
	44 - Strategy Leg Exchange For Swap Trade (Derivatives Only)								
	52 - Delta Neutral Trade - Underlying Cash Leg (Cash Only)								
	53 - Delta Neutral Trade - Underlying Future Leg (Derivatives Only)								
	27 - Large in Scale (LiS) Trade (Derivatives Only)								
	28 - Basis Trade (Derivatives Only)								
	29 - Large in Scale (LiS) Package Trade (Derivatives Only)								
	32 - Asset Allocation Trade (Derivatives Only)								
	36 - Exchange for Physical Trade - Cash Leg (Cash Only)								
	38 - Strategy Leg Large in Scale (LiS) Trade (Derivatives Only)								
	39 - Strategy Leg Basis Trade (Derivatives Only)								
	40 - Strategy Leg Guaranteed Cross Trade (Derivatives Only)								
	42 - Strategy Leg Asset Allocation Trade (Derivatives Only)								
	45 - Strategy Leg Exchange For Physical Trade (Derivatives Only)								
	48 - AtomX Trade (Derivatives Only)								
	31 - Against Actual Trade (Derivatives Only)								
	56 - Request for Cross Trade (Derivatives Only)								
	57 - Request for Cross Strategy Leg Trade (Derivatives Only)								
	72 - ETF-MTF NAV Trade (price in basis points)			X	X				
	73 - ETF-MTF NAV Dark Trade (price in basis points)								
	79 - Guaranteed Cross – Negotiated deal NLIQ (Liquid)								
	80 - Guaranteed Cross – Negotiated deal OILQ (illiquid)								
	81 - Large in Scale (LIS) Trade (Cash)			X	X		X	X	
	82 - Large in Scale (LiS) Trade in basis points (Derivatives Only)								
	83 - Large in Scale (LiS) Package Trade in basis points (Derivatives Only)								
	84 - Strategy Leg Large in Scale (LiS) Trade in basis points (Derivatives only)								
Requests	86 - New Bid RFQ Answer								
	87 - New Offer RFQ Answer			X	X				
	88 - Updated Bid RFQ Answer								
	89 - Updated Offer RFQ Answer								
	10 - Request for Quote (Cash and Derivatives)								
	11 - Request for Quote Bid (Cash and Derivatives)								
	13 - Request for Quote Offer (Cash and Derivatives)								
	12 - Request for Size (Cash and Derivatives)								
	66 - Request for Size Bid (Cash and Derivatives)						X	X	
	67 - Request for Size Offer (Cash and Derivatives)								
	25 - Request for Cross (RFC) Queued (Derivatives Only)								
	26 - Request for Cross (RFC) (Derivatives Only)								
Collars	14 - High Dynamic Collar (Cash Only)								
	15 - Low Dynamic Collar (Cash Only)	X	X	X	X		X	X	
	63 - Low Static Collar (Cash Only)								
	64 - High Static Collar (Cash Only)								
	70 - Low LP Collar (Cash Only)								
	71 - High LP Collar (Cash Only)								
BoB	16 - New Bid RLP (Retail Liquidity Provider) (Cash Only)								
	17 - New Offer RLP (Retail Liquidity Provider) (Cash Only)								
	18 - Updated Bid RLP (Retail Liquidity Provider) (Cash Only)					X			X
	19 - Updated Offer RLP (Retail Liquidity Provider) (Cash Only)								

[1] - only for negociated trade on Euronext Exchange

Message Sending Rules:

- For Cash and Derivatives:
  - New or updated top of book price and/or volume.
  - New Collars when the update is caused by a new trade which impact collar.
  - A Request for Quote (RFQ).
  - As a short trade message indicating its trade type, traded price and traded quantity.

- For Cash:
  - New or updated BoB depth of book price and/or volume.
  - New or updated With Liquidity Provider depth of book price and/or volume for warrants.

- For Derivatives:
  - Every morning for book retransmission.
  - New or updated depth of book price and/or volume.
  - A Request for Cross is set active on an instrument.
  - A Request for Cross is queued on an instrument, due to the fact that another RFC is already active.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Event Time	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Market Data Update Type	Type of market data update.	Enumerated	1	(See field description)	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Number Of Orders	Number of orders at the current price limit.	Numerical	2	From 0 to 2^16-2	Optional	148
Price	Price per unit of quantity (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Optional	148
Quantity	Number of traded or ordered units (to be calculated with Quantity Decimals).	Quantity	8	From 0 to 2^64-2	Optional	148

5.3.2 Price Update (1003)

The Price Update message provides reference prices for each following instrument:

	Warrants & Certificates	Fixed Income	ETFs	Cash Equities	Derivatives option and futures	Commodities
2 - Official Daily (Derivatives Only)					X	X
4 - Official Market Close (Derivatives Only)					X	X
6 - Official Expiry (Derivatives Only)					X	X
7 - Provisional Intraday (Derivatives Only)					X	
8 - Official Intraday (Derivatives Only)					X	X
9 - Official YDSP (Derivatives Only)	X				X	X
10 - Net Asset Value (+/-) for the instruments eligible to the NAV Trading Facility (Cash Only)			X			
12 - Adjusted Closing Price (Cash Only)	X	X	X	X		
13 - Subscription Price (Cash Only)	X		X			
14 - Indicative Matching Price (Cash and Derivatives)	X	X	X	X	X	X
19 - Min Price Out of Session Trades (Cash Only)	X*	X*	X*	X*		
20 - Max Price Out of Session Trades (Cash Only)	X*	X*	X*	X*		
21 - Min Price Out of Session Block Trades (Cash Only)	X*	X*	X*	X*		
22 - Max Price Out of Session Block Trades (Cash Only)	X*	X*	X*	X*		
23 - Valuation Price (Cash Only)	X	X	X	X		
24 - Fund Subscription (Cash Only)			X			
25 - Fund Redemption (Cash Only)			X			
26 - Uncrossing Price (Cash and Derivatives)	X	X	X	X	X	X
27 - Last Traded Price (Cash and Derivatives)	X	X	X	X	X	X
28 - Alternative Indicative Price (AIP) (Cash Only)	X	X	X	X		
30 - Net Asset Value (NAV)			X*			

* Only for TCS

For derivatives markets, all settlement prices and Indicative Uncrossing Prices for each uncrossing are provided in the Price Update message (1003).

It is sent for both past settlements (in the morning) and intraday settlements (during the trading day).

Indicative Matching Price:

The Indicative Matching Price (“Market Data Price Type” = 14) indicates the instrument's theoretical opening conditions which consist of:

- The Indicative Matching Price (IMP): price at which the instrument would trade if it opened at the moment the price is calculated
- The Indicative Matching Volume (IMV): quantity that would trade at the IMP if the instrument opened at the moment the price is calculated
- The indicative imbalance volume: remaining unmatched quantity at the IMP
- The indicative imbalance volume side: side of the indicative imbalance volume
- An Indicative Matching Price is sent if at least one of the instrument's theoretical opening conditions changes: (indicative matching price or indicative matching volume or imbalance volume or imbalance volume side varies).
- If the Indicative Matching Price remains undetermined, but the reason for this undetermined changes, then an Indicative Matching Price is sent with null values (in field Price).

Quantity field will be sent to null for the following Market Data Price Type:

- 11 - New Last Price
- 13 - Subscription Price
- 23 - Valuation Price
- 27 - Last Traded Price
- 28 - Alternative Indicative Price (AIP)

For Cash markets, all reference prices are published through a Price Update message, for both Central Order Book and Out of Session contexts:

- Closing Price
- Uncrossing Price
- Valuation Price
- Min/Max Out of Session Trade Price
- Net Asset value for eligible instruments

Fund features (subscription and redemption) are also communicated through a Price Update Message.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Event Time	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Market Data Price Type	Type of price update (note: 1 to 9 are settlement price type).	Enumerated	1	(See field description)	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Price	Price per unit of quantity (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Optional	148
Quantity	Number of traded or ordered units (to be calculated with Quantity Decimals).	Quantity	8	From 0 to 2^64-2	Optional	148
Imbalance Quantity	Imbalance volume quantity if Uncrossing occurs at this moment. This volume includes hidden quantity (to be calculated with Quantity Decimals).	Quantity	8	From 0 to 2^64-2	Optional	148
Imbalance Quantity Side	Side of the imbalance volume if the Uncrossing occurs at this moment.	Enumerated	1	0 = No imbalance 1 = Buy 2 = Sell	Optional	148

5.3.3 Full Trade Information (1004)

The Full Trade Information Message feeds the Market with a MiFID II compliant trade summary (A short trade message is provided in the Market Update message (1001) for all markets). The Full Trade Information message is also used for trade publications and trade summary reports.

If the Transaction Type is "Summary Report", then it will be a differed publication of aggregated trades. Therefore, only the MiFID Notional Amount will be filled and the high and low prices will be in the Statistics message (1009).

On Derivatives, field MiFID Price will be set to null, due to market convention, for:

- Against Actual trades (Trade Type 6)
- Exchange for Swap Trade (Trade Type 9)
- Strategy Leg Against Actual Trade (Trade Type 15)
- Strategy Leg Exchange For Swap Trade (Trade Type 18)

MiFID 2 flags are populated using the Market Model Typology (MMT) in version 3.0. For more information please visit: http://www.fixtradingcommunity.org/pg/group-types/mmt

Message Sending Rules:

- For each trade notification.
- For each trade retransmission.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Event Time	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Optional	148
Trading Date Time	Date and time when the transaction was executed.	Text	27	(See field description)	Mandatory	148

Field	Short Description	Format	Len	Values	Presence	Page
Publication Date Time	Date and time when the transaction was published by a trading venue or Approved Publication Arrangement (APA).	Text	27	(See field description)	Optional	148
Trade Type	Type of trade.	Enumerated	1	(See field description)	Mandatory	148
MiFID Instrument ID Type	Code type used to identify the financial instrument.	Text	4	(See field description)	Optional	148
MiFID Instrument ID	Code used to identify the financial instrument. This code has to be processed with the MiFID Instrument ID Type.	Alphanumerical ID	12	(See field description)	Optional	148
MiFID Execution ID	MiFID Transaction Identification Code is composed of the Symbol Index (on 10 characters), the EMM (on 3 characters) and the Execution ID (on 10 characters). It is a unique Execution ID by instrument per day on the different available EMM.	Alphanumerical ID	52	(See field description)	Mandatory	148
MiFID Price	Traded price of the transaction excluding, where applicable, commission and accrued interest.	Text	20	(See field description)	Optional	148
MiFID Quantity	Number of units of the financial instrument. The nominal or monetary value of the financial instrument.	Text	20	(See field description)	Mandatory	148
MiFID Price Notation	Indication as to whether the price is expressed in monetary value, in percentage or in yield.	Text	4	(See field description)	Optional	148
MiFID Currency	Currency in which the price is expressed (applicable if the price is expressed as monetary value) following ISO 4217 standard.	Alphanumerical ID	3	(See field description)	Optional	148
MiFID Qty in Measurement Unit Notation	Indication of measurement units in which the quantity in measurement unit is expressed.	Text	25	(See field description)	Optional	148
MiFID Quantity Measurement Unit	The equivalent amount of commodity or emission allowance traded expressed in measurement unit	Text	20	(See field description)	Optional	148
MiFID Notional Amount	Nominal amount or notional amount.	Text	20	(See field description)	Optional	148
Notional Currency	Currency in which the notional is denominated following ISO 4217 standard.	Alphanumerical ID	3	(See field description)	Optional	148
MiFID Clearing Flag	Code to identify whether the transaction will be cleared.	Text	5	(See field description)	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
MMT Market Mechanism	Defines the fundamental functional market mechanism that has facilitated the trade following MMT level 1.	Enumerated	1	(See field description)	Optional	148
MMT Trading Mode	Differentiates transactions by defining the trading mode under which the trade was executed following MMT level 2.	Enumerated	1	(See field description)	Optional	148
MMT Transaction Category	Defines the transaction category following MMT level 3.1.	Text	4	(See field description)	Optional	148
MMT Negotiation Indicator	Defines the negotiation indicator or pre-trade transparency waiver following MMT level 3.2.	Text	4	(See field description)	Optional	148
MMT Agency Cross Trade Indicator	Defines the agency cross trade indicator following MMT level 3.3.	Text	4	(See field description)	Optional	148
MMT Modification Indicator	Defines the modification indicator following MMT level 3.4.	Text	4	(See field description)	Optional	148
MMT Benchmark Indicator	Defines the benchmark indicator or the reference price indicator following MMT level 3.5.	Text	4	(See field description)	Optional	148
MMT Special Dividend Indicator	Defines the special dividend indicator following MMT level 3.6.	Text	4	(See field description)	Optional	148
MMT Off Book Automated Indicator	Defines the off book automated indicator following MMT level 3.7.	Enumerated	1	M = Off Book Non-Automated Q = Off Book Automated - = (Hyphen) Unspecified or does not apply	Optional	148
MMT Contribution to Price	Defines the contribution to price or the price discovery process following MMT level 3.8.	Text	4	(See field description)	Optional	148
MMT Algorithmic Indicator	Defines the algorithmic indicator following MMT level 3.9.	Text	4	(See field description)	Optional	148
MMT Publication Mode	Defines the publication mode or post-trade deferral reason following MMT level 4.1.	Text	4	(See field description)	Optional	148
MMT Post Trade Deferral	Defines the post trade deferral or enrichment type following MMT level 4.2.	Text	4	(See field description)	Optional	148
MMT Duplicative Indicator	Defines the duplicative indicator following MMT level 5.	Text	4	(See field description)	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Trade Qualifier	Trade Qualifier. Values specified, in the list of possible values, indicate the bit positions that should be used to set zero (0) or one (1) values. A single field contains multiple values provided in different positions.	Bitmap	1	(See field description)	Mandatory	148
Transaction Type	Transaction type or publication type.	Enumerated	1	(See field description)	Optional	148
Effective Date Indicator	Indicates if the trade is introduced on the trading session day or earlier.	Enumerated	1	0 = If the seller declaration is received on the current trading session day 1 = If seller declaration is received before the current trading session day	Optional	148
Block Trade Code	Indicates if trade relates to a block or a negotiated deal following MiFID rules.	Enumerated	1	B = Block Trade N = Regular trade or Negotiated deal - = (Hyphen) Undefined	Optional	148
Trade Reference	Reference of the trade reported to the Exchange.	Alphanumerical ID	30	(See field description)	Optional	148
Original Report Timestamp	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Optional	148
Transparency Indicator	Used to define the transparency of the trade.	Enumerated	1	0 = Lit/Regular Trade 1 = Dark Trade and Immediate Publication 2 = Dark Trade and Deferred Publication	Optional	148
Currency Coefficient	When an actual price is displayed in a different 'price expression' than the official instrument trading currency, the Currency Coefficient represents the ratio 'price expression' divided by 'official currency' (To be calculated with Ratio / Multiplier Decimals).	Numerical ID	4	From 0 to 2^32-2	Optional	148
Price Multiplier	Number of units of the financial instrument that are contained in a trading lot. Price multiplier coefficient for instrument unit price.	Numerical	4	From 0 to 2^32-2	Optional	148
Price Multiplier Decimals	Number of decimals for the field Price Multiplier.	Numerical	1	From 0 to 2^8-2	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Venue	Identification of the venue where the transaction was executed using the ISO 10383 segment MIC for transactions executed on a trading venue.	Alphanumerical ID	11	(See field description)	Mandatory	148
Start Time Vwap	(Number of seconds since the beginning of the day).(Number of seconds since the beginning of the day).	Intraday Time in Seconds	4	From 0 to 2^32-2	Optional	148
End Time Vwap	(Number of seconds since the beginning of the day).(Number of seconds since the beginning of the day).	Intraday Time in Seconds	4	From 0 to 2^32-2	Optional	148
MiFID Emission Allowance Type	This field is only applicable for emission allowances.	Text	4	(See field description)	Optional	148
Market Of Reference MIC	Indicates the instrument Exchange of Reference by its MIC (Market Identification Code according to ISO 10383) (For Future Use).	Alphanumerical ID	4	(See field description)	Optional	148
Block Length for repeating section	Defines the length in bytes if the repeating section	Header	1	0	Mandatory	
Num in Group for repeating section	Defines how many times the repeating section is repeated	Hader	1	0	Mandatory	

5.3.4 Market Status Change (1005)

The Market Status Change message provides the market with all required scheduling data at the instrument level for cash markets, and both contract and instrument levels on derivatives markets (depending on the scenario). This message is sent each time the status changes, scheduled (following the predefined pattern) or not.

Message Sending Rules:

- Automatically for each Instrument/contract, before the pre-opening to indicate the times at which the market session, in the Market Status Change, will change from one phase to another.
- On an exceptional basis, it may be sent during the trading day in case scheduled hours have changed or there are multiple openings during the day.
- Each time a Book State changes during the trading day.
- A change of Phase Qualifier, Trading Period, Trading Side, Price Limits or Quote Spread Multiplier.
- A change in the Order Entry Flag.
- A change of trading Session.
- The Scheduling of an event or the cancellation of a previously Scheduled Event.

The "Event Time" change is always provided.

Each time a Market Status Change message is sent, the full information on the status is provided. The information that changes can be identified using the "Market Data Change Type" field.

