Celoxica
pure acceleration

GMAC - CME Binary V3 Mapping

R2017-1.1 | Confidential

About This Document

This document describes the mapping between the exchange and the GMAC V3 messages.

Copyright Information

Celoxica and the Celoxica logo are trademarks of Celoxica Limited.

All other products or services mentioned herein may be trademarks of their respective owners.

Neither the whole nor any part of the information contained in, or the product described in, this document may be adapted or reproduced in any material form except with the prior written permission of the copyright holder.

The product described in this document is subject to continuous development and improvement. All particulars of the product and its use contained in this document are given by Celoxica Limited in good faith. However, all warranties implied or express, including but not limited to implied warranties of merchantability, or fitness for purpose, are excluded.

This document is intended only to assist the reader in the use of the product. Celoxica Limited shall not be liable for any loss or damage arising from the use of any information in this document, or any incorrect use of the product. The information contained herein is subject to change without notice and is for general guidance only.

Copyright © 1991 - 2017 Celoxica Limited. All rights reserved.

Sales	sales@celoxica.com
Customer Support	support@celoxica.com
Website	http://www.celoxica.com

UK Head Office

Celoxica Limited

20 Craven Terrace

London

W2 3QH, UK

Phone: +44 (0) 20 7262 2008

US Head Office

Celoxica Inc.

275 Madison Avenue, Suite 404

New York, NY

10016, USA

Phone: +1 (0) 212 880 2075

Celoxica
pure acceleration

Content

1. Mapping 7
1.1 Introduction 7
1.2 Source 7
1.3 PRF Clearing Files Mapping 7
1.4 Exchange Messages Mapping 7
1.5 GMAC Messages Mapping 8
1.6 Book Building 10
1.6.1 MBP Book 10
1.6.2 MBO Book 10
1.7 Certification 10
1.8 GMACPacketHeader 10
1.9 GMACExtensionCMEBinaryTemplateHeader 11
1.10 GMACExtensionCMEBinaryMatchEventInd 11
1.11 GMACMessageReferenceSecurityV3 11
1.11.1 Message Security Definition Mapping 11
1.11.2 Futures PRF Clearing File Mapping 14
1.11.3 Options PRF Clearing File Mapping 16
1.12 GMACExtensionCMEBinaryFeedType 17
1.12.1 Message Security Definition Mapping 17
1.13 GMACExtensionCMEBinaryInstAttrib 18
1.13.1 Message Security Definition Mapping 18
1.13.2 Futures PRF Clearing File Mapping 18
1.13.3 Options PRF Clearing File Mapping 18
1.14 GMACExtensionCMEBinarySecDefMain 19
1.14.1 Message Security Definition Mapping 19
1.14.2 Futures PRF Clearing File Mapping 19
1.14.3 Options PRF Clearing File Mapping 20
1.15 GMACExtensionCMEBinaryTickRules 21
1.15.1 Futures PRF Clearing File Mapping 21
1.15.2 Options PRF Clearing File Mapping 21
1.16 GMACMessageSnapshotUpdateV3 22
1.16.1 Message Snapshot Full Refresh Mapping 22
1.17 GMACMessageOrderDepthV3 22
1.17.1 Message Snapshot Full Refresh Mapping 22
1.17.2 Message Incremental Refresh Mapping 23
1.18 GMACMessageOHLCV3 24
1.18.1 Message Snapshot Full Refresh Mapping 24
1.18.2 Message Incremental Refresh Mapping 26
1.19 GMACMessageTradeV3 28
1.19.1 Message Snapshot Full Refresh Mapping 28
1.19.2 Message Incremental Refresh Mapping 28
1.20 GMACMessageInformationV3 29
1.20.1 Message Snapshot Full Refresh Mapping 29
1.20.2 Message Incremental Refresh Mapping 29
1.21 GMACMessageTradingStatusV3 30
1.21.1 Message Security Status Mapping 30
1.21.2 Message Snapshot Full Refresh Mapping 31
1.22 GMACMessageQuoteRequestV3 32
1.22.1 Message Quote Request Mapping 32
1.23 GMACMessageOpenInterestV3 32
1.23.1 Message Snapshot Full Refresh Mapping 32
1.23.2 Message Incremental Refresh Mapping 33
1.24 GMACMessageImbalanceV3 33
1.24.1 Message Snapshot Full Refresh Mapping 33
1.24.2 Message Incremental Refresh Mapping 34
1.25 GMACExtensionCMEBinaryMatchOrders 34
1.25.1 Message Incremental Refresh Mapping 34
1.26 GMACMessageResetV3 35
1.26.1 Message Incremental Refresh Mapping 35
1.27 GMACMessageOrderUpdateV3 35
1.27.1 Message Snapshot Full Refresh Mapping 35
1.27.2 Message Incremental Refresh Mapping 36
1.28 GMACMessageOrderDecreaseV3 37
1.28.1 Message Incremental Refresh Mapping 37