For Derivatives, Market Status Change message is sent on contract level and instrument level (ie Intraday Creation, Suspension and Expiry) by using its Symbol Index and the “Book State” field can be set to null when EMM is “4 = Derivative Wholesales”.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Market Data Change Type	Type of scheduled change.	Enumerated	1	0 = Status Change(s) 1 = Scheduled Event Notification 2 = Status Change(s) and Scheduled Event Notification	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Event Time	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Book State	Book State.	Enumerated	1	(See field description)	Optional	148
Status Reason	Provides the reason for Book State changes.	Enumerated	1	(See field description)	Optional	148
Phase Qualifier	Indicates the Phase Qualifier (no multiple phase possible at the same time even if this field is a bitmap).	Bitmap	2	(See field description)	Mandatory	148
Trading Period	Provides the current trading period.	Enumerated	1	1 = Opening (Cash and Derivatives) 2 = Standard (Cash and Derivatives) 3 = Closing (Cash and Derivatives)	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Trading Side	Indicates the Trading Side.	Enumerated	1	1 = Bid Only (Cash Only) 2 = Offer Only (Cash Only) 3 = PAKO (Cash Only) 4 = Both Sides (Cash Only)	Optional	148
Price Limits	Indicates the Price Limits mode.	Enumerated	1	1 = Price Limits Enabled - Normal (Derivatives Only) 2 = Price Limits Enabled - Wide (Derivatives Only) 3 = Price Limits Enabled - Widest (Derivatives Only) 4 = Price Limits Disabled (Derivatives Only)	Optional	148
Quote Spread Multiplier	Indicates the Quote Spread Multiplier.	Enumerated	1	1 = Quote Spread Multiplier 1 (Derivatives Only) 2 = Quote Spread Multiplier 2 (Derivatives Only) 3 = Quote Spread Multiplier 3 (Derivatives Only)	Optional	148
Order Entry Qualifier	Field indicating the state of the Order Entry for the current market state.	Enumerated	1	0 = Order Entry/Cancel/Modify Disabled 1 = Order Entry/Cancel/Modify Enabled 2 = Cancel and Modify Only (Derivatives Only) 3 = Cancel Only	Optional	148
Session	Current market session.	Enumerated	1	(See field description)	Mandatory	148
Scheduled Event	Type of Scheduled Event.	Enumerated	1	(See field description)	Optional	148
Scheduled Event Time	Scheduled Time for the event to happen (On cash: time in an integer on 8 bytes expressed as hhmmss UTC; On derivatives: time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Optional	148

5.3.5 Statistics (1009)

This message provides statistics on prices and volumes on an instrument. The following table lists the statistics available per instrument:

Statistics	On-exchange on-book												On-Exchange off-book	Off-Exchange off-book
	Warrants & Certificates		Fixed Income		ETFs		French and Dutsch Funds	Cash Equities		Indices	Derivatives option and futures*	Commodities*		
	Valuation	All Other	Valuation	All Other	Valuation	All Other		Valuation	All Other					
1 - Percent Variation Previous NAV (Cash oNLY)					x	x								
5 - Daily High (Cash and Derivatives)	x	x	x	x	x	x		x	x	x	x	x		
6 - Daily Low (Cash and Derivatives)	x	x	x	x	x	x		x	x	x	x	x		
7 - Yearly High (Derivatives Only)											x	x		
8 - Yearly Low (Derivatives Only)											x	x		
9 - Lifetime High (Derivatives Only)											x	x		
10 - Lifetime Low (Derivatives Only)											x	x		
14 - Variation Last Price (Cash Only)	x	x	x	x	x	x		x	x					
15 - Open Price (Cash and Derivatives)	x	x	x	x	x	x		x	x	x	x	x		
16 - Trade Count (Cash and Derivatives)		x		x		x			x		x	x		
17 - Last Traded Price (Cash and Derivatives)	x	x	x	x	x	x	x	x	x		x	x		
18 - Percent Variation Previous Close (Cash and Derivatives)	x	x	x	x	x	x		x	x	x	x	x		
19 - Off Book Cumulative Quantity (Cash Only)													x	
21 - On Book Auction Cumulative Quantity (Cash Only)		x		x		x			x					
22 - On Book Continuous Cumulative Quantity (Cash Only)		x		x		x			x					
23 - On and Off Book Cumulative Quantity (Cash and Derivatives)		x		x		x			x		x	x	x	

* For Derivatives flex contracts, no statistics are published

Statistics will not be provided for off-exchange off-book trades. The “Off Book Cumulative Quantity” will only be provided for the on-exchange off-book trades.

High and Low

- Daily High: Highest traded price for the current trading day (to be calculated with the Price/Index Level Decimals).
- Daily Low: Lowest traded price for the current trading day (to be calculated with the Price/Index Level Decimals).
- Yearly High: Highest traded price for the current Year, since January the first (to be calculated with Price/Index Level Decimals).
- Yearly Low: Lowest traded price for the current Year, since January the first (to be calculated with Price/Index Level Decimals).
- Lifetime High: Highest traded price for the instrument lifetime for booked trades only (to be calculated with the Price/Index Level Decimals).
- Lifetime Low: Lowest traded price for the instrument lifetime for booked trades only (to be calculated with the Price/Index Level Decimals).

Cumulative quantities

On Cash: MDG will deliver five cumulative quantity fields that will allow clients to compute all possible statistics based on this. These fields are:

- Off Book Cumul Qty: Cumulated Off-book volume traded since the start of the current trading session (to be calculated with the Quantity Decimals).
- On Book Auction Cumul Qty: Cumulated volume of regulated market trades done in Auction phase since the start of the current trading session (to be calculated with the Quantity Decimals).
- On Book Continuous Cumul Qty: Cumulated volume of regulated market trades done in Continuous phase since the start of the current trading session (to be calculated with the Quantity Decimals).

- On and Off Book Cumul Qty: Cumulated volume of on-book and off-book trades since the start of the current trading session (to be calculated with the Quantity Decimals). This is the sum of Off Book Cumul Qty, On Book Auction Cumul Qty and On Book Continuous Cumul Qty.

On Derivatives there is only one cumulative quantity:

- On and Off Book Cumul Qty: Cumulated volume of on-book and off-book trades since the start of the current trading session (to be calculated with the Quantity Decimals).

Other Statistics

- Percentage Var from Prev Close: Percentage of variation for last price (or index) versus previous closing price (or closing reference price) (to be calculated with the Ratio / Multiplier Decimals).
- Variation Last Price: Percentage variation of last price/last reference price with previous price.

Last Traded Price: The Last Traded Price indicates the price of last fill on an instrument (to be calculated with the Price/Index Decimals). It is also computed for French and Dutch Funds.

- Open Price: Opening Price of the instrument (to be calculated with the Price/Index Level Decimals).
- Trade Count: The number of trades done intra-day on the instrument.
  - For cash it is only for on-book trades.
  - For derivatives it is for both on-book and off-book on exchange.

Trade cancellation in statistics

In case of a trade cancellation the statistics message will broadcast all the statistics updates. If the cancellation cancelled the only trade and there is no Valuation Price then the statistics will be set to null except for the Trade Count and the cumulative quantities.

Message Sending Rules:

Statistics messages are sent for each trade on an instrument, except for Indices Statistics. A minimum of 50 milliseconds is set between 2 statistics messages. Hence, if several trades occur for the same instrument within this interval, only 1 Statistics message is published. Additionally, conflation will send only the latest stats in case of queue. In this case, all the fields are reflecting the change with regards to the last trade except for:

- Open price which does not change intraday
- Daily/Lifetime/Yearly High and Low that are considering all trades

For Indices, statistics will only be sent once an updated value is triggered by index messages. No statistics are applicable for Index Level Types:

- (Confirmed) Reference Index (6)
- Options Liquidation Index (7)

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Stats Update Type	Indicates the type of published statistics update.	Enumerated	1	(See field description)	Mandatory	148
Stats Update Value	Indicates the value of the published statistics update.	Signed Numerical	8	From -2^63+1 to 2^63-1	Optional	148

5.3.6 Real Time Index (1008)

A Real-Time Index message handles the real-time characteristics of an index: the level of the index, type of index level (opening index level, real-time, indicative level), and various indicators for the instruments that make up the index. This message is sent for:

- Stock Indices
- Strategy Indices
- Volatility Indices
- Indicative Net Asset Value (iNAV) of an ETF

Message Sending Rules:

Sending of these messages for a given index is conditioned by a flag configured at the index level. These conditions and the nature of these messages that are sent for each index are dependent on two factors:

- The publication mode of the index; there are three publication modes:
  - Continuous: Calculated index levels are published periodically, at a frequency that can be configured for each index. Currently an index that is published continuously can either be published every 15 seconds or every 30 seconds.
  - Discontinuous: A single Closing level (level 5) before the provisional closing phase, occurring at a time (a 'fixed time') that can be configured for each index
  - At closing only: No broadcast before the provisional closing phase
- The current calculation phase of the index

The following sections provide an overview of the different conditions at which an index level can be sent.

CAC 40 Index

At System Start-up

The Closing level of the index of the previous trading day (level 5) is sent at the start of each trading day in the referential.

During the Trading Session

Opening Kinematics

At the reception of the first trade price of any instrument that is part of the composition of the CAC 40, the index moves into the Session phase. If at this point 65% or more of the market cap of the index has traded, the Official Opening level (level 1) is calculated and published. The Official Opening level is based on the last trade prices or the last-adjusted closing price if a last traded price is not available. Subsequently, real-time Session levels (level 2) are calculated and published every 15 seconds.

If, at the opening of the index, less than 65% of the market cap of the index has traded, an Automatic Indicative level (level 3) is published every 15 seconds following the opening of the market until at least 65% of the market cap of the index has traded. Once this threshold of 65% has been reached (and the index is not in the 'Indicative' phase), the Official Opening level (level 1) is calculated and published. Subsequently, real-time Session levels (level 2) are calculated and published every 15 seconds.

For most other French indices, there are two thresholds that need to be reached for the index to send an official opening level:

At the opening of the market, at least 65% of the market cap needs to have traded. If at the opening of the market this threshold of 65% has not been reached, an Automatic indicative level (level 3) is sent every 15 seconds.

The Automatic indicative level continues to be sent every 15 seconds until a second threshold has been reached. For most French indices this second threshold is configured at 95% of the market cap. Once this second threshold has been reached, the Official Opening level (level 1) is calculated and published. Subsequently, real-time Session levels (level 2) are calculated and published every 15 seconds.

If the index remains in an Automatic Indicative state the entire day, the last Automatic Indicative index level (level 3) is considered to be the official close. (There is no official opening level in this case.)

As soon as 100% of the market cap of the non-regulated-halted constituents of the index has traded (and the index is not in 'indicative' state), the Reference level (level 4) is calculated and broadcasted. This level is calculated using only the opening (first trade) prices of its constituents.

Following the Opening

Once the Official Opening level (level 1) has been published, the real-time Session levels (level 2) are calculated and published every 15 seconds.

In the case of an 'Indicative' Phase:

The compiler can decide, following the opening of the index, to change the status of the index. This decision can be made if it is believed that circumstances prevent the proper calculation of the index. In this case, instead of the real-time Session level (level 2), an indicative level (level 0) is sent every 15 seconds. This level 0 is calculated by using the last-traded price or the last-adjusted closing price if a last traded price is not available.

The index levels that are calculated during the 'Indicative' status of an index are not taken into account to update the highest and the lowest levels of the index.

Once the compiler is sure that the index level is representative again, the real-time index levels (level 2) are calculated and published again every 15 seconds.

Options Liquidation Index (Level 7) for CAC 40

Definition / Purpose

- The liquidation index is used as a basis for the automatic exercise of options that are within the price range on their expiration date, as well as for the calculation of resulting payments.
- It is the average of the index level calculated every 15 seconds between 15:40 (CET) and 16:00 (CET). The result of the calculation is published every 15 seconds during the same time interval.
- This average is sent at each expiry date.

At the End of the Trading Day

When all Index instruments are closed, the index moves into the Temporary Closing phase. On a normal trading day, this occurs around 18:00:00 (CET). During this phase, the first Closing level (level 5), the first confirmation of the Reference level (level 6) and the first Index Summary message (message 1011) are published. During the Temporary Closing phase, Euronext can make any necessary adjustments to the index if deemed necessary. The Temporary Closing phase currently lasts 5 minutes.

At the end of the Closing delay, the index moves into the Final Closing phase. The second Closing level, the second confirmation of the Reference level (level 6) and the second Index summary message (message 1011) are published. Any adjustments that are made during the Temporary Closing Phase are taken into account in the second Closing level and the Index Summary message.

The first and second Closing levels (level 5) are calculated based on the last trades of the instruments that take part in the index. This level represents the official Closing Reference Level of the CAC 40.

The confirmation of the Reference level (level 6) is calculated using only the opening (first trade) prices of its constituents not taking into account any cancellation of opening trades.

AEX Index, BEL 20 Index and PSI 20 Index

At System Start-up

The Closing level of the index of the previous trading day (level 5) is sent at the start of each trading day in the referential.

During the Trading Session

Opening Kinematics

At the reception of the first trade price of any instrument that is part of the composition of the index, the index moves into the Session phase. If at this point 100% or more of the market cap of the index has traded, the Official Opening level (level 1) is calculated and published. The Official Opening level is based on the last trade prices, including previous day, adjusted closing prices. Subsequently, real-time Session levels (level 2) are calculated and published every 15 seconds.

If by 9:05 the threshold of 100% is still not met, the threshold is dropped to 80% (second threshold). As soon as 80% of the market cap is available any time after 09:05, the Official Opening level (level 1) is calculated and published followed by real-time Session levels (level 2).

From the opening of the index up until the first or second threshold is met, an Automatic Indicative level (level 3) is published every 15 seconds.

If the index remains in an Automatic Indicative state the entire day, the last Automatic Indicative index level (level 3) is considered to be the official close. (There is no official opening level in this case.)

Following the Opening

Once the Official Opening level (level 1) has been published, the real-time Session levels (level 2) are calculated and published every 15 seconds.

In the case of an 'Indicative' Phase:

The compiler can decide, following the opening of the index, to change the status of the index. This decision can be made if it is believed that circumstances prevent the proper calculation of the index. In this case, instead of the real-time Session level (level 2), an indicative level (level 0) is sent every 15 seconds. This level 0 is calculated by using the last-traded price or the last-adjusted closing price if a last-traded price is not available.

The index levels that are calculated during the 'Indicative' status of an index are not taken into account to update the highest and the lowest levels of the index.

Once the compiler is sure that the index level is representative again, the real-time index levels (level 2) are calculated and published again every 15 seconds.

Options Liquidation Index (Level 7) for AEX Index

Definition / Purpose

- The liquidation index is used as a basis for the automatic exercise of options that are within the price range on their expiration date, as well as for the calculation of resulting payments.
- It is the average of the index level calculated every 15 seconds between 15:30 (CET) and 16:00 (CET). The result of the calculation is published every minute during the same time interval.

At the End of the Trading Day

When all Index instruments are closed, the index moves into the Temporary Closing phase. On a normal trading day this occurs around 18:00:00 (CET). During this phase, the first Closing level (level 5) and the first Index Summary message (message 1011) are published. During the Temporary Closing phase, Euronext can make any necessary adjustments to the index if deemed necessary. The temporary Closing phase currently lasts 5 minutes.

At the end of the Closing delay, the index moves into the Final Closing phase. The second Closing level (level 5) and the second Index Summary message (message 1011) are published. Any adjustments that are made during the Temporary Closing Phase are taken into account in the second closing level and the Index Summary message.

The first and second Closing levels (level 5) are calculated based on the last trades of the instruments that take part of the composition of the index. This level represents the official Closing Reference Level of the index.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Event Time	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Index Level	The value of the last level for the index that is the subject of this message (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Mandatory	148
Percentage of Capitalization	Percentage of capitalization for the active instruments in the index (to be calculated with the Ratio / Multiplier Decimals).	Numerical	8	From 0 to 2^64-2	Optional	148
Percentage Var from Prev Close	Percentage of variation for last price (or index) versus previous closing price (or closing reference price) (to be calculated with the Ratio / Multiplier Decimals).	Signed Numerical	8	From -2^63+1 to 2^63-1	Mandatory	148
Number Of Traded Instruments in Index	Number of traded instruments in the index.	Quantity	2	From 0 to 2^16-2	Optional	148
Index Level Type	Type of Index Level.	Enumerated	1	(See field description)	Mandatory	148
Index Price Code	Type of Price as positioned in Session High/Low or to indicate the trend or at the contrary the reference value from which the price may change.	Enumerated	1	(See field description)	Mandatory	148

5.3.7 Index Summary (1011)

The Index Summary message is sent twice at the end of the day in order to disseminate the final statistics related to an index, which aggregates daily data.

Message Sending Rules:

- Every trading day, for each index type 'stock index', two types of index summary messages are sent (this rules out iNAVs):
  - The first summary is sent when the index enters the provisional closing phase.
  - The second summary is sent when the index enters the final closing phase.

Field	Short Description	Format	Len	Values	Presence	Page
Market Data Sequence Number	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence.	Sequence	8	From 0 to 2^64-2	Mandatory	148
Rebroadcast Indicator	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.	Numerical ID	1	From 0 to 2^8-2	Mandatory	148
EMM	Defines the Exchange Market Mechanism applied on each platform.	Enumerated	1	(See field description)	Mandatory	148
Event Time	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Symbol Index	Exchange identification code of the instrument.	Numerical ID	4	From 0 to 2^32-2	Mandatory	148
Opening Level	Official Opening Index Level. This level corresponds to the Index Level Type 1 of the Real Time Index (1008) of the corresponding index (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Mandatory	148
Opening Time	Time of Official Opening level (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Confirmed Reference Level	Confirmed Reference level. This level corresponds to the index Level Type 6 of the message Real Time Index (1008) of the corresponding index (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Optional	148
Confirmed Reference Time	Time of (Confirmed) Reference level (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Optional	148

Field	Short Description	Format	Len	Values	Presence	Page
Closing Reference Level	Reference closing index level. This level corresponds to the Index Level Type 5 of the message Real Time Index (1008) of the corresponding index (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Mandatory	148
Closing Reference Time	Time of provisional closing reference index level (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Percentage Var from Prev Close	Percentage of variation for last price (or index) versus previous closing price (or closing reference price) (to be calculated with the Ratio / Multiplier Decimals).	Signed Numerical	8	From -2^63+1 to 2^63-1	Mandatory	148
High Level	Highest index level (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Mandatory	148
High Time	Time of provisional highest index level (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Low Level	Lowest index level (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Mandatory	148
Low Time	Time of provisional lowest index level (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148
Liquidation Level	Index Level of reference at expiration settlement (to be calculated with the Price/Index Level Decimals).	Price	8	From -2^63+1 to 2^63-1	Optional	148
Liquidation Time	Time of provisional expiration settlement index level (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Optional	148

5.4 SNAPSHOT MESSAGES

The Snapshot mechanism uses the same messages as the real-time feed.

When used for the snapshot, the messages have the field “Rebroadcast Indicator” set to “1”.

Message	Purpose	Sending rules
Start Of Snapshot (2101)	Defines the start of a snapshot sequence on all channels	This is the first message of a snapshot sequence. It contains the last Market Data Sequence Number from real-time that is contained in this snapshot sequence.
End Of Snapshot (2102)	Defines the end of a snapshot sequence on all channels	This is the last message of a snapshot sequence. It contains the last Market Data Sequence Number from real-time that is contained in this snapshot sequence.
Outright Standing Data (1014) Strategy Standing Data (1012)	Provides all the characteristics of instruments	Only intraday instrument creation will be snapshotted. For all other standing data please refer to the file servers.
Timetable (1006)	Provides all the scheduled events for the instruments	Only intraday modifications will be snapshotted. Otherwise, use the file servers to retrieve data.
Market Status Change (1005)	Notifies of a market status change along with its reason	Only the Last Market Status Change per Symbol Index and EMM will be sent.
Market Update (1001) for BBO (with Market Data Update Type set to "1" or "2" only)	Provides the Best Bid and the Best Offer for each instrument	Only the last Best Bid and the last Best Offer will be resent.
Market Update (1001)	Allows clients to rebuilt the book with full depth	Only for market by limits.
Order Update (1002)		Only for market by orders.
Price Update (1003)	Provides all last updated reference prices	Only last Price Update, for each Market Data Price Type, will be sent.
Full Trade Information (1004)	Provides Trade reporting for last trades	Only last 50 intraday trades and if they are not older than 15 minutes, for the whole instrument set on a given channel will be resent. Otherwise, refer to Full Trade Information files on file servers.
Statistics (1009)	Provides full statistics per instruments	Only last statistics will be sent. Clients might receive, in snapshot, statistics for an instrument in more than one packet.
Index Summary (1011)	Provides end of day index summary	Only the last message will be resent.
Real Time Index (1008)	Provides real-time index data	Only the last message will be resent.

Any message that is not in the above table will not be disseminated using the Snapshot mechanism.

5.4.1 Technical messages in Snapshot channels

Start of Day, Health Status and End of Day are also sent on the snapshot channels. They are not part of the Snapshot Sequence and should be processed separately by the clients. Customers need to take into account that they can also be sent between a Start of Snapshot and an End of snapshot messages.

In the Health Status, still on the snapshot channels, the Market Data Sequence Number is the MDSN of the last message sent by the aggregator of this channel. Please note that this Market Data Sequence Number may be different from the Last Market Data Sequence Number in the Start / End of Snapshot messages that matches the last real time message taken into account to build the snapshot.

5.4.2 Snapshot Sequence behaviour

The snapshot sequences start as soon as MDG is ready to broadcast messages (and not after the first real-time message is sent on the real-time channels) and stops only when MDG stops. So Start of Day, Health Status and End of Day messages will be sent along with the snapshots at the beginning of the day, during the day and at the end of the day respectively. At the beginning of the day the snapshots will contain only Start of Snapshot and End of Snapshot messages with no snapshotted messages in between and the Market Data Sequence Number in Start of Snapshot and End of Snapshot will be set to null.

The minimum period between two snapshot sequences for a given channel is set to 2 seconds all along the day.

The snapshot sequence provides messages for all instruments of the channel at the same time, as opposed to instrument by instrument.

5.4.3 Start Of Snapshot (2101)

Provides the Market Data Sequence Number of the last real-time message processed for this snapshot.

Message Sending Rules:

Start Of Snapshot message is always the first message of a snapshot sequence, and indicates the beginning of a snapshot sequence.

Field	Short Description	Format	Len	Values	Presence	Page
Last Market Data Sequence Number	Indicates the Market Data Message Sequence Number of the last real-time message processed for this snapshot.	Sequence	8	From 0 to 2^64-2	Optional	148
Snapshot Time	Indicates the time when snapshot generation has respectively started/ended in the Start Of Snapshot/End Of Snapshot message (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148

5.4.4 End Of Snapshot (2102)

The End Of Snapshot message indicates the end of a snapshot sequence.

It provides the Market Data Sequence Number of the last real time message processed for this snapshot. It also indicates that processing queued messages from the real-time feed with a higher Market Data Sequence member is now possible.

Message Sending Rules:

End Of Snapshot message is always the last message of a snapshot sequence.

Field	Short Description	Format	Len	Values	Presence	Page
Last Market Data Sequence Number	Indicates the Market Data Message Sequence Number of the last real-time message processed for this snapshot.	Sequence	8	From 0 to 2^64-2	Optional	148
Snapshot Time	Indicates the time when snapshot generation has respectively started/ended in the Start Of Snapshot/End Of Snapshot message (Time in number of nanoseconds since 01/01/1970 UTC).	Epoch Time in Nanoseconds	8	From 0 to 2^64-2	Mandatory	148

6. FIELD DESCRIPTION

A

Account Type

Field Name	Account Type
Description	Indicates the account type for which the order is entered. For example, an order can be entered for a client account, a house account or a liquidity provider account. For Cross orders it specifies the account type for which the buy side of a cross order is entered. - Non-LP clients are not allowed to use the type '6' (Liquidity Provider). - Only members acting as Retail Member Organizations (RMO) can send '4' (RO) orders on behalf of their retail clients.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Client 2 = House 4 = RO [C] 6 = Liquidity Provider 7 = Related Party [C] 8 = Structured Product Market Maker [C]
Used In	Full Trade Information (1004)

Amount Decimals

Field Name	Amount Decimals
Description	Indicates the number of decimals for each Amount related to this Symbol Index
Used For	Cash and Derivatives
Format	Decimal Places
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Available Wholesale Trade Type

Field Name	Available Wholesale Trade Type
Description	Wholesale trade type supported by the trading host. Until phase 3, this has to be combined with the field WholesaleTradeType from the New Order Cross message in Order Entry Gateway: - bit in position 0 - Large in Scale Trade (Formerly Block Trade) (0: No ; 1: Yes) is the value '1' in WholesaleTradeType - bit in position 1 - Basis Trade (0: No ; 1: Yes) is the value '2' in WholesaleTradeType - bit in position 2 - Against Actual (0: No ; 1: Yes) is the value '3' in WholesaleTradeType - bit in position 3 - Asset Allocation (0: No ; 1: Yes) is the value '4' in WholesaleTradeType - bit in position 4 - Large In Scale Package Trade (0: No ; 1: Yes) is the value '5' in WholesaleTradeType

	- bit in position 5 - Guaranteed Cross Trade (0: No ; 1: Yes) is the value '6' in WholesaleTradeType - bit in position 6 - Exchange For Swap (0: No ; 1: Yes) is the value '7' in WholesaleTradeType - bit in position 7 - Request For Cross (0: No ; 1: Yes) is the value '9' in WholesaleTradeType
Used For	Derivatives
Format	Bitmap
Length	4
Possible Values	0 = Large in Scale Trade (Formerly Block Trade) 1 = Basis Trade 2 = Against Actual 3 = Asset Allocation 4 = Large In Scale Package Trade (former Prof Trade) 5 = Guaranteed Cross Trade 6 = Exchange For Swap 7 = Request For Cross
Used In	Contract Standing Data (1013)

B

Block Trade Code

Field Name	Block Trade Code
Description	Indicates if trade relates to a block or a negotiated deal following MiFID rules.
Used For	Cash
Format	Enumerated
Length	1
Possible Values	B = Block Trade N = Regular trade or Negotiated deal - = (Hyphen) Undefined
Used In	Full Trade Information (1004)

Book State

Field Name	Book State
Description	Book State.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Inaccessible 2 = Closed 3 = Call 4 = Uncrossing 5 = Continuous 6 = Halted 7 = Continuous Uncrossing (Warrants and Certificates Only) 8 = Suspended 9 = Reserved

Used In	Market Status Change (1005)

C

CFI

Field Name	CFI
Description	Classification code of a financial instrument defined by the ISO-10962:2015 standard.
Used For	Cash and Derivatives
Format	Text
Length	6
Possible Values	(See field description)
Used In	Outright Standing Data (1014) Strategy Standing Data (1012)

Closing Reference Level

Field Name	Closing Reference Level
Description	Reference closing index level. This level corresponds to the Index Level Type 5 of the message Real Time Index (1008) of the corresponding index (to be calculated with the Price/Index Level Decimals).
Used For	Cash
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Index Summary (1011)

Closing Reference Time

Field Name	Closing Reference Time
Description	Time of provisional closing reference index level (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Index Summary (1011)

Confirmed Reference Level

Field Name	Confirmed Reference Level
Description	Confirmed Reference level. This level corresponds to the index Level Type 6 of the message Real Time Index (1008) of the corresponding index (to be calculated with the Price/Index Level Decimals).
Used For	Cash
Format	Price
Length	8

Possible Values	From -2^63+1 to 2^63-1
Used In	Index Summary (1011)

Confirmed Reference Time

Field Name	Confirmed Reference Time
Description	Time of (Confirmed) Reference level (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Index Summary (1011)

Contract Event Date

Field Name	Contract Event Date
Description	(in number of days since the 1st of January 1970).(in number of days since the 1st of January 1970).
Used For	Derivatives
Format	Date
Length	2
Possible Values	From 0 to 2^16-2
Used In	Contract Standing Data (1013)

Contract Name

Field Name	Contract Name
Description	Contract Name
Used For	Derivatives
Format	Text
Length	60
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Contract Symbol Index

Field Name	Contract Symbol Index
Description	Identifies the contract of this instrument by its Symbol Index.
Used For	Derivatives
Format	Numerical ID
Length	4
Possible Values	From 0 to 2^32-2
Used In	Outright Standing Data (1014) Strategy Standing Data (1012)

Contract Trading Type

Field Name	Contract Trading Type
Description	Contract Trading Type.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Traded as an outright 2 = Not traded, but listed in contract data. Traders may subscribe to it 3 = Traded as a simple inter-commodity spread 4 = Traded as an inter-commodity spread
Used In	Contract Standing Data (1013)

Contract Type

Field Name	Contract Type
Description	Generic Contract Type.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	F = Future O = Option
Used In	Contract Standing Data (1013)

Country Of Exchange

Field Name	Country Of Exchange
Description	Country of exchange is the Country associated to the MIC following ISO 3166 Alpha-3.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	3
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Currency Coefficient

Field Name	Currency Coefficient
Description	When an actual price is displayed in a different 'price expression' than the official instrument trading currency, the Currency Coefficient represents the ratio 'price expression' divided by 'official currency' (To be calculated with Ratio / Multiplier Decimals). For example a UK-listed instrument with its trading currency GBP having a price expressed in Pence, the Currency Coefficient will be 0.01 expressed with Currency Coefficient set to 1 and Ratio / Multiplier Decimals set to 2. The Currency Coefficient may be used for the Instrument Trading Price (the Referential field Trading Currency Indicator is then set to 1), and/or for the Derivatives and Warrants Instrument Strike Price (the Referential field Strike Currency Indicator is then set to 1).

Used For	Cash
Format	Numerical ID
Length	4
Possible Values	From 0 to 2^32-2
Used In	Full Trade Information (1004)

D

Days To Expiry

Field Name	Days To Expiry
Description	Number of Calendar days until the Last Trading Day of the Expiry.
Used For	Cash
Format	Numerical
Length	2
Possible Values	From 0 to 2^16-2
Used In	Outright Standing Data (1014)

Delta Protect for MM

Field Name	Delta Protect for MM
Description	Delta Protection for Market Makers Level.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Protection for Market Makers enabled at a contract level 1 = Protection for Market Makers enabled at a contract and expiry level.
Used In	Contract Standing Data (1013)

E

Effective Date Indicator

Field Name	Effective Date Indicator
Description	Indicates if the trade is introduced on the trading session day or earlier.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	0 = If the seller declaration is received on the current trading session day 1 = If seller declaration is received before the current trading session day
Used In	Full Trade Information (1004)

EMM

Field Name	EMM
Description	Defines the Exchange Market Mechanism applied on each platform.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Cash and Derivative Central Order Book (COB) 2 = NAV Trading Facility [C] 4 = Derivative Wholesales [D] 5 = Cash On Exchange Off book [C] 6 = Euronext off-exchange trade reports 7 = Derivative On Exchange Off book [D] 8 = ETF MTF - NAV Central Order Book [C] 99 = Not Applicable (For indices and iNAV) [C]
Used In	Full Trade Information (1004) Index Summary (1011) Market Status Change (1005) Market Update (1001) Outright Standing Data (1014) Price Update (1003) Real Time Index (1008) Strategy Standing Data (1012)

End Time Vwap

Field Name	End Time Vwap
Description	(Number of seconds since the beginning of the day).(Number of seconds since the beginning of the day).
Used For	Cash
Format	Intraday Time in Seconds
Length	4
Possible Values	From 0 to 2^32-2
Used In	Full Trade Information (1004)

Event Time

Field Name	Event Time
Description	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash and Derivatives
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Full Trade Information (1004) Health Status (1103) Index Summary (1011) Market Status Change (1005) Market Update (1001)

	Price Update (1003) Real Time Index (1008)

Exchange Code

Field Name	Exchange Code
Description	Indicates the Market Place.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	A = Amsterdam Equity Derivatives B = Brussels Equity Derivatives C = Paris Equity Underlyings D = Brussels Cash Underlyings F = Brussels Index Derivatives G = Amsterdam Cash Underlyings H = Lisbon Cash Underlyings J = Paris Index Derivatives K = Amsterdam Index Derivatives M = Lisbon Index Derivatives P = Paris Equity Derivatives R = Amsterdam Commodities Derivatives S = Lisbon Equity Derivatives Y = Paris Commodities Derivatives Z = Amsterdam Currency Derivatives
Used In	Contract Standing Data (1013) Strategy Standing Data (1012)

Exercise Style

Field Name	Exercise Style
Description	Type of exercise of a derivatives instrument
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	0 = European 1 = American 2 = Asian 3 = Bermudan 4 = Other
Used In	Contract Standing Data (1013)

F

Firm ID

Field Name	Firm ID

Description	Identifier of the member firm that sends the message. It is provided by the Exchange upon the registration of the Firm by the Membership department.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	8
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Flex Indicator

Field Name	Flex Indicator
Description	Indicates whether a derivatives instrument can be defined using flexible terms, or not.
Used For	Derivatives
Format	Boolean
Length	1
Possible Values	0 = False 1 = True
Used In	Contract Standing Data (1013)

H

High Level

Field Name	High Level
Description	Highest index level (to be calculated with the Price/Index Level Decimals).
Used For	Cash
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Index Summary (1011)

High Time

Field Name	High Time
Description	Time of provisional highest index level (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Index Summary (1011)

I

Imbalance Quantity

Field Name	Imbalance Quantity
Description	Imbalance volume quantity if Uncrossing occurs at this moment. This volume includes hidden quantity (to be calculated with Quantity Decimals).
Used For	Cash
Format	Quantity
Length	8
Possible Values	From 0 to 2^64-2
Used In	Price Update (1003)

Imbalance Quantity Side

Field Name	Imbalance Quantity Side
Description	Side of the imbalance volume if the Uncrossing occurs at this moment.
Used For	Cash
Format	Enumerated
Length	1
Possible Values	0 = No imbalance 1 = Buy 2 = Sell
Used In	Price Update (1003)

Index Level

Field Name	Index Level
Description	The value of the last level for the index that is the subject of this message (to be calculated with the Price/Index Level Decimals).
Used For	Cash
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Real Time Index (1008)

Index Level Type

Field Name	Index Level Type
Description	Type of Index Level.
Used For	Cash
Format	Enumerated
Length	1
Possible Values	0 = Indicative Index 1 = Official Opening Index

	2 = Real-Time Index 3 = Automatic Indicative Index 4 = (Preliminary) Reference Index 5 = Closing Reference Index 6 = (Confirmed) Reference Index 7 = Options Liquidation Index
Used In	Real Time Index (1008)

Index Price Code

Field Name	Index Price Code
Description	Type of Price as positioned in Session High/Low or to indicate the trend or at the contrary the reference value from which the price may change.
Used For	Cash
Format	Enumerated
Length	1
Possible Values	0 = Only Index 1 = Index and Session High 2 = Index and Session Low 3 = Index and Session High and Low (typically first price) 4 = Only Session High 5 = Only Session Low 6 = Previous Day Close
Used In	Real Time Index (1008)

Instrument Decimals Ratio

Field Name	Instrument Decimals Ratio
Description	Default ratio used in Order Entry for prices computation. When entering a price if 2 is given in this field for the designated contract, and client enters an order on a series that belongs to it with a price set at 14500 – the functional value of the entered price is 145.
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Instrument EDSP Tick Size

Field Name	Instrument EDSP Tick Size
Description	Specific Tick Size value applicable for EDSP - numerator
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Instrument Event Date

Field Name	Instrument Event Date
Description	(in number of days since the 1st of January 1970).(in number of days since the 1st of January 1970).
Used For	Cash and Derivatives
Format	Date
Length	2
Possible Values	From 0 to 2^16-2
Used In	Outright Standing Data (1014)

Instrument Settlement Tick Size

Field Name	Instrument Settlement Tick Size
Description	Default Tick Size value applicable for all Settlement Prices - numerator.
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Instrument Tick Size

Field Name	Instrument Tick Size
Description	Default Tick Size value applicable for all series that belong to the contract - numerator
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Instrument Tick Size Long

Field Name	Instrument Tick Size Long
Description	Default Tick Size value applicable for all series that belong to the contract - numerator
Used For	Derivatives
Format	Numerical
Length	2
Possible Values	From 0 to 2^16-2
Used In	Contract Standing Data (1013)

Instrument Trading Code

Field Name	Instrument Trading Code
Description	Is the AMR code on derivatives and the Trading Code on cash.