1.29 GMACExtensionCMEBinaryOrderSnapshot.....37
1.29.1 Message Snapshot Full Refresh Mapping.....37

Revisions

Revision	Date	Description of Changes
R2017-1.1	24 JUL 2017	Release R2017-1.1 - Updated GMACMessageTradeV3 mapping for Incremental Refresh message - Updated GMACMessageReferenceSecurityV3 mapping for Security Definition message - Updated GMACMessageOHLCV3 mapping
R2017-1.0	24 MAR 2017	Release R2017-1.0 - Added details to GMACExtensionCMEBinaryMatchEventInd generation conditions - Updated GMACMessageOHLCV3 mapping
R2016-2.0	22 NOV 2016	Release R2016-2.0 - Added Options PRF clearing file mapping - Added GMACMessageOrderUpdateV3 mapping - Added GMACMessageOrderDecreaseV3 mapping - Added GMACExtensionCMEBinaryOrderSnapshot extension - Added MBO Book Building section - Updated GMACMessageReferenceSecurityV3.UnderlyingID mapping for Futures PRF clearing file - Updated GMACMessageTradingStatusv3.TradingStatusConditions mapping - Updated MPB Book Building section
R2016-1.5	03 OCT 2016	Release R2016-1.5 - Added GMACMessageImbalanceV3.Paired mapping for Incremental Refresh message
R2016-1.3	28 JUL 2016	Release R2016-1.3 - Added GMACPacketHeader.MulticastID mapping
R2016-1.2	14 JUN 2016	Release R2016-1.2 - Added Futures PRF clearing file mapping - Updated ExchangeTimestamp mapping (documentation correction only)
R2016-1.0	01 APR 2016	Release R2016-1.0 - Removed CME plugins migration section
R2015-5.7	26 NOV 2015	Release R2015-5.7 - Added GMACMessageReferenceSecurityV3.ReferenceDate mapping
R2015-5.4	05 NOV 2015	Release R2015-5.4 - Updated GMACExtensionCMEBinaryMatchOrders generation conditions
R2015-3.0	09 JUN 2015	Release R2015-3.0 - Updated InstrumentIndex field mapping
R2015-2.0	16 APR 2015	Release R2015-2.0 - Updated GMACMessageTradingStatusV3 mapping - Updated GMACMessageOrderDepthV3 mapping
R2014-7.0	18 DEC 2014	Release R2014-7.0 - Added some certification recommendations in section Certification

Revision	Date	Description of Changes
		- Updated GMACMessageReferenceSecurityV3.PriceType mapping - Updated GMACMessageOHLCV3 mapping - Updated header of extension messages - Changed GMACMessageOrderResetV3 into GMACMessageResetV3
R2014-6.1	24 OCT 2014	Release R2014-6.1 - Added GMACMessageOrderResetV3 mapping - Added GMACMessageReferenceHeaderV3.InstrumentGroupStr mapping - Added GMACMessageTradingStatusV3.InstrumentGroupStr mapping
R2014-6.0	03 OCT 2014	Release R2014-6.0 - Added GMACMessageDerivativeHeaderV3.UnderlyingIDs.LegPrice mapping - Added a Book Building section
R2014-5.2	12 SEP 2014	Release R2014-5.2 - Added GMACExtensionCMEBinaryMatchOrders mapping
R2014-5.0	08 AUG 2014	Release R2014-5.0 - Added GMACMessageTradeV3.NumberOfOrders mapping - Updated CME plugins migration section
R2014-4.0	18 JUN 2014	Release R2014-4.0 - Added GMACExtensionCMEBinaryMatchEventInd generation for Security Definition, Security Status and Quote Request - Added GMACMessageSnapshotUpdateV3.TotNumReports mapping - Updated GMACMessageTradeV3 mapping for Incremental Refresh - Renamed GMACExtensionCMEBinaryIncRef into GMACExtensionCMEBinaryMatchEventInd
R2014-2.0	13 MAR 2014	Initial release

1. Mapping

1.1 Introduction

This document should be read in conjunction with:

- GMAC Product Overview
- GMAC Configuration Guide
- GMAC API Reference Guide
- GMAC V3 Messages Templates