	Cash: Trading code is a 12-character string, the only instrument identifier that is unique in the feed in addition to the symbol index. Derivatives: The AMR code is a 15-character string, allocated by the trading engine. It is unique per instrument.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	15
Possible Values	(See field description)
Used In	Outright Standing Data (1014) Strategy Standing Data (1012)

Instrument Unit Expression

Field Name	Instrument Unit Expression
Description	Unit in which the instrument is quoted.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Units 2 = Percentage of Nominal Excluding Accrued Interest (Clean) 3 = Basis Points 5 = Percentage of Nominal Including Accrued Interest (Dirty) 8 = Kilograms 9 = Ounces
Used In	Contract Standing Data (1013)

ISIN Code

Field Name	ISIN Code
Description	Instrument ISIN following ISO 6166. Identifier of a product. Combined with MIC and Currency, identifies an instrument traded on a given market using a given currency.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	12
Possible Values	(See field description)
Used In	Outright Standing Data (1014)

L

Last Market Data Sequence Number

Field Name	Last Market Data Sequence Number
Description	Indicates the Market Data Message Sequence Number of the last real-time message processed for this snapshot.
Used For	Cash and Derivatives

Format	Sequence
Length	8
Possible Values	From 0 to 2^64-2
Used In	End Of Snapshot (2102) Start Of Snapshot (2101)

Last Trading Date

Field Name	Last Trading Date
Description	(in number of days since the 1st of January 1970).(in number of days since the 1st of January 1970).
Used For	Cash and Derivatives
Format	Date
Length	2
Possible Values	From 0 to 2^16-2
Used In	Outright Standing Data (1014)

Leg Buy or Sell

Field Name	Leg Buy or Sell
Description	Leg Side.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	B = Buy S = Sell
Used In	Strategy Standing Data (1012)

Leg Price

Field Name	Leg Price
Description	Price of underlying leg for a delta neutral strategy (to be calculated with the Price/Index Level Decimals).
Used For	Derivatives
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Strategy Standing Data (1012)

Leg Ratio

Field Name	Leg Ratio
Description	Ratio of lots for the leg. For contingent trades, the delta (to be calculated with the Amount Decimals).
Used For	Derivatives
Format	Quantity
Length	4
Possible Values	From 0 to 2^32-2

Used In	Strategy Standing Data (1012)

Leg Symbol Index

Field Name	Leg Symbol Index
Description	MDG proprietary identification code of the instrument leg for the strategy. This identifier is unique per triplet: MIC, ISIN and currency. Once the instrument is expired its number can be used for a new instrument.
Used For	Derivatives
Format	Numerical ID
Length	4
Possible Values	From 0 to 2^32-2
Used In	Strategy Standing Data (1012)

Liquidation Level

Field Name	Liquidation Level
Description	Index Level of reference at expiration settlement (to be calculated with the Price/Index Level Decimals).
Used For	Cash
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Index Summary (1011)

Liquidation Time

Field Name	Liquidation Time
Description	Time of provisional expiration settlement index level (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Index Summary (1011)

Lot Size

Field Name	Lot Size
Description	For Cash, it defines a multiple of the tradable quantity and for derivatives, it represents the amount of underlying instrument per unit of a derivative contract (to be calculated with the Quantity Decimals).
Used For	Cash and Derivatives
Format	Quantity
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013)

	Outright Standing Data (1014)

Low Level

Field Name	Low Level
Description	Lowest index level (to be calculated with the Price/Index Level Decimals).
Used For	Cash
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Index Summary (1011)

Low Time

Field Name	Low Time
Description	Time of provisional lowest index level (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Index Summary (1011)

M

Main Depositary

Field Name	Main Depositary
Description	Identifies the default (or main) depository organization of the instrument (between the possible 4 depositaries registered) used by priority for the settlement (for example: multi-listed instruments which have several depositories). For Cash Markets this data has to be treated in consideration of the data Depositary List used by the clearing house to determine the relevant system for settling trades. Valid values are the same as for "Depositary List". Valid values are: - '00001' – Euroclear France - '00002' – Euroclear Belgium - '00003' – Euroclear Nederland - '00004' – X/N National Bank of Belgium - '00005' – VIF (non-fungible Belgian instruments) - '00006' – Euroclear Bank - '00008' – Physical - '00010' – Interbolsa - '00000' – No depository organization - 'Nulls' – Not significant
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	5

Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Market Data Change Type

Field Name	Market Data Change Type
Description	Type of scheduled change.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Status Change(s) 1 = Scheduled Event Notification 2 = Status Change(s) and Scheduled Event Notification
Used In	Market Status Change (1005)

Market Data Price Type

Field Name	Market Data Price Type
Description	Type of price update (note: 1 to 9 are settlement price type).
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	2 = Official Daily (Derivatives Only) 4 = Official Market Close (Derivatives Only) 6 = Official Expiry (Derivatives Only) 7 = Provisional Intraday (Derivatives Only) 8 = Official Intraday (Derivatives Only) 9 = Official YDSP (Derivatives Only) 10 = Net Asset Value (+/-) for the instruments eligible to the NAV Trading Facility (Cash Only) 12 = Adjusted Closing Price (Cash Only) 13 = Subscription Price (Cash Only) 14 = Indicative Matching Price (Cash and Derivatives) 19 = Min Price Out of Session Trades (Cash Only) 20 = Max Price Out of Session Trades (Cash Only) 21 = Min Price Out of Session Block Trades (Cash Only) 22 = Max Price Out of Session Block Trades (Cash Only) 23 = Valuation Price (Cash Only) 24 = Fund Subscription (Cash Only) 25 = Fund Redemption (Cash Only) 26 = Uncrossing Price (Cash and Derivatives) 27 = Last Traded Price (Cash and Derivatives) 28 = Alternative Indicative Price (AIP) (Cash Only) 30 = Net Asset Value (NAV) (Cash Only) 31 = External Reference Price (Cash Only)
Used In	Price Update (1003)

Market Data Sequence Number

Field Name	Market Data Sequence Number
Description	Assigned by MDG for each message. Each channel has its own Market Data Sequence Number sequence. This sequence will always increment but not by 1 during the day, except for "Health Status" messages that will contain the Market Data Sequence Number of the last message (that is not a "Health Status" message) sent on the channel.
Used For	Cash and Derivatives
Format	Sequence
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013) End Of Day (1102) Full Trade Information (1004) Health Status (1103) Index Summary (1011) Market Status Change (1005) Market Update (1001) Outright Standing Data (1014) Price Update (1003) Real Time Index (1008) Start Of Day (1101) Statistics (1009) Strategy Standing Data (1012) Technical Notification (1106)

Market Data Update Type

Field Name	Market Data Update Type
Description	Type of market data update.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Best Bid (Cash and Derivatives) 2 = Best Offer (Cash and Derivatives) 3 = New Bid (Cash and Derivatives) 4 = New Offer (Cash and Derivatives) 5 = Updated Bid (Cash and Derivatives) 6 = Updated Offer (Cash and Derivatives) 7 = Total Traded Volume (Derivatives Only) 8 = Implied Bid (Derivatives Only) 9 = Implied Offer (Derivatives Only) 10 = Request for Quote (Cash and Derivatives) 11 = Request for Quote Bid (Cash Only) 12 = Request for Size (Cash Only) 13 = Request for Quote Offer (Cash) 14 = High Dynamic Collar (Cash Only) 15 = Low Dynamic Collar (Cash Only) 16 = New Bid RLP (Retail Liquidity Provider) (Cash Only) 17 = New Offer RLP (Retail Liquidity Provider) (Cash Only) 18 = Updated Bid RLP Retail Liquidity Provider) (Cash Only)

	19 = Updated Offer RLP (Retail Liquidity Provider) (Cash Only) 24 = Conventional Trade (Cash and Derivatives) 25 = Request for Cross (RFC) Queued (Derivatives Only) 26 = Request for Cross (RFC) (Derivatives Only) 27 = Large in Scale (LiS) Trade (Derivatives Only) 28 = Basis Trade (Derivatives Only) 29 = Large in Scale (LiS) Package Trade (Derivatives Only) 30 = Guaranteed Cross Trade (Cash and Derivatives) 31 = Against Actual Trade (Derivatives Only) 32 = Asset Allocation Trade (Derivatives Only) 34 = Exchange for Swap Trade (Derivatives Only) 35 = Dark Trade (Cash Only) 36 = Exchange for Physical Trade - Cash Leg (Cash Only) 37 = Strategy Leg Conventional Trade (Derivatives Only) 38 = Strategy Leg Large in Scale (LiS) Trade (Derivatives Only) 39 = Strategy Leg Basis Trade (Derivatives Only) 40 = Strategy Leg Guaranteed Cross Trade (Derivatives Only) 41 = Strategy Leg Against Actual Trade (Derivatives Only) 42 = Strategy Leg Asset Allocation Trade (Derivatives Only) 44 = Strategy Leg Exchange For Swap Trade (Derivatives Only) 45 = Strategy Leg Exchange For Physical Trade (Derivatives Only) 46 = BoB Trade (Cash Only) 48 = AtomX Trade (Derivatives Only) 50 = Trade Cancellation (Cash and Derivatives) 51 = Out of Market Trade (Cash Only) 52 = Delta Neutral Trade - Underlying Cash Leg (Cash Only) 53 = Delta Neutral Trade - Underlying Future Leg (Derivatives Only) 54 = Euronext Fund Service Trade (Cash Only) 55 = Secondary Listing Trade (Cash Only) 56 = Request for Cross Trade (Derivatives Only) 57 = Request for Cross Strategy Leg Trade (Derivatives Only) 58 = New Bid With Liquidity Provider (Cash Only) 59 = New Offer With Liquidity Provider (Cash Only) 60 = Updated Bid With Liquidity Provider (Cash Only) 61 = Updated Offer With Liquidity Provider (Cash Only) 63 = Low Static Collar (Cash Only) 64 = High Static Collar (Cash Only) 65 = Market VWAP Operation Trade 66 = Request for Size Bid(Cash Only) 67 = Request for Size Offer(Cash Only) 70 = Low LP Collar (Cash Only) 71 = High LP Collar (Cash Only) 72 = ETF-MTF NAV Trade (price in basis points) (Cash Only) - For Future Use 73 = ETF-MTF NAV Dark Trade (price in basis points) (Cash Only) - For Future Use 74 = New Bid on Wholesale RFC (Derivatives Only) 75 = New Offer on Wholesale RFC (Derivatives Only) 76 = Updated Bid on Wholesale RFC (Derivatives Only) - For Future Use 77 = Updated Offer on Wholesale RFC (Derivatives Only) - For Future Use 78 = Clear Wholesale RFC (Derivatives Only) 79 = Guaranteed Cross – Negotiated deal NLIQ (Liquid) 80 = Guaranteed Cross – Negotiated deal OILQ (illiquid) 82 = Large in Scale (LiS) Trade in basis points (Derivatives Only) 83 = Large in Scale (LiS) Package Trade in basis points (Derivatives Only) 84 = Strategy Leg Large in Scale (LiS) Trade in basis points (Derivatives Only)

	81 = Large in Scale (LIS) Trade (Cash) 252 = Static Collar Reference Price (Cash and Derivatives) 253 = Dynamic Collar Reference Price (Cash and Derivatives) 254 = Clear Book (Cash and Derivatives)
Used In	Market Update (1001)

Market Of Reference MIC

Field Name	Market Of Reference MIC
Description	Indicates the instrument Exchange of Reference by its MIC (Market Identification Code according to ISO 10383) (For Future Use).
Used For	Cash
Format	Alphanumerical ID
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Maturity Date

Field Name	Maturity Date
Description	Maturity Date of the instrument (text formatted as YYYYMMDD). For contracts with one expiry per month the day component may be "00" (text formatted as YYYYMMDD). For AtomX instruments this field contains the exact expiry date. For repo (repurchase agreement) it represents the inclusive date until which a lending/borrowing contract can be traded.
Used For	Cash and Derivatives
Format	Text
Length	8
Possible Values	(See field description)
Used In	Outright Standing Data (1014) Strategy Standing Data (1012)

MIC

Field Name	MIC
Description	Identifies the market to which an instrument belongs by its MIC (Market Identification Code), segment MIC according to ISO 10383. Euronext owns the following MICs: - 'ALXA' – ALTERNEXT AMSTERDAM - 'ALXB' – EURONEXT GROWTH BRUSSELS - 'ALXL' - EURONEXT GROWTH LISBON - 'ALXP' – EURONEXT GROWTH PARIS - 'EMTF' – EURO MTF - 'ENXB' – EURONEXT - EASY NEXT - 'ENXL' – EURONEXT ACCESS LISBON - 'MFOX' - EURONEXT - MERCADO DE FUTUROS E OPÇÕES - 'MLXB' - EURONEXT ACCESS BRUSSELS - 'TNLA' – EURONEXT - TRADED BUT NOT LISTED AMSTERDAM - 'TNLB' – EURONEXT – TRADING FACILITY BRUSSELS

	- 'VPXB' - EURONEXT - VENTES PUBLIQUES BRUSSELS - 'WQXL' – EURONEXT - MARKET WITHOUT QUOTATIONS LISBON - 'XAMS' – EURONEXT - EURONEXT AMSTERDAM - 'XBRD' - EURONEXT - EURONEXT BRUSSELS - DERIVATIVES - 'XBRU' – EURONEXT - EURONEXT BRUSSELS - 'XEUC' - EURONEXT COM, COMMODITIES FUTURES AND OPTIONS - 'XEUE' - EURONEXT EQF, EQUITIES AND INDICES DERIVATIVES - 'XEUI' - EURONEXT IRF, INTEREST RATE FUTURE AND OPTIONS - 'XLDN' – EURONEXT - EURONEXT LONDON - 'XLIS' – EURONEXT - EURONEXT LISBON - 'XLUX' – LUXEMBOURG STOCK EXCHANGE - 'XMAT' - EURONEXT PARIS MATIF - 'XMLI' – EURONEXT ACCESS PARIS - 'XMON' - EURONEXT PARIS MONEP - 'XOTH' - Others - This MIC is not registered. It is use for testing purpose in both p-EUA and Production. - 'XPAR' – EURONEXT - EURONEXT PARIS - 'XSPM' - EURONEXT STRUCTURED PRODUCTS MTF
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	4
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

MiFID Clearing Flag

Field Name	MiFID Clearing Flag
Description	Code to identify whether the transaction will be cleared. - 'true': Transaction to be cleared. - 'false': Transaction not to be cleared.
Used For	Derivatives
Format	Text
Length	5
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Currency

Field Name	MiFID Currency
Description	Currency in which the price is expressed (applicable if the price is expressed as monetary value) following ISO 4217 standard.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	3
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Emission Allowance Type

Field Name	MiFID Emission Allowance Type
Description	This field is only applicable for emission allowances. Possible values: - 'EUAE' – European Union Allowances (EUA) - 'CERE' - Certified Emission Reductions (CER) - 'ERUE' - Emission Reduction Units (ERU) - 'EUAA' - European Union Aviation Allowances (EUAA) - 'OTHR' – Other (for derivatives only)
Used For	Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Execution ID

Field Name	MiFID Execution ID
Description	MiFID Transaction Identification Code is composed of the Symbol Index (on 10 characters), the EMM (on 3 characters) and the Execution ID (on 10 characters). It is a unique Execution ID by instrument per day on the different available EMM. Example: Trade done with Execution Id: 42 on the Symbol Index: 1384659 on EMM: 1 (COB) will have this MiFID Execution ID: 00013846590010000000042.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	52
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Instrument ID

Field Name	MiFID Instrument ID
Description	Code used to identify the financial instrument. This code has to be processed with the MiFID Instrument ID Type.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	12
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Instrument ID Type

Field Name	MiFID Instrument ID Type
Description	Code type used to identify the financial instrument. Possible values:

	- 'ISIN' = ISIN code, where ISIN is available. - 'OTHR' = other identifier.
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Notional Amount

Field Name	MiFID Notional Amount
Description	Nominal amount or notional amount. For spread bets, the notional amount shall be the monetary value wagered per point movement in the underlying financial instrument. For credit default swaps, it shall be the notional amount for which the protection is acquired or disposed of. Possible values: - Maximum of 18 digits with a maximum of 5 decimals. Note: Decimal separator is '.' (full stop).
Used For	Cash and Derivatives
Format	Text
Length	20
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Price

Field Name	MiFID Price
Description	Traded price of the transaction excluding, where applicable, commission and accrued interest. Where price is reported in monetary terms, it shall be provided in the major currency unit. Where price is currently not available but pending, the value should be 'PNDG'. Where price is not applicable the field shall not be populated. Possible values: - For price expressed as monetary value: maximum of 18 digits with a maximum of 13 decimals. - For price expressed as percentage or yield: maximum of 11 digits with a maximum of 10 decimals. - For not available price (only for derivatives): 'PNDG'. Note 1: Decimal separator is '.' (full stop). Note 2: Negative numbers are prefixed with '-' (minus). Note 3: Where applicable, values shall be rounded and not truncated.
Used For	Cash and Derivatives
Format	Text
Length	20
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Price Notation

Field Name	MiFID Price Notation
Description	Indication as to whether the price is expressed in monetary value, in percentage or in yield. Possible values: 'MONE' – Monetary value 'PERC' – Percentage 'YIEL' – Yield 'BAPO' – Basis points.
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Qty in Measurement Unit Notation

Field Name	MiFID Qty in Measurement Unit Notation
Description	Indication of measurement units in which the quantity in measurement unit is expressed. Possible values: 'TOCD' – tons of carbon dioxide equivalent Or {ALPHANUM-25} otherwise.
Used For	Cash and Derivatives
Format	Text
Length	25
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Quantity

Field Name	MiFID Quantity
Description	Number of units of the financial instrument. The nominal or monetary value of the financial instrument. Possible values: - For quantity expressed as number of units: maximum of 18 digits with a maximum of 17 decimals. - For quantity expressed as monetary or nominal value: maximum of 18 digits with a maximum of 5 decimals. Note 1: Decimal separator is '.' (full stop).
Used For	Cash and Derivatives
Format	Text
Length	20
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MiFID Quantity Measurement Unit

Field Name	MiFID Quantity Measurement Unit

Description	The equivalent amount of commodity or emission allowance traded expressed in measurement unit Possible values: - For quantity expressed as number of units: maximum of 18 digits with a maximum of 17 decimals. Note: Decimal separator is '.' (full stop).
Used For	Cash and Derivatives
Format	Text
Length	20
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Minimum Quantity For Initiator

Field Name	Minimum Quantity For Initiator
Description	Wholesale RFC Minimum Quantity defines the minimum quantity required to submit an RFC as initiator. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.
Used For	Derivatives
Format	Quantity
Length	4
Possible Values	From 0 to 2^32-2
Used In	Contract Standing Data (1013)

Minimum Quantity For Reactor

Field Name	Minimum Quantity For Reactor
Description	Wholesale RFC Min Qty defines the minimum quantity required to submit a response to the RFC during the Improvement period. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.
Used For	Derivatives
Format	Quantity
Length	4
Possible Values	From 0 to 2^32-2
Used In	Contract Standing Data (1013)

MMT Agency Cross Trade Indicator

Field Name	MMT Agency Cross Trade Indicator
Description	Defines the agency cross trade indicator following MMT level 3.3. Possible values: - 'ACTX': Agency Cross Trade - '-': No Agency Cross Trade
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Algorithmic Indicator

Field Name	MMT Algorithmic Indicator
Description	Defines the algorithmic indicator following MMT level 3.9. Possible values: - 'ALGO': Algorithmic Trade - '-': No Algorithmic Trade
Used For	Cash
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Benchmark Indicator

Field Name	MMT Benchmark Indicator
Description	Defines the benchmark indicator or the reference price indicator following MMT level 3.5. Possible values: - 'BENC': Benchmark Trade - 'RFPT': Reference Price Trade - '-': No Benchmark or Reference Price Trade
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Contribution to Price

Field Name	MMT Contribution to Price
Description	Defines the contribution to price or the price discovery process following MMT level 3.8. Possible values: - 'P': Plain-Vanilla Trade - 'NPFT': Non-Price Forming Trade (formerly known as the Technical Trade) - 'TNCP': Trade not Contributing to the Price Discovery Process
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Duplicative Indicator

Field Name	MMT Duplicative Indicator
Description	Defines the duplicative indicator following MMT level 5. Possible values: - 'DUPL': Duplicative Trade Report (reported to more than one APA)

	- '-': Unique Trade Report
Used For	Cash
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Market Mechanism

Field Name	MMT Market Mechanism
Description	Defines the fundamental functional market mechanism that has facilitated the trade following MMT level 1.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Central Limit Order Book 2 = Quote Driven Market 3 = Dark Order Book 4 = Off Book (including Voice or Messaging Trading) 5 = Periodic Auction (= Uncrossing) 6 = Request for Quotes
Used In	Full Trade Information (1004)

MMT Modification Indicator

Field Name	MMT Modification Indicator
Description	Defines the modification indicator following MMT level 3.4. Possible values: - 'CANC': Trade Cancellation - 'AMND': Trade Amendment - '-': New Trade
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Negotiation Indicator

Field Name	MMT Negotiation Indicator
Description	Defines the negotiation indicator or pre-trade transparency waiver following MMT level 3.2. Possible values: - 'N': Negotiated Trade - 'NLIQ': Negotiated Trade in Liquid Financial Instruments - 'OILQ': Negotiated Trade in Illiquid Financial Instruments - 'PRIC': Negotiated Trade Subject to Conditions Other Than The Current Market Price - 'ILQD': Pre-Trade Transparency Waiver for illiquid instrument on an Side

	- 'SIZE': Pre-Trade Transparency Waiver for above standard market size on an SI - '-': No Negotiated Trade
Used For	Cash
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Off Book Automated Indicator

Field Name	MMT Off Book Automated Indicator
Description	Defines the off book automated indicator following MMT level 3.7.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	M = Off Book Non-Automated Q = Off Book Automated - = (Hyphen) Unspecified or does not apply
Used In	Full Trade Information (1004)

MMT Post Trade Deferral

Field Name	MMT Post Trade Deferral
Description	Defines the post trade deferral or enrichment type following MMT level 4.2. Possible values for the original trade: - 'LMTF': Limited Details Trade - 'DATF': Daily Aggregated Trade - 'VOLO': Volume Omission Trade - 'FWAF': Four Weeks Aggregation Trade - 'IDAF': Indefinite Aggregation Trade - 'VOLW': Volume Omission Trade, Eligible for Subsequent Enrichment in Aggregated Form Possible values for the subsequent enrichment trade: - 'FULF': Full Details of Earlier "Limited Details Trade (LMTF)" - 'FULA': Full Details of Earlier "Daily Aggregated Trade (DATF)" - 'FULV': Full Details of Earlier "Volume Omission Trade (VOLO)" - 'FULJ': Full Details of Earlier "Four Weeks Aggregation Trade (FWAF)" - 'COAF': Full Details in Aggregated Form of Earlier "Volume Omission Trade, Eligible for Subsequent Enrichment in Aggregated Form (VOLW)" Possible values if neither apply: - '-': Not Applicable / No Relevant Deferral or Enrichment Type
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Publication Mode

Field Name	MMT Publication Mode
Description	Defines the publication mode or post-trade deferral reason following MMT level 4.1. Possible values: - '-': Immediate Publication - '1': Non-Immediate Publication - 'LRGS': Non-Immediate Publication: Deferral for "Large in Scale" - 'ILQD': Non-Immediate Publication: Deferral for "Illiquid Instrument" - 'SIZE': Non-Immediate Publication: Deferral for "Size Specific"
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Special Dividend Indicator

Field Name	MMT Special Dividend Indicator
Description	Defines the special dividend indicator following MMT level 3.6. Possible values: - 'SDIV': Special Dividend Trade - '-': No Special Dividend Trade
Used For	Cash
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

MMT Trading Mode

Field Name	MMT Trading Mode
Description	Differentiates transactions by defining the trading mode under which the trade was executed following MMT level 2.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Undefined Auction (= Uncrossing) 2 = Continuous Trading 3 = At Market Close Trading 4 = Out of Main Session Trading 5 = Trade Reporting (On Exchange) 6 = Trade Reporting (Off Exchange) 7 = Trade Reporting (Systematic Internaliser) I = Scheduled Intraday Auction (= Uncrossing) K = Scheduled Closing Auction (= Uncrossing) O = Scheduled Opening Auction (= Uncrossing) U = Unscheduled Auction (= Uncrossing)

Used In	Full Trade Information (1004)

MMT Transaction Category

Field Name	MMT Transaction Category
Description	Defines the transaction category following MMT level 3.1. Possible values: - 'D': Dark Trade - 'RPRI': Trade that has Received Price Improvement - 'TPAC': Package Trade (excluding Exchange for Physicals) - 'XFPH': Exchange for Physicals Trade - '-': None apply (a standard trade for the Market Mechanism and Trading Mode)
Used For	Cash and Derivatives
Format	Text
Length	4
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Mother Stock ISIN

Field Name	Mother Stock ISIN
Description	ISIN Code of the index underlying of the TRF contract.
Used For	Derivatives
Format	Text
Length	12
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

N

Notional Currency

Field Name	Notional Currency
Description	Currency in which the notional is denominated following ISO 4217 standard.
Used For	Cash
Format	Alphanumerical ID
Length	3
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Number Of Orders

Field Name	Number Of Orders
Description	Number of orders at the current price limit.

Used For	Cash and Derivatives
Format	Numerical
Length	2
Possible Values	From 0 to 2^16-2
Used In	Market Update (1001)

Number Of Traded Instruments in Index

Field Name	Number Of Traded Instruments in Index
Description	Number of traded instruments in the index.
Used For	Cash
Format	Quantity
Length	2
Possible Values	From 0 to 2^16-2
Used In	Real Time Index (1008)

O

Opening Level

Field Name	Opening Level
Description	Official Opening Index Level. This level corresponds to the Index Level Type 1 of the Real Time Index (1008) of the corresponding index (to be calculated with the Price/Index Level Decimals).
Used For	Cash
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Index Summary (1011)

Opening Time

Field Name	Opening Time
Description	Time of Official Opening level (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Index Summary (1011)

Option Type

Field Name	Option Type
Description	Type of the option.
Used For	Derivatives

Format	Enumerated
Length	1
Possible Values	1 = Call 2 = Put
Used In	Outright Standing Data (1014)

Optiq Segment

Field Name	Optiq Segment
Description	An Optiq segment is a universe of instruments sharing common trading properties. Instruments have the flexibility to be moved from one partition to another within an Optiq segment.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Equities 2 = Funds 3 = Fixed Income 4 = Warrants and Certificates 5 = Bourse de Luxembourg 6 = Financial Options 7 = Financial Futures 8 = Commodity Derivatives 9 = Indices 10 = Trade Reporting and Publication 11 = Index Derivatives 12 = Equity Derivatives 13 = Financial Derivatives
Used In	Contract Standing Data (1013)

Order Entry Qualifier

Field Name	Order Entry Qualifier
Description	Field indicating the state of the Order Entry for the current market state.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Order Entry/Cancel/Modify Disabled 1 = Order Entry/Cancel/Modify Enabled 2 = Cancel and Modify Only (Derivatives Only) 3 = Cancel Only
Used In	Market Status Change (1005)

Order Side

Field Name	Order Side
Description	Indicates the side of the order. Please note that the value Cross is used only for the Order Entry, it will never be populated in the Market Data feed.

Used For	Cash
Format	Enumerated
Length	1
Possible Values	1 = Buy 2 = Sell 3 = Cross [i]
Used In	Full Trade Information (1004)

Order Type Rules

Field Name	Order Type Rules
Description	Order types supported by the matching engine. - bit in position 0 – Market: Market orders are available for this instrument (0: No ; 1: Yes) - bit in position 1 – Limit: Limit orders are available for this instrument (0: No ; 1: Yes) - bit in position 2 - Stop / Stop Loss: Stop and stop loss orders are available for this instrument (0: No ; 1: Yes) - bit in position 3 - Stop Limit: Stop limit orders are available for this instrument (0: No ; 1: Yes) - bit in position 4 - Market on Open (MOO): Market on open orders are available for this instrument (0: No ; 1: Yes) - bit in position 5 - Trade at Settlement: Trade at settlement are available for this instrument (0: No ; 1: Yes)
Used For	Derivatives
Format	Bitmap
Length	2
Possible Values	0 = Market 1 = Limit 2 = Stop / Stop Loss 3 = Stop Limit 4 = Market on Open (MOO) 5 = Trade at Settlement
Used In	Contract Standing Data (1013)

Original Report Timestamp

Field Name	Original Report Timestamp
Description	(Time in number of nanoseconds since 01/01/1970 UTC).(Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash and Derivatives
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Full Trade Information (1004)

Outright G.Cross Threshold

Field Name	Outright G.Cross Threshold
Description	Wholesale Guaranteed Trade Threshold checked for Order Cross submission.

Used For	Derivatives
Format	Numerical
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013)

Outright LIS Trade Threshold

Field Name	Outright LIS Trade Threshold
Description	Wholesale LIS Trade Threshold checked for Order Cross submission.
Used For	Derivatives
Format	Numerical
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013)

P

Partition ID

Field Name	Partition ID
Description	Identifies uniquely an Optiq partition across all the Exchange partitions.
Used For	Cash and Derivatives
Format	Numerical ID
Length	2
Possible Values	From 0 to 2^16-2
Used In	Contract Standing Data (1013)

Percentage of Capitalization

Field Name	Percentage of Capitalization
Description	Percentage of capitalization for the active instruments in the index (to be calculated with the Ratio / Multiplier Decimals).
Used For	Cash
Format	Numerical
Length	8
Possible Values	From 0 to 2^64-2
Used In	Real Time Index (1008)

Percentage Var from Prev Close

Field Name	Percentage Var from Prev Close
Description	Percentage of variation for last price (or index) versus previous closing price (or closing reference price) (to be calculated with the Ratio / Multiplier Decimals).

Used For	Cash and Derivatives
Format	Signed Numerical
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Index Summary (1011) Real Time Index (1008)

Phase Qualifier

Field Name	Phase Qualifier
Description	Indicates the Phase Qualifier (no multiple phase possible at the same time even if this field is a bitmap). - bit in position 0 – No Qualifier: indicates that no phase qualifier are applicable (0: No ; 1: Yes) - bit in position 1 – Call BBO Only (Cash Only): indicates a call on BBO only phase (0: No ; 1: Yes) - bit in position 2 – Trading At Last (Cash Only): indicates a trading at last phase (TaL) phase (0: No ; 1: Yes) - bit in position 3 – Random Uncrossing (Cash Only): indicates a random uncrossing phase (0: No ; 1: Yes) - bit in position 4 – Suspended (Derivatives Only): indicates a suspended phase (0: No ; 1: Yes) - bit in position 5 – Wholesale Allowed (Derivatives Only): indicates a wholesale allowed phase (0: No ; 1: Yes)
Used For	Cash and Derivatives
Format	Bitmap
Length	2
Possible Values	0 = No Qualifier 1 = Call BBO Only (Cash Only) 2 = Trading At Last (Cash Only) 3 = Random Uncrossing (Cash Only) 4 = Suspended (Derivatives Only) 5 = Wholesale Allowed (Derivatives Only)
Used In	Market Status Change (1005)

Premium Pricing Threshold

Field Name	Premium Pricing Threshold
Description	Premium threshold defining the change of Tick Size to be applied from the default one provided in Instrument Tick Size field to the one provided in Premium Pricing Tick Size field.
Used For	Derivatives
Format	Numerical
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013)

Premium Pricing Tick Size

Field Name	Premium Pricing Tick Size
Description	Specific Tick Size value applicable for the instrument for premium under the threshold defined in Premium Pricing Threshold field.
Used For	Derivatives

Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Price

Field Name	Price
Description	Price per unit of quantity (to be calculated with the Price/Index Level Decimals).
Used For	Cash and Derivatives
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Market Update (1001) Price Update (1003)

Price / Index Level Decimals

Field Name	Price / Index Level Decimals
Description	Indicates the number of decimals for each Price / Index Level related to this Symbol Index
Used For	Cash and Derivatives
Format	Decimal Places
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Price Limits

Field Name	Price Limits
Description	Indicates the Price Limits mode.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Price Limits Enabled - Normal (Derivatives Only) 2 = Price Limits Enabled - Wide (Derivatives Only) 3 = Price Limits Enabled - Widest (Derivatives Only) 4 = Price Limits Disabled (Derivatives Only)
Used In	Market Status Change (1005)

Price Multiplier

Field Name	Price Multiplier
Description	Number of units of the financial instrument that are contained in a trading lot. Price multiplier coefficient for instrument unit price.
Used For	Cash

Format	Numerical
Length	4
Possible Values	From 0 to 2^32-2
Used In	Full Trade Information (1004)

Price Multiplier Decimals

Field Name	Price Multiplier Decimals
Description	Number of decimals for the field Price Multiplier.
Used For	Cash
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Full Trade Information (1004)

Pricing Algorithm

Field Name	Pricing Algorithm
Description	Pricing Algorithm for the Contract. Possible values: 'TRF' - Total Return Futures 'MOC' - Market On Close
Used For	Derivatives
Format	Alphanumerical ID
Length	3
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Product Code

Field Name	Product Code
Description	Physical alphanumerical product code.
Used For	Derivatives
Format	Alphanumerical ID
Length	3
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Publication Date Time

Field Name	Publication Date Time
Description	Date and time when the transaction was published by a trading venue or Approved Publication Arrangement (APA). Date and time in the following format: YYYY-MM-DDThh:mm:ss.dddddd Z. Where:

	- 'YYYY' is the year. - 'MM' is the month. - 'DD' is the day. - 'T' constant 'T' letter used as separator between YYYY-MM-DD and hh:mm:ss.ddddddZ. - 'hh' is the hour. - 'mm' is the minute. - 'ss.dddddd' is the second and its fraction of a second. - 'Z' constant 'Z' letter that stands for UTC time.
Used For	Cash and Derivatives
Format	Text
Length	27
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Q

Quantity

Field Name	Quantity
Description	Number of traded or ordered units (to be calculated with Quantity Decimals).
Used For	Cash and Derivatives
Format	Quantity
Length	8
Possible Values	From 0 to 2^64-2
Used In	Market Update (1001) Price Update (1003)

Quantity Decimals

Field Name	Quantity Decimals
Description	Indicates the number of decimals for each Quantity related to this Symbol Index
Used For	Cash and Derivatives
Format	Decimal Places
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Quote Spread Multiplier

Field Name	Quote Spread Multiplier
Description	Indicates the Quote Spread Multiplier.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Quote Spread Multiplier 1 (Derivatives Only)

	2 = Quote Spread Multiplier 2 (Derivatives Only) 3 = Quote Spread Multiplier 3 (Derivatives Only)
Used In	Market Status Change (1005)

R

Ratio / Multiplier Decimals

Field Name	Ratio / Multiplier Decimals
Description	Indicates the number of decimals for each Ratio / Multiplier related to this Symbol Index
Used For	Cash and Derivatives
Format	Decimal Places
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Rebroadcast Indicator

Field Name	Rebroadcast Indicator
Description	Indicates if this message is resent or new (1 if resent, 0 otherwise). For a snapshot, this field will always be set to '1'.
Used For	Cash and Derivatives
Format	Numerical ID
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013) Full Trade Information (1004) Index Summary (1011) Market Status Change (1005) Market Update (1001) Outright Standing Data (1014) Price Update (1003) Real Time Index (1008) Statistics (1009) Strategy Standing Data (1012) Technical Notification (1106)

Reference Future Contract SecGrp

Field Name	Reference Future Contract SecGrp
Description	Exchange Code, Contract Type and Product code of the future contract.
Used For	Derivatives
Format	Text
Length	5
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Retransmission End Time

Field Name	Retransmission End Time
Description	Indicates when the retransmission ends. For trade retransmission, all the trades previously received by the clients that have an “Event time” strictly higher than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash and Derivatives
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Technical Notification (1106)

Retransmission Start Time

Field Name	Retransmission Start Time
Description	Indicates when the retransmission starts. For trade retransmission, all the trades previously received by the clients that have an “Event time” strictly lower than this field are valid (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash and Derivatives
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Technical Notification (1106)

S

Scheduled Event

Field Name	Scheduled Event
Description	Type of Scheduled Event. Notifies an event that will occur at the Scheduled Event Time.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Cancel Previously Scheduled Event(Cash and Derivatives) 1 = Reopening (Cash Only) 3 = Resumption of trading (Cash Only) 4 = Closed (Derivatives Only) 5 = Expiry (Derivatives Only) 6 = Wholesale Large in Scale (LiS) trades open extension (Derivatives Only) 7 = Wholesale Basis trades open extension (Derivatives Only) 8 = Wholesale Against Actuals trades open extension (Derivatives Only) 9 = Wholesale Large in Scale (LiS) Package trades open extension (Derivatives Only) 10 = Wholesale Exchange For Swaps trades open extension (Derivatives Only) 11 = Wholesale Trades Open Extension (Derivatives Only) 12 = Suspension (Cash Only)

Used In	Market Status Change (1005)

Scheduled Event Time

Field Name	Scheduled Event Time
Description	Scheduled Time for the event to happen (On cash: time in an integer on 8 bytes expressed as hhmmss UTC; On derivatives: time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash and Derivatives
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	Market Status Change (1005)

Session

Field Name	Session
Description	Current market session.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Session 0 1 = Session 1 2 = Session 2 3 = Session 3 4 = Session 4 5 = Session 5 6 = Session 6 7 = Session 7 8 = Session 8 9 = Session 9
Used In	Market Status Change (1005)

Session Trading Day

Field Name	Session Trading Day
Description	Date of the current trading session (in number of days since the 1st of January 1970).
Used For	Cash and Derivatives
Format	Date
Length	2
Possible Values	From 0 to 2^16-2
Used In	End Of Day (1102) Start Of Day (1101)

Settlement Method

Field Name	Settlement Method

Description	Settlement method - “C” = Cash Settlement - “P” = Physical Settlement - "O" = Optional - Blank/null for exchanges “C”, “G”, “D”, “H” containing Underlying instruments
Used For	Derivatives
Format	Alphanumerical ID
Length	1
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Snapshot Time

Field Name	Snapshot Time
Description	Indicates the time when snapshot generation has respectively started/ended in the Start Of Snapshot/End Of Snapshot message (Time in number of nanoseconds since 01/01/1970 UTC).
Used For	Cash and Derivatives
Format	Epoch Time in Nanoseconds
Length	8
Possible Values	From 0 to 2^64-2
Used In	End Of Snapshot (2102) Start Of Snapshot (2101)

Start Time Vwap

Field Name	Start Time Vwap
Description	(Number of seconds since the beginning of the day).(Number of seconds since the beginning of the day).
Used For	Cash
Format	Intraday Time in Seconds
Length	4
Possible Values	From 0 to 2^32-2
Used In	Full Trade Information (1004)

Stats Update Type

Field Name	Stats Update Type
Description	Indicates the type of published statistics update.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	5 = Daily High (Cash and Derivatives) 6 = Daily Low (Cash and Derivatives) 7 = Yearly High (Cash and Derivatives) 8 = Yearly Low (Cash and Derivatives) 9 = Lifetime High (Cash and Derivatives) 10 = Lifetime Low (Cash and Derivatives) 14 = Variation Last Price (Cash Only)

	15 = Open Price (Cash and Derivatives) 16 = Trade Count (Cash and Derivatives) 17 = Last Traded Price (Cash and Derivatives) 18 = Percent Variation Previous Close (Cash and Derivatives) 19 = Off Book Cumulative Quantity (Cash) 21 = On Book Auction Cumulative Quantity (Cash) 22 = On Book Continuous Cumulative Quantity (Cash) 23 = On and Off Book Cumulative Quantity (Cash and Derivatives)
Used In	Statistics (1009)

Stats Update Value

Field Name	Stats Update Value
Description	Indicates the value of the published statistics update. This field has to be calculated with a scale code field depending on the "Stats Update Type" as follow: - Price / Index Level Decimals for "Stats Update Type": "5 - Daily High", "6 - Daily Low", "7 - Yearly High", "8 - Yearly Low", "9 - Lifetime High", "10 - Lifetime Low", "15 - Open Price" and "17 - Last Trade Price" - Quantity Decimals for "Stats Update Type": "19 - Off Book Cumulative Quantity", "21 - On Book Auction Cumulative Quantity", "22 - On book Continuous Cumulative Quantity" and "23 - On and Off Book Cumulative Quantity" - Ratio / Multiplier Decimals for "Stats Update Type": "14 - Variation Last Price" and "18 - Percent Variation Previous Close" "16 - Trade Count" has no scale code.
Used For	Cash and Derivatives
Format	Signed Numerical
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Statistics (1009)

Status Reason

Field Name	Status Reason
Description	Provides the reason for Book State changes.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Scheduled (Cash and Derivatives) 4 = Collars Breach (Cash Only) 7 = Automatic Reopening (Cash Only) 8 = No Liquidity Provider (Cash Only) 11 = Knock-In by Issuer (Cash Only) 12 = Knock-Out by Exchange (Cash Only) 13 = Knock-Out by Issuer (Cash Only) 15 = Action by Market Operations (Cash and Derivatives) 16 = Waiting for Tradable State (Derivatives Only) 20 = New Listing (Cash Only) 21 = Due to Underlying (Cash Only) 22 = Outside of LP quotes (Cash Only) 23 = Technical (BdL Only)
Used In	Market Status Change (1005)

Strategy Code

Field Name	Strategy Code
Description	Exchange-recognized strategy code
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	A = Jelly Roll B = Butterfly C = Call or Put Cabinet D = Spread E = Calendar Spread F = Diagonal Calendar Spread G = Guts H = Two by One Ratio Spread I = Iron Butterfly J = Combo K = Strangle L = Ladder M = Strip N = Straddle Calendar Spread O = Pack P = Diagonal Straddle Calendar Spread Q = Simple Inter Commodity Spread R = Conversion / Reversal S = Straddle V = Volatility Trade W = Condor X = Box Y = Bundle Z = Reduced Tick Spread a = Ladder versus Underlying b = Butterfly versus Underlying c = Call Spread versus Put versus Underlying d = Call or Put Spread versus Underlying e = Call or Put Calendar Spread versus Underlying f = Call/Put Diagonal Calendar Spread versus Underlying g = Guts versus Underlying h = Two by One Call or Put Ratio Spread versus Underlying i = Iron Butterfly versus Underlying j = Combo versus Underlying k = Strangle versus Underlying m = Exchange for Physical n = Straddle Calendar Spread versus Underlying p = Put Spread versus Call versus Underlying q = Diagonal Straddle Calendar Spread versus Underlying r = Synthetic s = Straddle versus Underlying t = Condor versus Underlying u = Buy Write v = Iron Condor versus Underlying

	w = Iron Condor x = Call Spread versus Sell a Put y = Put Spread versus Sell a Call z = Put Straddle versus Sell a Call or a Put
Used In	Contract Standing Data (1013) Strategy Standing Data (1012)

Strategy G.Cross Threshold

Field Name	Strategy G.Cross Threshold
Description	Wholesale Strategy Guaranteed Cross Trade Threshold checked for Order Cross submission.
Used For	Derivatives
Format	Numerical
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013)

Strategy LIS Trade Threshold

Field Name	Strategy LIS Trade Threshold
Description	Wholesale Strategy LIS Trade Threshold checked for Order Cross submission.
Used For	Derivatives
Format	Numerical
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013)

Strike Price

Field Name	Strike Price
Description	The strike price of an option/warrant is the specified price at which the underlying can be bought (in the case of a call/right to buy) or sold (in case of a put/right to sell) by the holder (buyer) of the option/warrant contract, at the moment he exercises his right against a writer (seller) of the option/warrant. Only provided for warrants or other derivatives instruments. To be calculated with Strike Price Decimals for cash instruments and Strike Price Decimals Ratio for derivatives instruments.
Used For	Cash and Derivatives
Format	Price
Length	8
Possible Values	From -2^63+1 to 2^63-1
Used In	Outright Standing Data (1014)

Strike Price Decimals Ratio

Field Name	Strike Price Decimals Ratio
Description	Value used , only for the AMR code, to determine the number of decimals present in the Option contract strike price, as the strike price is disseminated in format of an integer.

	For example, for AMR code POTO1250404300C, you need to use the AMR Strike Price Decimals Ratio for the Exercise (Strike) Price part of the AMR code as defined in Chapter 4.6.2. In this case it's 04300 and if the AMR Strike Price Decimals Ratio=2, it will result in Strike Price 43.
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Strike Price Flex Increment

Field Name	Strike Price Flex Increment
Description	Strike Price increment for flex contracts (To be calculated with Price / Index Level Decimals). Used for flex options only.
Used For	Derivatives
Format	Numerical
Length	4
Possible Values	From 0 to 2^32-2
Used In	Contract Standing Data (1013)

Symbol Index

Field Name	Symbol Index
Description	Exchange identification code of the instrument. This identifier is unique per triplet: MIC, ISIN and currency. The correspondence of the Symbol Index and with the instrument characteristics is provided in the standing data messages and associated files.
Used For	Cash and Derivatives
Format	Numerical ID
Length	4
Possible Values	From 0 to 2^32-2
Used In	Contract Standing Data (1013) Full Trade Information (1004) Index Summary (1011) Market Status Change (1005) Market Update (1001) Outright Standing Data (1014) Price Update (1003) Real Time Index (1008) Statistics (1009) Strategy Standing Data (1012) Technical Notification (1106)

T

Technical Notification Type

Field Name	Technical Notification Type

Description	Indicates the technical notification sent.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Instrument Book Retransmission End 10 = Trade Retransmission Start 11 = Trade Retransmission End
Used In	Technical Notification (1106)

Throttle for Incoming Orders

Field Name	Throttle for Incoming Orders
Description	Defines the number of order messages that a session on the Order Entry Gateway can submit per second in a particular contract. If the value is set to zero (0) it means the applicable value of the throttling limit is the client connection throughput for all contracts on which member is not acting as a Liquidity Provider.
Used For	Derivatives
Format	Numerical
Length	2
Possible Values	From 0 to 2^16-2
Used In	Contract Standing Data (1013)

Tick Value

Field Name	Tick Value
Description	Used to compute the Valuation Coefficient: allows the calculation of the amount in a currency which should be paid by the buyer to the seller for a given price, for a trading lot (to be calculated with the Tick Value Decimals).
Used For	Derivatives
Format	Numerical
Length	8
Possible Values	From 0 to 2^64-2
Used In	Contract Standing Data (1013)

Tick Value Decimals

Field Name	Tick Value Decimals
Description	Indicates the number of decimals for Tick Value related to this Symbol Index
Used For	Derivatives
Format	Decimal Places
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

Trade Qualifier

Field Name	Trade Qualifier
Description	Trade Qualifier. Values specified, in the list of possible values, indicate the bit positions that should be used to set zero (0) or one (1) values. A single field contains multiple values provided in different positions. - bit in position 0 - Uncrossing Trade: indicates whether the trade occurred during an Uncrossing, or not. (0: No ; 1: Yes) - bit in position 1 - First Trade Price: indicates whether the price of the trade is the first trade price of the day, or not. (0: No ; 1: Yes) Please note that there can be multiple Trades with the “First Trade Price” flag set to Yes. - bit in position 2 - Passive Order: indicates whether the corresponding order was passive, or not. (0: No ; 1: Yes) - bit in position 3 - Aggressive Order: indicates whether the corresponding order was aggressive, or not. (0: No ; 1: Yes) - bit in position 4 - Trade Creation by Market Operations: indicates whether the trade results from a creation by Market Operations, or not. (0: No ; 1: Yes) - For future use - bit in position 5 - NAV Trade expressed in bps: indicates whether the trade results from a NAV trade expressed in basis point on the ETF Access platform. (0: No ; 1: Yes) - bit in position 6 - NAV Trade expressed in price currency: indicates whether the trade is a NAV trade expressed in price currency. This trade is always an update from a previous NAV trade expressed in basis point on the ETF Access platform. (0: No ; 1: Yes) If all bits are set to 0, then it means that no Trade Qualifier applies. For the Market Data feed: - The values Passive Order and Aggressive Order always qualify the Buy order.
Used For	Cash and Derivatives
Format	Bitmap
Length	1
Possible Values	0 = Uncrossing Trade 1 = First Trade Price 2 = Passive Order 3 = Aggressive Order 4 = Trade Creation by Market Operations 5 = NAV Trade expressed in bps [C] 6 = NAV Trade expressed in price currency [C]
Used In	Full Trade Information (1004)

Trade Reference

Field Name	Trade Reference
Description	Reference of the trade reported to the Exchange.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	30
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Trade Type

Field Name	Trade Type

Description	Type of trade.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Conventional Trade (Cash and Derivatives) 2 = Large in Scale (LiS) Trade (Derivatives Only) 3 = Basis Trade (Derivatives Only) 4 = Large in Scale (LiS) Package Trade (Derivatives Only) 5 = Guaranteed Cross Trade (Cash and Derivatives) 6 = Against Actual Trade (Derivatives Only) 7 = Asset Allocation Trade (Derivatives Only) 9 = Exchange for Swap Trade (Derivatives Only) 10 = Exchange for Physical Trade - Cash Leg (Cash Only) 11 = Strategy Leg Conventional Trade (Derivatives Only) 12 = Strategy Leg Large in Scale (LiS) Trade (Derivatives Only) 13 = Strategy Leg Basis Trade (Derivatives Only) 14 = Strategy Leg Guaranteed Cross Trade (Derivatives Only) 15 = Strategy Leg Against Actual Trade (Derivatives Only) 16 = Strategy Leg Asset Allocation Trade (Derivatives Only) 18 = Strategy Leg Exchange For Swap Trade (Derivatives Only) 19 = Strategy Leg Exchange For Physical Trade (Derivatives Only) 20 = BoB Trade (Cash Only) 22 = AtomX Trade (Derivatives Only) 24 = Trade Cancellation (Cash and Derivatives) 25 = Out of Market Trade (Cash Only) 26 = Delta Neutral Trade - Underlying Cash Leg (Cash Only) 27 = Market VWAP Operation Trade (Cash Only) 28 = Euronext Fund Service Trade (Cash Only) 29 = Secondary Listing Trade (Cash Only) 30 = Request for Cross Trade (Derivatives Only) 31 = Request for cross strategy Leg Trade (Derivatives Only) 32 = Trade Publication (Cash and Derivatives) 33 = Dark Trade (Cash Only) 34 = Delta Neutral Trade - Underlying Future Leg (Derivatives Only) 36 = Total Traded Volume (For future use) 37 = ETF-MTF NAV Trade (price in basis points) (Cash Only) - For future use 38 = ETF-MTF NAV Dark Trade (price in basis points) (Cash Only) - For future use 39 = Guaranteed Cross – Negotiated deal NLIQ (Liquid) 40 = Guaranteed Cross – Negotiated deal OILQ (illiquid) 42 = Large in Scale (LiS) Trade in basis points (Derivatives Only) 43 = Large in Scale (LiS) Package Trade in basis points (Derivatives Only) 44 = Strategy Leg Large in Scale (LiS) Trade in basis points (Derivatives Only) 41 = Large in Scale (LIS) Trade (Cash)
Used In	Full Trade Information (1004)

Trading Currency

Field Name	Trading Currency
Description	Code of the currency (ISO 4217-3A).
Used For	Cash and Derivatives
Format	Alphanumerical ID

Length	3
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Trading Date Time

Field Name	Trading Date Time
Description	Date and time when the transaction was executed. Date and time in the following format: YYYY-MM-DDThh:mm:ss.dddddd Z. Where: - 'YYYY' is the year. - 'MM' is the month. - 'DD' is the day. - 'T' constant 'T' letter used as separator between YYYY-MM-DD and hh:mm:ss.dddddd Z. - 'hh' is the hour. - 'mm' is the minute. - 'ss.dddddd' is the second and its fraction of a second. - 'Z' constant 'Z' letter that stands for UTC time.
Used For	Cash and Derivatives
Format	Text
Length	27
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Trading Period

Field Name	Trading Period
Description	Provides the current trading period.
Used For	Cash and Derivatives
Format	Enumerated
Length	1
Possible Values	1 = Opening (Cash and Derivatives) 2 = Standard (Cash and Derivatives) 3 = Closing (Cash and Derivatives)
Used In	Market Status Change (1005)

Trading Side

Field Name	Trading Side
Description	Indicates the Trading Side.
Used For	Cash
Format	Enumerated
Length	1
Possible Values	1 = Bid Only (Cash Only) 2 = Offer Only (Cash Only) 3 = PAKO (Cash Only) 4 = Both Sides (Cash Only)

Used In	Market Status Change (1005)

Transaction Type

Field Name	Transaction Type
Description	Transaction type or publication type.
Used For	Cash
Format	Enumerated
Length	1
Possible Values	1 = Plain Vanilla Trade 2 = Dark Trade 3 = Benchmark Trade 4 = Technical Trade 5 = Give-up/Give-in Trade 6 = Ex/Cum dividend Trade 7 = Trade With Condition 15 = Summary Report
Used In	Full Trade Information (1004)

Transparency Indicator

Field Name	Transparency Indicator
Description	Used to define the transparency of the trade.
Used For	Cash
Format	Enumerated
Length	1
Possible Values	0 = Lit/Regular Trade 1 = Dark Trade and Immediate Publication 2 = Dark Trade and Deferred Publication
Used In	Full Trade Information (1004)

U

Underlying Expiry

Field Name	Underlying Expiry
Description	Expiry Date of the underlying (in number of days since the 1st of January 1970).
Used For	Derivatives
Format	Date
Length	4
Possible Values	From 0 to 2^32-2
Used In	Contract Standing Data (1013)

Underlying Instrument Trading Code

Field Name	Underlying Instrument Trading Code
Description	Is the underlying AMR code on derivatives and the Trading Code on cash. Cash: Trading code is a 12-character string, the only instrument identifier that is unique in the feed in addition to the symbol index. Derivatives: The AMR code is a 15-character string, allocated by the trading engine. It is unique per instrument.
Used For	Derivatives
Format	Alphanumerical ID
Length	15
Possible Values	(See field description)
Used In	Outright Standing Data (1014)

Underlying ISIN Code

Field Name	Underlying ISIN Code
Description	Underlying ISIN. For Repo: Underlying instrument (instrument used in the loan quotation system) for loan contracts on centralized lending market. For Warrant: Gives the trading code of the underlying listed instrument of a warrant.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	12
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Underlying MIC

Field Name	Underlying MIC
Description	Identifies the market to which an instrument' underlying belongs by its MIC (Market Identification Code), according to ISO 10383. Refer to MIC field to have all the authorized values.
Used For	Cash and Derivatives
Format	Alphanumerical ID
Length	4
Possible Values	(See field description)
Used In	Contract Standing Data (1013)

Underlying Subtype

Field Name	Underlying Subtype
Description	Defined the underlying sub-type associated to the underlying type. Underlying Type "Stock" accepts following Underlying Subtypes: Basket, Dividend, ETF and Share Underlying Type "Index" accepts: Dividend Index, Equity Index, TRF Index and Volatility Index

	Underlying Type "Future" accepts: Future on Commodities Underlying Type "Exchange rate" accepts: FX Cross Rates (FXCR), FX Emerging Markets (FXEM) and FX Majors (FXMJ) Underlying Type "Commodity" accepts: Agricultural (AGRI), Environmental (ENVR), Freight (FRGT), Fertilizer (FRTL), Industrial products (INDP), Inflation (INFL), Multi Commodity Exotic (MCEX), Metals (METL), Energy (NRGY), Official economic statistics (OEST), Other C10 (OTHC), Other (OTHR), Paper (PAPR) and Polypropylene (POLY)
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Basket 1 = Dividend 2 = ETF 3 = Share 4 = Dividend Index 5 = Equity Index 6 = TRF Index 7 = Volatility Index 8 = Future On Commodities 9 = FXCR - FX Cross Rates 10 = FXEM - FX Emerging Markets 11 = FXMJ - FX Majors 12 = AGRI - Agricultural 13 = ENVR - Environmental 14 = FRGT - Freight 15 = FRTL - Fertilizer 16 = INDP - Industrial products 17 = INFL - Inflation 18 = MCEX - Multi Commodity Exotic 19 = METL - Metals 20 = NRGY - Energy 21 = OEST - Official economic statistics 22 = OTHC - Other C10 23 = OTHR - Other 24 = PAPR - Paper 25 = POLY - Polypropylene
Used In	Contract Standing Data (1013)

Underlying Type

Field Name	Underlying Type
Description	Defines the instrument type of the underlying.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	C = Commodity F = Future I = Index S = Stock X = Exchange Rate

Used In	Contract Standing Data (1013)

V

Vega Protect for MM

Field Name	Vega Protect for MM
Description	Vega Protection for Market Makers Level.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Protection for Market Makers enabled at a contract level 1 = Protection for Market Makers enabled at a contract and expiry level.
Used In	Contract Standing Data (1013)

Venue

Field Name	Venue
Description	Identification of the venue where the transaction was executed using the ISO 10383 segment MIC for transactions executed on a trading venue. Otherwise the BIC is sent following ISO 9362. For Approved Publication Arrangement (APA), possible values are: - SINT – Systematic INTernalizer (This is not a tag in ISO) - XOFF – OFF-EXCHANGE TRANSACTIONS - LISTED INSTRUMENTS.
Used For	Derivatives
Format	Alphanumerical ID
Length	11
Possible Values	(See field description)
Used In	Full Trade Information (1004)

Volume Protect for MM

Field Name	Volume Protect for MM
Description	Volume Protection for Market Makers Level.
Used For	Derivatives
Format	Enumerated
Length	1
Possible Values	0 = Protection for Market Makers enabled at a contract level 1 = Protection for Market Makers enabled at a contract and expiry level.
Used In	Contract Standing Data (1013)

W

WhRFC Days Before Expiry

Field Name	WhRFC Days Before Expiry
Description	Wholesale RFC Days Before Expiry defines the number of days (0 to 99) from expiry from which the RFC will no longer be available. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

WhRFC Improvement Period

Field Name	WhRFC Improvement Period
Description	Wholesale RFC Improvement Period is the number of seconds that defines the duration of the RFC Improvement Period. Available only if the Request For Cross (7) is set in Available Wholesale Trade Type.
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

WhRFC Minutes Before Closing

Field Name	WhRFC Minutes Before Closing
Description	Wholesale RFC Minutes Before Close allows the setup of the number of minutes (1 to 99) from market close from which the RFC will be deactivated.
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2
Used In	Contract Standing Data (1013)

WhRFC Pick Up Perc

Field Name	WhRFC Pick Up Perc
Description	Defines the percentage of the RFC Initiator quantity that is available for RFC responses during the final execution at the RFC price. This pick up percentage is not relevant during the final execution with RFC responses improving the RFC Price. Available only for Wholesale Trade Type = 9.
Used For	Derivatives
Format	Numerical
Length	1
Possible Values	From 0 to 2^8-2

Used In	Contract Standing Data (1013)

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APPENDIX B: DOCUMENT HISTORY

Version	Date	Change Description
1.0.0	12 Jul 201612 Jul 201612 Jul 201612 Jul 2016	**First Version**

1.1.0	27 Sep 201627 Sep 201627 Sep 201627 Sep 2016	**Specification changes:**
		- The addition of the SBE Template Version that this document refers to is located on the first page
		- Section 2.1.3 Market Data Messages per Channel: addition of Standing data messages for derivatives
		  ○ Contract Standing Data (1013)
		  ○ Outright Standing Data (1014)
		  ○ Strategy Standing Data (1012)
		- In 4.1 Technical Format Fields:
		  ○ New link for description of "Price, Quantity, Ratio And Amount Decimals" for Amount and Quantity
		  ○ Modification of Amount fields.
		- 4.3 Sequence Numbers have been improved
		- 4.6 Instrument Identifier:
		  ○ Added specific ranges applying for Bourse de Luxembourg instruments
		  ○ Adding Standing Data messages for Derivatives
		- 4.5 Added a chapter on how to manage Ticks
		- In 5.4 Snapshot Messages:
		  ○ Replaced "Standing Data (1007)" with Outright and Strategy Standing Data messages
		  ○ Precision regarding the beginning of the day for snapshot, only the Start Of Snapshot and End of Snapshot will be sent
		  ○ Chapter enriched with the behaviour of technical messages
		- Renamed "Ratio/Coefficient Decimals" by "Ratio / Multiplier Decimals"
		- Added expected behaviour for Market Orders in Market Update and Order Update descriptions
		- Removing fields: "Prev Day Capital Traded", "Previous Volume Traded", "Time Lag Euronext UTC", "Time Lag MiFID Regulator UTC", "Instrument Category", "Partition ID" and "Routing Information" from all messages
		- "Prev Day Capital Traded", "Previous Volume Traded" and "Routing Information" are available in files.
		- List of all optional fields as defined by SBE
		Message changes:
		- Start Of Day, End Of Day and Health Status messages description improved with their frequency and Market Data Sequence Number
		- Start Of Day and End Of Day message structure changed

Version	Date	Change Description
		- Health Status (1103): o Added emission frequency (set to 2 seconds) o Added in description that the Market Data Sequence Number will not be incremented for this message - Standing Data (1007): o new section on multi-listed instruments in message description o Added Full Instrument Name Field o Removed: Previous Volume Traded and Prev Day Capital Traded o "Fix Price Tick" and "Tick Size Index ID" moved to the repeating section - Contract Standing Data (1013): "Country Of Exchange" added - Outright Standing Data (1014): o Added a repeating section containing EMM to identify outrights that can be traded at both the COB and OTC o Removed Instrument Group Code, Open Interest and Open Interest Date. They will be available via a new file o "Optiq Segment" removed - Strategy Standing Data (1012): o Added EMM field o Added in description a note to inform that the message is also available on file servers o "Product Code" removed - Timetable (1006) message: Symbol Index has been moved outside the repeating section where the message description has been modified - Market Update (1001) message description enriched with: o Details on Liquidity Provider updates o Iceberg orders o Values sent on BBO removal when there is no more BBO on one side of the order book o "Valuation Trade (49)" has been removed - Market Status Change (1005): o The Trading Mode values have been split into 5 fields: ▪ Trading Mode (with less possible values) ▪ Trading Period ▪ Trading Side ▪ Price Limits ▪ Quote Spread Multiplier o Event Time has replaced Change Time o Change time field has been removed - Price Update (1003): o Added IMP description o Added Alternative Indicative Price (AIP) in possible values - Full Trade Information (1004): o Added a link to MMT website and definition of the version used. o MiFID MIC field has been merged with Venue. Description of Venue has been updated accordingly

Version	Date	Change Description
		- Real Time Index message (1008): Message description completed - Exchange Announcement (1010): o "Message Number" field modified from 2 bytes to 1 byte and moved closer to "Number of Messages" field o "Line break is done with '@' and page breaks with '#'" has been replaced by "All line break and special characters are the ones specified in Unicode" - Full Trade Information messages is located within the snapshot: rules regarding the snapshot message changed - Snapshot Statistics (2009): 9 new fields: o Variation Last Price o Open Price o Trade Count o Last Traded Price o Off Book Cumul Qty o Off Exchange Cumul Qt Off exchange cumulative o On Book Auction Cumul Qty o On book Continuous Cumul Qty o On and Off Book Cumul Qty **Field changes:** - "Block Length", "Number Of Messages", "Packet Flags", "Percentage of Capitalization", "Price Multiplier Decimal" and "Price Multiplier" fields become Numerical - "Instrument State" and "Exchange Code" become Enumerated - "Stats Update Value" description improved with decimal fields to use for each update type - Field descriptions improved for "Order Entry Qualifier", "Symbol Index" and "Order Price" - "(To be calculated with the Quantity Decimals)" added for Cumulative Quantity fields. - All updates for indices have been removed in "Transaction Type" field - EMM defined as Euronext Market Mechanism has been replaced by Exchange Market Mechanism - "Order Price" field origin has been changed from Cash to Cash and Derivatives - "Order Priority" field description now contains the uniqueness criteria - "Instrument Event Date" and "Date Of Last Trade" type changed to "Date" - "Original Order Priority" renamed as "Order Reference Number" - "Session" field: possible value '10' removed and '0' added - "Last traded Price" description improved with the field decimal to apply - How is formatted the timestamp described for: "Snapshot Time", "Trade Retransmission End Time" and "Trade Retransmission Start Time" - "Priority Indicator" description enriched - Peg orders added in "Order Type"

Version	Date	Change Description

		- "Main Depositary" now on 5 characters
		- "Guarantee Indicator":
		  o Value 0 and 1 switched
		  o Added value 8 for lending and borrowing
		- "Wholesale Trade Type":
		  o Name changed to "Available Wholesale Trade Type"
		  o Description improved
		- "WhRFC Improvement Period", "Minimum Quantity For Reactor", "Minimum Quantity For Initiator" and "WhRFC Days Before Expiry" description changed
		- "Trade Qualifier" possible values has been enriched
		- "Trading At Last" "Currency Coefficient", "Last Adjusted Closing Price", "Maximum Decimals In Quantity", "Mnemonic", "Nominal Market Price", "Instrument Group Code", "Guarantee Indicator", "Quantity Notation", "Trading Currency Indicator", "Settlement Delay", "Full Instrument Name", "Notional Currency", "First Settlement Date", "Strike Currency" and "Strike Currency Indicator" are cash only
		- "Market Data Update Type" following possible values are cash only:
		  o "Request for Quote Bid"
		  o "Request for Size Bid"
		  o "Request for Size Offer"
		  o "Request for Size"
		  o "Request for Quote Offer"
		- "Last Trading Date", "Contract Symbol Index" and "Option Type" are derivative only
		- "Phase Time" and "Scheduled Event Time" changed in number of seconds since the beginning of the day
		- "Market Data Update Type": possible values removed:
		  o 33 - External Match Trade
		  o 43 - Strategy Leg External Match Trade
		- "Trade Type": possible values removed:
		  o 8 - External Match Trade
		  o 17 - Strategy Leg External Match Trade
		- Stats Update Type: possible value "Cumulative Quantity" replaced by:
		  o "Off Book Cumul Qty"
		  o "Off Exchange Cumul Qty"
		  o "On Book Auction Cumul Qty "
		  o "On book Continuous Cumul Qty "
		  o "On and Off Book Cumul Qty"
		- "Currency Ratio" replaced by "Currency Coefficient"
		- "Euronext Code" renamed "Instrument Trading Code"
		- "EMM" possible values have been renamed
		- "First Settlement Date", "Last Trading Date", "Currency Coefficient", "Trading Currency Indicator" and "Strike Currency Indicator" descriptions have been improved

Version	Date	Change Description
1.2.0	5 Dec 2016	**Specification changes:** - Section 2.1.3 Market Data Messages per Channel: Specify that Cash represents also BdL and tables split into 3 different tables - Section 2.4 Compression: Added Compression behaviour and LZ4 confirmed - Section 2.8.1 Clear the Book: Fields to clear specified - Section 2.9 Cancellations: Adding new section describing trade cancellation, Order cancellation and limit cancellation - Section 2.11: Description improved - Section 4.1 Technical Format Fields: Added description for Decimal Places - Section 4.6 Instrument Identifiers: Added behaviour in case of corporate action **Message changes:** - "Standing Data" (1007): Description updated by removing: "For phase 1 it will be populated only once, only for the COB." - "Market Update" (1001): Description improved with the update types per channel - "Price Update" (1003): change for undetermined IMP the values are not 0 but null - "Statistics" (1009): Description improved with the update types per asset class **Field changes:** - "Strike Price Flex Increment" description improved with the Decimal field to apply on - "Nominal Market Price" is now Price Format - "Trade Type": Trade Cancellation is now for both Cash and Derivatives - "Start Time Vwap" and "End Time Vwap" are cash only fields - "Market Data Price Type", Official YDSP is Derivatives Only - "Scheduled Event Date" is now in number of nanoseconds since 1970/01/01 - "Order Reference Number" description improved by adding for phase 1 the order date with the order id
1.3.0	7 Feb 2017	**Specification changes:** - Renaming Retail Matching Service by Best of Book - Functional Type "Timestamp" split into "Epoch Time in Nanoseconds" and "Intraday Time in Seconds" - Section 1.5 Transition Phase: Added the list of Full Trade Information fields that will be filled with null value until phase 2 - Section 1.5 Transition Phase: section updated - Section 1.6 Features delivery schedule: section added - Section 2.1.3 Market Data Messages per Channels: o Added for note 3 and 4 that there is also Clear-Book (254) o Removing Market Status Change message in Trade and Referential channel in both RT and Snapshot o Updated and Replace BBO channels on cash instrument by a Full Order Book Market Update (current BBO will also be sent on Full Order Book Order Update channel) - Section 2.1.3.4 Real Time Channels for OTC Trade Reporting: new table has been added for OTC channel

Version	Date	Change Description
		- Section 2.1.3.5 Snapshot Cash: Adding columns for SI and BoB - Section 2.1.3.8 Snapshot Channel OTC Trades added - Section 2.2 Snapshot: Improved with full new section - Section 2.4 Compression: added the maximum length of uncompressed packet - Section 2.5 Shaping: Added a simplified example of shaping - Section 3.2 Market Data Packet Header: description of bits improved - Section 3.3 SBE Message Structure: o Update maximal values for each fields of SBE Header and Repeating Section Header o Change order in repeating section header for the repeating section count and the size of each repeating section - Section 4.1 Technical Format Fields: o Section reviewed o Added the null value for strings o Added new column for null value o Bitmap and boolean description improved - Section 4.6 Instrument Identifier: o 4.6.1 Contract Symbol Index description updated o New subsection for AMR added - Section 5.4 Snapshot Messages: o Number of Full Trade Information messages in snapshot provided o Exchange Announcement is not snapshotted anymore **Message changes:** - Market Update (1001): o "Number Of Orders" field added o Description for BBO improved to include MO and MTL o "Market Data Update Type" value "SI Trade" added o Six new possible values added in "Market Data update Type" field: "ETF-MTF NAV Trade", "ETF-MTF NAV Dark Trade", "Execution Summary Buy", "Execution Summary Sell", "High LP Collar" and "Low LP Collar" - Order Update (1002): o New possible value "Average Price" in Order Type field for the RFQ related orders (only for phase 2) o Message description improved with the cases that have quantity set to null o New possible value "Modification of order with loss of priority" added in field "Market Data Action Type" o Value "Modification of order" renamed as "Modification of order without loss of priority" in field "Market Data Action Type" o "Order Reference Number" field renamed in "Previous Priority" - Price Update (1003): Field o "Price" is now optional o Description improved with all update types that provide a quantity set to null

Version	Date	Change Description
		○ In “Market Data Price Type” field, update “Official YDSP” is Derivatives Only and not both - Full Trade Information (1004): ○ Following fields are now optional: "Publication Date Time", "MiFID Price Notation", "MMT Market Mechanism", “MMT Publication Mode”, "MMT Trading Mode", "MMT Transaction Category", "MMT Negotiation Indicator", "MMT Agency Cross Trade Indicator", "MMT Modification Indicator", "MMT Benchmark Indicator", "MMT Special Dividend Indicator", "MMT Off Book Automated Indicator", "MMT Contribution to Price", "MMT Algorithmic Indicator", "MMT Post Trade Deferral", "MMT Duplicative Indicator", "Effective Date Indicator", “Notional Currency”, “Trade Type”, “MiFID Currency”, “MiFID Notional Amount”, “MiFID Instrument Id” and “MiFID Instrument Id Type” ○ Following fields are set to null for step 1 and field descriptions modified accordingly: “MiFID Price Notation”, “MiFID Qty in Msrmt Unit Notation”, ”MiFID Quantity Measurement Unit”, “Publication Date Time”, “MMT Market Mechanism”, “MMT Trading Mode”, “MMT Transaction Category”, “MMT Negotiation Indicator”, “MMT Agency Cross Trade Indicator”, “MMT Modification Indicator”, “MMT Benchmark Indicator”, “MMT Special Dividend Indicator”, “MMT Off Book Automated Indicator”, “MMT Contribution to Price”, “MMT Algorithmic Indicator”, “MMT Post Trade Deferral” and “MMT Duplicative Indicator” ○ “Venue Of Publication” has been removed ○ Trade Qualifier has 2 new possible values (only for phase 2): “NAV Trade expressed in bps” and “ NAV Trade expressed in price currency” ○ “Trade Type” value “Valuation Trade” removed ○ “MiFID Emission Allowance Type” and “Market Of Reference MIC” values added ○ Following fields are now cash only: “MMT Algorithmic indicator”, “MMT Duplicative Indicator”, “MMT Negotiation Indicator” and “MMT Special Dividend Indicator” - Timetable (1006): ○ “Instrument State” field renamed into “Phase Id” and value halted removed ○ “EMM”, “Symbol Index” and “Pattern ID” fields are now optional ○ “Trading Side” field removed ○ “Price Limits” and “Quote Spread Multiplier” fields removed - Market Status change (1005): ○ Value “Both Sides” added in field “Trading Side” ○ Value “Uncrossing” added in field “Scheduled Event” ○ Value “All Possible Values” replaced by “Opening”, “Standard” and “Closing” in field “Trading Period” ○ “Instrument State” renamed in “Book State” and following values added: “7 – Continuous Uncrossing”, “8 – Suspended” and “9 – Reserved” ○ Adding possible values in Status Reason field: “Suspension Post Creation”, “Suspension due to Underlying”, “Outside of LP quotes” and “Technical Suspension (BdL Only)” - Standing Data (1007) message: ○ “Partition ID”, “Nominal Currency” and “Issue Price” added

Version	Date	Change Description
		○ "Nominal Market Price" and "Repo Settlement Price" removed ○ Following field are now optional: "Mnemonic", "Type of Market Admission" and "Pattern ID" ○ "Instrument Group Code" field is now mandatory ○ "Market Model" field added ○ "CFI" field is mandatory not optional ○ "MIC" field is now Mandatory - Statistics (1009) message: ○ EMM field removed ○ Added a description for each Stats Update Type ○ "Stats Update Value" field is optional and optional case described in message description - Contract Standing Data (1013): ○ Addition of: "Partition ID", "Outright LIS Trade Threshold ", "Strategy LIS Trade Threshold ", "Outright G.Cross Threshold ", "Strategy G.Cross Threshold ", "Premium Pricing Threshold", "Tick Value" and "Premium Pricing Tick Size" ○ "Tick Size Denominator" renamed in "Instrument Decimals Ratio" ○ "Instrument Numerator EDSP" renamed in "Instrument EDSP Tick Size" ○ "Tick Size Numerator" renamed in "Instrument Tick Size" ○ "Strike Price Denominator" renamed in "Strike Price Decimals Ratio" ○ "Instrument Numerator Settlement" renamed into "Instrument Settlement Tick Size" ○ "Lot Size" and "Underlying Expiry" field added ○ "Strategy Code" field added in a repeated section and is optional ○ "Instrument Unit Expression" field added and passed to cash and derivatives - Outright Standing Data (1014): following fields are now optional: "Option Type" and "Strike Price" - Strategy Standing Data (1012): ○ "Instrument Trading Code" added ○ "Price / Index Level Decimal", "Ratio / Multiplier Decimal", "Quantity Decimal" and "Amount Decimal" have been removed - Real Time Index (1008): Description review to correct Index Level types in description - Index Summary (1011): Following fields are now optional: "Confirmed Reference Level", "Confirmed Reference Time", "Liquidation Level" and "Liquidation Time" - "Exchange Announcement" (1010): Symbol Index is now optional - "Snapshot Statistic" (2009) message: Message removed, statistics in snapshot will be provided using same message structure as real time message "Statistics" (1009) - "Start Of Snapshot" and "End Of Snapshot": field Last Market Data Sequence Number is optional
		Field changes: - "Stats Update Type": ○ The possible value "Last Trade Price" renamed as "Last Traded Price" ○ "Off Exchange Cumulative Quantity" value removed

Version	Date	Change Description

		- "Stats Update Value": field type is now a Signed Numerical
		- "On book Continuous Cumul Qty" renamed with an uppercase b: "On Book Continuous Cumul Qty"
		- "MiFID Price": note 4 removed (left padding with null value when the value is PNDG)
		- "EMM" field has a new possible value only for phase 2: "8 - ETF MTF - NAV Central Order Book" and Naming of possible values reviewed
		- "MiFID Execution ID": description improved with the details on how the value is generated
		- "Previous Priority": description for phase 1 changed. It is now the concatenation of the order id and the order date
		- "Currency Coefficient" description has been improved with the use of the decimal scale code
		- "Strike Price Flex Increment" description improved with the Decimal field to use
		- "Trade Type":
		  o possible values "Delta Neutral Trade - Future Leg", "Total Traded Volume" and "Hidden Quantity" added
		  o Value "26 - Delta Neutral - cash leg" is Cash Only and not Cash and Derivatives
		- "Market Data Price Type": possible values "Provisional Daily", "Provisional Market Close" and "Provisional Expiry" removed
		- Technical type for field "Last Adjusted Closing Price" is now "signed integer 64"
		- "Par Value" field is now an amount instead of a price
		- "Snapshot Time" field description improved
		- "CFI" field description improved with the correct ISO and values removed. Please refer to the according ISO
		- "MIC" field is Cash and derivatives and not Cash Only and completed with derivatives values
		- Continuous Uncrossing value added in fields: "Book State" and "Phase Id"
		- "Order Entry Qualifier" a new value added "Cancel Only"
		- "Order Type":
		  o Possible values "Average Price" added
		  o Possible value "Stop / Stop on quote" renamed as "Stop-market or Stop-market-on-quote"
		  o Possible value "Stop limit / Stop on quote limit" renamed as "Stop-limit or Stop-limit-on-quote"
		- Following fields have been set to mandatory: "Available Wholesale Trade Type", "Trading Mode", "Trade Qualifier"
		- EMM field, value "Primary Market" has been removed
		- Trading Mode Field renamed as Phase Qualifier: the values changed (+1 for each value and value "0" replaced by "0 - No Qualifier") and it is now a 16bits fields (instead of 32)

1.4.0	15 Mar 2017	**Specification changes:**
		- In "Preface" part, a new scope "Trade Reporting and Publication" has been added.
		- Section 1.6 Features Delivery Schedule:
		  o New feature for SI short trade in Market Update added
		  o Statistics latency between each message added as a feature for phase 2
		  o In EMM field, the value 254 will be changed to 99 for phase 2

Version	Date	Change Description

		- Section 2.1.1 Market Data Channels: Types of data updated
		- Section 2.1.3 Market Data Messages per Channel:
		  o added a specific section for BoB and SI in real time and snapshot
		  o removed Standing Data and Contract Standing Data crosses from snapshots
		  o 2.1.3.10 title section modified to clarify OTC (replaced by Off-Exchange Off-Book)
		- Section 2.2 Snapshots:
		  o Replaced "Last Market Data Sequence Number" that is **lower** or equal to the MDSN identified just before on real time" by ""Last Market Data Sequence Number" that is **Higher** or equal to the MDSN identified just before on real time"
		  o Market Status Change Removed from BoB and SI snapshotted messages
		  o Warrants specificities added with Derivatives
		- Section 2.4 Compression: Improved with LZ4 technical specifications (it is used in block mode with no headers)
		- Section 2.8.1 Clear the Book: Implied updates added in the list of update types to clear on a clear book
		- Section 2.9.2 Order Cancellation with Order Update message: Correction of the field value used in phase 1 and updated with the value to use in phase 2
		- Section 3.2 Market Data Packet Header
		  o Bit 1 to 3: Bit set every morning will be set to 0 instead of 1
		  o Notes added on sizes
		- Section 4.2 Date And Time Conventions updated with the integer time expressed as hhmmss
		- Section 5.4 Snapshot Messages: Row for Price Update improved and statistics can be sent in more than one packet
		Message changes:
		- Full Trade Information (1004):
		  o "MiFID Instrument ID Type" and "MiFID Price Notation" fields are now with a format type as "Text" instead of "Alphanum id"
		  o In "Trade Type" field the value "34 Delta Neutral Trade - Underlying Future Leg" is now "Derivatives Only" instead of "Cash and Derivatives"
		  o "MiFID Price Notation": new possible value added (BAPO –Basis Point)
		  o "MiFID Emission Allowance Type": OTHR added in the possible values (for others)
		  o "Transaction Type" is now optional (not used for derivatives)
		- Contract Standing Data (1013):
		  o "Throttle for Incoming Orders" field description improved
		  o "Instrument Decimals Ratio" and "Strike Price Decimals Ratio" field description improved
		- Outright Standing Data (1014): "CFI" field is optional
		- Strategy Standing Data (1012): field "Contract Symbol Index" added
		- Exchange Announcement (1010): "Message Title" field, description has been improved
		- Trade Retransmission End (1105): Sending rules corrected
		- Price Update (1003): Description improved with all update types that provide a quantity set to null

Version	Date	Change Description

		- Statistics (1009): No Variation Last Traded Price for Indices (removed in the table) and sending rules for indices added
		- Order Update (1002):
		  o "Peg Offset" field has been added
		  o Opening Order removed from the list of field used to order the book in message description
		- Real Time Index (1008): "Percentage of Capitalization" and "Number Of Traded Instruments in Index" are now Optional (for BdL)
		Field changes:
		- In "Phase Qualifier" field, description has been updated
		- In "EMM" field, the word "APA" from value "Euronext APA off-exchange trade reports" has been removed
		- "Premium Pricing Tick Size" description corrected (it is not premium over the threshold but premium under the threshold)
		- "Market Data Update Type" and "Trade Type" fields: "Hidden Quantity" value not used any more
		- "Trade Type": "Total Traded Volume" value not used any more
		- "Order Priority" description updated with behaviour for phase 2
		- "Previous Priority" description updated for phase 2
		- "Phase Time" way to provide time changed (from number of sec to hhmmss)
		- "Strike Price Decimals Ratio" and "Quantity Notation" fields description improved
		- "Instrument Name" is cash only instead of Cash and Derivatives
		- "Book State" values "8 – Suspended" and "9 – Reserved" are for future use
		- "Instrument Decimals Ratio" description improved
		- "Optiq Segment": new value "10 – Trade Reporting and Publication" added
		- "Strategy Code": New value "U - Inter Commodity Spread" added

1.4.1	15/05/2017	**Specification changes:** - In Price Update message, value "14 = Indicative Matching Price" is no longer sent in Post Trade channel, but in Pre Trade instead. Refer to chapter 2.1.3 Market Data Messages per Channel and 2.2 Snapshots for table updates - Section 2.1.3.2 Real Time Channels for BoB and SI and 2.1.3.7 Snapshot Channels for BoB and SI: SI trade removed - Section 2.1.3.5: Title changed from "Real Time Channel for OTC Trade Reporting" to "Real Time Channel for Off-Exchange Off-Book Trades" - Section 2.2 Snapshot: chapter on how to use the information type - Section 2.8.1 Clear the Book: Collars added in the list of updates to clear - Section 2.9.1 Trade Cancellation: "MMT Modification Indicator 'CANC – Trade Cancellation'" removed since it will be available only in phase 2. - Section 2.12 Production Timetable: Times added - Section 4.5 Tick Size: updated with new names for derivatives fields - Section 4.7.11 … Determine the option underlying expiry: added

Version	Date	Change Description

		Message changes:
		- Health Status (1103): Description improved with "this message is alone in packets"
		- Order Update (1002): Description improved with:
		  - The unique identifier key for the order rank added
		  - Order priority regarding the order type updated (MTL and Market Orders are on the same priority and market on opening order removed)
		  - Phase 2 – Order Update with loss of priority updated
		- Full Trade Information (1004): MiFID Clearing Flag is now optional
		- Contract Standing Data (1013): Following fields are now optional when it contains underlying referential: "Contract Event Date", "Contract Type", "Price / Index Level Decimals", "Quantity Decimals", "Amount Decimals", "Ratio / Multiplier Decimals", "MIC", "Country Of Exchange", "Order Type Rules", "Settlement Method", "Available Wholesale Trade Type", "Strike Price Decimals Ratio", "Premium Pricing Tick Size", "Premium Pricing Threshold", "Tick Value", "Instrument EDSP Tick Size", "Outright LIS Trade Threshold", "Strategy LIS Trade Threshold", "Outright G.Cross Threshold" and "Strategy G.Cross Threshold"
		- Outright Standing Data (1014): Field "Underlying Instrument Trading Code" added
		- Exchange Announcement (1010): Field "Message Title" is Cash only and optional
		- Start Of Snapshot (2101): description updated with the case of Last Market Data Sequence Number set to null
		Field changes:
		- Market Model is Cash only and not Cash and Derivatives
		- Issuing Country field: the ISO used has been changed (3166 is the one to use)

1.4.2	01/09/2017	**Specification changes:**
		- Section 1.5: Transition Phase section has been updated for MiFID II delivery
		- Section 2.1.3.8 Snapshot Channels for Warrants and Derivatives: No Contract Standing Data sent in snapshot. Cross removed from the table
		- Section 2.2 Snapshots: In Market Update, the information type BBO was composed of BBO and implied. It has been split into BBO on one side and Implied Limits on the other side.
		- Section 2.12 Production Timetable: Indices specificities added in the table and Optiq MDG system close time on Derivatives has been updated
		- Section 3.3 SBE Message Structure: Details on SBE backward and Forward compatibility added
		- Section 4.6.1 Symbol Index: maximum authorized value updated to 4,289,999,999
		- Section 5.4 Snapshot Messages: last Market Status Change is snapshotted per Symbol Index and EMM. Precision added.
		Message changes:
		- Market Update (1001): In table specifying when is used each Market Data Update Type per Segment, cross has been added for "Option and Futures" and "Commodities" on lines:
		  - 34 - Exchange for Swap Trade (Derivatives Only)
		  - 37 - Strategy Leg Conventional Trade (Derivatives Only)
		  - 41 - Strategy Leg Against Actual Trade (Derivatives Only)
		  - 44 - Strategy Leg Exchange For Swap Trade (Derivatives Only)
		  - 53 - Delta Neutral Trade - Underlying Future Leg (Derivatives Only)

Version	Date	Change Description

		- Full Trade Information (1004):
		  - MiFID Price is optional for some trade types due to market convention. Message description updated accordingly
		  - Trade Qualifier field is now optional
		- Statistics (1009):
		  - Description updated to inform that no statistics are generated for Indices when the index level type is 6 or 7
		  - The Last Traded Price statistics is also computed for French and Dutch Funds.
		- Price Update (1003): Value 30 – Net Asset Value (NAV) (Cash only) has been added in field Market Data Price Type
		- Strategy Standing Data (1012): Leg Price field is now optional
		- Timetable (1006): Phase Qualifier field is now optional, Trading Period and Session fields are now mandatory
		Field changes:
		- Settlement Delay description improved with the value for X (D+2) and Z (D+3)
		- Number Of Orders is now Cash and Derivatives
		- Scheduled Event Time description has been improved to underline different behaviour between cash and derivatives
		- Leg Ratio: No decimal field to be used with. Amount decimal has been removed from the description
		- MIC: list of values updated
		- Strike Price Decimal Ratio description has been updated
		- Packet Flags description has been updated
		- Following Bitmap fields have been updated:
		  - Available Wholesale Trade Type
		  - Phase Qualifier
		  - Order Type Rules
		  - Trade Qualifier
		- Lot Size description has been updated
		- First Settlement Date description has been updated
		- MMT Negotiation Indicator has 2 new possible values as defined in MMT Typology 3.01
		- Market Data Update Type has 5 new possible values for Wholesales RFC

1.4.3	08/01/2018	**Specification changes:** - Scope: Trade Publication and Reporting are no longer in the scope of this document with MiFID II starting. Please Refer to dedicated specifications for trade reporting and publication. - Section 2.1.1 Market Data Channels: in table, row “Equity Off-Exchange Trade Reports” removed. Please to dedicated specifications for trade reporting and publication. **Message changes:** - In Market Udpate (1001): Details on Wholesales Request For Cross (RFC) added including cross in Best Bid and Offer columns in Market Data Update Types table. **Field changes:** - Market Data Update Type: “76 = Updated Bid on Wholesale RFC” and “77 = Updated Offer on Wholesale RFC (Derivatives Only)” are for future use

Version	Date	Change Description

1.5.0	21/06/2018	**Specification changes:**
		- All references to Systematic Internalizer (SI) removed
		- Section 2.2 Snapshots: “or equal” added in the sentence: Discard all the real time messages with a MDSN lower or equal than the Last Market Data Sequence Number of the Start or End Of Snapshot message.
		- Section 2.3 Conflation: All the chapter has been replaced by: “Performance analysis studies will be conducted in order to assess the need and the type of bandwidth optimization.”
		- Section 2.7 System Failure: precisions added on Market Data Sequence Number in case of MDG restart.
		- Section 4.2 Date and Time Conventions: precision for derivatives is microsecond as for Cash. It will be a nanosecond precision once UTP is replaced by Optiq ME
		- Section 4.7.8 … Manage BBO and Implied Prices: Section splitted and details provided on how to manage BBO and Implied prices.
		Message changes:
		- Contract Standing Data (1013):
		  - Following fields added for Total Return Futures (TRF) except last two: “Pricing Algorithm”, “Underlying Subtype”, “Mother Stock ISIN”, “Reference Future Contract SecGrp”, “Instrument Tick Size Long” and “Tick Value Decimals”
		  - “Instrument Tick Size” has been deprecated and replaced by the “Instrument Tick Size Long” because the field was too short
		- Outright Standing Data (1014): field “Days To Expiry added” for Total Return Futures (TRF)
		- Strategy Standing Data (1012): field “CFI” added
		- Market Update (1001): Details on Wholesales RFC added (derivatives only)
		- Full Trade Information (1004): fields “MiFID Emission Allowance Type” and “Market Of Reference MIC” are deprecated since version 6 of the SBE template
		- Standing Data (1007): field “Fix Price Tick” is deprecated since version 6 of the SBE template
		Field changes:
		- Market Data Update Types:
		  - Following values have been deprecated: “20 = New Bid SI”, “21 = New Offer SI”, “22 = Updated Bid SI”, “23 = Updated Offer SI” and “47 = SI Trade”
		  - Following field have been added: "82 - Large in Scale (LiS) Trade in index points (Derivatives Only)", "83 - Large in Scale (LiS) Package Trade in index points (Derivatives Only)" and "84 - Strategy Leg Large in Scale (LiS) Trade in index points (Derivatives Only)"
		  - Types 82,83,84 expressed in basis points (and not in index points)
		- Trade Type:
		  - Following value have been changed to Deprecated “21 = SI Trade”
		  - Following field have been added: "42 - Large in Scale (LiS) Trade in basis points (Derivatives Only)", "43 - Large in Scale (LiS) Package Trade in basis points (Derivatives Only)" and "44 - Strategy Leg Large in Scale (LiS) Trade in basis points (Derivatives Only)"
		- EMM: following value has been deprecated “50 = Societe Generale Systematic Internaliser (SI)”
		- Strike Price: desciprtion updated to specify the field decimal to use with this field.
		- Lot Size: description improved
		- Price Algorithm: description updated to add new value: “MOC” (Market On Close)
		Miscellaneous:
		Updated SBE version (distinct from internal DDM version).

Version	Date	Change Description
1.5.1	13 Sep 2018	Page **1** : • **SBE version** changed from **1.19.4** to **1.19.5** Section **4.6.2 Automated Market Reference (AMR):** • New paragraph about **AMR & MAX STRIKE PRICE LIMIT** added Section **6. Field Description** : • **Strike Price** field description updated : the field is to be calculated with **Price/Index Level Decimals**
1.5.2	21 Sep 2018	**Section 5.3.1 - Market Data Update Type** updated : - From "82 – Large in Scale (LiS) Trade in index points (Derivatives Only)" to "82 – Large in Scale (LiS) Trade in **basis points** (Derivatives Only)". - From "83 – Large in Scale (LiS) Package Trade in index points" to "83 – Large in Scale (LiS) Package Trade in **basis points**". - From "84 – Strategy Leg Large in Scale (LiS) Trade in index points" to "84 – Strategy Leg Large in Scale (LiS) Trade in **basis points**".

Version	Date	Change Description
1.6.0	16 Jan 2019	*[SBE template 7]* **<u>The following sections have been removed:</u>** §2.1.3.5 – Real Time Channels for Off-Exchange Off-Book Trades §2.1.3.10 – Snapshots Channels for Off-Exchange Off-Book Trades **<u>The following section has been updated:</u>** §2.8 – Book and Trades Retransmission §3.2 – Market Data Packet Header **<u>The following messages have been updated (from SBE Template):</u>** **Technical Notification:** Added | **Trade Retransmission Start:** Removed | **Trade Retransmission End:** Removed | **Exchange Announcement:** Removed | **Order Update:** Removed |**Timetable:** Removed | **Standing Data:** Removed | **APA Quotes:** Removed | **APA Standing Data:** Removed | **APA Full Trade Information:** Removed | **FullTradeInformation:** Updated *SymbolIndex* presence from Mandatory to Optional ; Updated *TradeQualifier* presence from Optional to Mandatory ; Added one empty repeating section at the end of the message | **StrategyStandingData:** Removed SinceVersion attribute for *ContractSymbolIndex, CFI* |**ContractStandingData:** Removed SinceVersion attribute for *TickValueDecimals, PricingAlgorithm, UnderlyingSubType, MotherStockISIN, ReferenceFutureContractSecGrp, InstrumentTickSizeLong* ; Removed Deprecated attribute for *InstrumentTickSize* ; Update *InstrumentTickSizeLong* presence from Mandatory to Optional |**OutrightStandingData:** Removed SinceVersion attribute for *UnderlyingInstrumentTradingCode, DaysToExpiry* **<u>The following fields have been updated (from SBE Template):</u>** *TechnicalNotificationType:* Added | *ScheduledEvent:* Renamed value '1' from 'Unhalt' to 'Reopening' ; Renamed value '3' from 'Uncrossing' to 'Resumption of Trading' ; Added value '12' | *StatusReason:* Removed values '1', '2', '3', '6', '17', '18', '19' ; Renamed value '7' from 'Automatic Unhalting by Matching Engine' to 'Automatic Reopening', Renamed value '20' from 'Suspension Post Creation' to 'New Listing', Renamed value '21' from 'Suspension due to underlying' to 'Due to underlying', Renamed value '23' from 'Technical Suspension' to 'Technical' |*MarketDataPriceType:* Removed value '11' ; Added value '31' | *MarketDataUpdateType:* Removed values '20', '21', '22', '23', '47', '62', '68', '69' ; Added values '79', '80', '81' ; Removed SinceVersion attribute for values '82', '83', '84' | EMM: Removed value '50', '254' ; Added value '99' | *OrderEntryQualifier:* Removed value '4' | *TradeType:* Removed values '21', '35' ; Added values '37', '38', '39', '40' ; Removed SinceVersion attribute for values '42', '43', '44' | *OptiqSegment:* Added values '11', '12, '13' ; Removed SinceVersion attribute for value '10' | *ExerciseStyle:* Added values '2', '3', '4' | *TradeQualifier:* Renamed bit '1' from 'Opening Trade' to 'First Trade Price' |*GuaranteeIndicator:* Removed | *EfficientMMTMarketMEchanism:* Removed | *EfficientMMTTradingMode:* Removed | *EfficientMMTTransactionCategory:* Removed | *EfficientMMTNegotiationIndicator:* Removed | *EfficientMMTAgencyCrossTradeIndicator:* Removed | *EfficientMMTModificationIndicator:* Removed | *EfficientMMTBenchmarkIndicator:* Removed | *EfficientMMTSpecialDividendIndicator:* Removed | *EfficientMMTOffBookAutomatedIndicator:* Removed | *EfficientMMTContributiontoPrice:* Removed | *EfficientMMTAlgorithmicIndicator:* Removed | *EfficientMMTPublicationMode:* Removed | *EfficientMMTPostTradeDeferral:* Removed | *EfficientMMTDuplicativeIndicator:* Removed | *TaxCode:* Removed | *TypeOfMarketAdmission:* Removed | *PhaseID:* Removed | *OrderType:* Removed | *QuoteUpdateType:* Removed | *RepoIndicator:* Removed | *StrikeCurrencyIndicator:* Removed | *TradingCurrencyIndicator:* Removed | *MarketDataActionType:* Removed | *MarketModel:* Removed