The field presence in a message is mapped as follows:

Presence	Description
Y	Field is subject to the presence map and its present map is set
N	Field is subject to the presence map and its present map is not set
M	Field is not subject to the presence map and is mandatory

1.2 Source

Documentation CME Globex Impacts

http://www.cmegroup.com/confluence/display/EPICSANDBOX/MDP3

Version MDP 3.0

Date N/A

1.3 PRF Clearing Files Mapping

File	Mapped	GMAC Message
Futures PRF clearing file	**Y**	n GMACMessageReferenceSecurityV3 and its extensions: • [1 GMACExtensionCMEBinarySecDefMain] • [n GMACExtensionCMEBinaryInstAttrib] • [1 GMACExtensionCMEBinaryTickRules]
Options PRF clearing file	**Y**	n GMACMessageReferenceSecurityV3 and its extensions: • [1 GMACExtensionCMEBinarySecDefMain] • [n GMACExtensionCMEBinaryInstAttrib] • [1 GMACExtensionCMEBinaryTickRules]

1.4 Exchange Messages Mapping

A GMAC message in square brackets e.g. [1 GMACMessageTradeV3] is conditionally generated; refer to its generation conditions for details.

Exchange Message	Type	Mapped	GMAC Message
Heartbeat	0	**N**	
Logout	5	**N**	
Logon	A	**N**	
Security Definition	d	**Y**	1 GMACMessageReferenceSecurityV3 and its extensions: • [1 GMACExtensionCMEBinarySecDefMain] • [NoMDFeedTypes [1141] GMACExtensionCMEBinaryFeedType] • [NoInstAttrib [870] GMACExtensionCMEBinaryInstAttrib] NoLegs [555] GMACMessageReferenceSecurityV3 for the legs NoUnderlyings [711] GMACMessageReferenceSecurityV3 for the underlying

Exchange Message	Type	Mapped	GMAC Message
			legs Each message is followed by [1 GMACExtensionCMEBinaryTemplateHeader] Last message is followed by [1 GMACExtensionCMEBinaryMatchEventInd]
Security Status	f	**Y**	1 GMACMessageTradingStatusV3 Followed by [1 GMACExtensionCMEBinaryTemplateHeader] Last message is followed by [1 GMACExtensionCMEBinaryMatchEventInd]
Market Data Request	V	**N**	
Quote Request	R	**Y**	NorelatedSym [146] messages GMACMessageQuoteRequestV3 Followed by [1 GMACExtensionCMEBinaryTemplateHeader] Last message is followed by [1 GMACExtensionCMEBinaryMatchEventInd]
Snapshot Full Refresh	W	**Y**	Where 0 <= n <= NoMDEntries [268]: 1 GMACMessageSnapshotUpdateV3 followed by: • 1 GMACMessageTradingStatusV3 • [n GMACMessageOrderDepthV3] • [n GMACMessageTradeV3] • [n GMACMessageOHLCV3] • [n GMACMessageInformationV3] • [n GMACMessageOpenInterestV3] • [n GMACMessageImbalanceV3] • [n GMACMessageOrderUpdateV3] • [n GMACExtensionCMEBinaryOrderSnapshot] Each message is followed by [1 GMACExtensionCMEBinaryTemplateHeader]
Incremental	X	**Y**	Where 0 <= n <= NoMDEntries [268]:
Refresh			[n GMACMessageOrderDepthV3] [n GMACMessageTradeV3] and its extensions [n GMACExtensionCMEBinaryMatchOrders] [n GMACMessageOHLCV3] [n GMACMessageInformationV3] and its extensions [n GMACExtensionCMEBinaryMatchOrders] [n GMACMessageOpenInterestV3] [n GMACMessageImbalanceV3] [1 GMACMessageResetV3] [n GMACMessageOrderUpdateV3] [n GMACMessageOrderDecreaseV3] Each message is followed by [1 GMACExtensionCMEBinaryTemplateHeader] Last message is followed by [1 GMACExtensionCMEBinaryMatchEventInd]
Request Reject	Y	**N**	

1.5 GMAC Messages Mapping

An exchange message in square brackets is conditionally mapped; refer to the GMAC message generation conditions for details.

GMAC Message	Mapped	Exchange Message
GMACMessageImbalanceV3	**Y**	[Market Data Snapshot Full Refresh]

GMAC Message	Mapped	Exchange Message
		[Market Data Incremental Refresh]
GMACMessageInformationV3	Y	[Market Data Snapshot Full Refresh] [Market Data Incremental Refresh]
GMACMessageOHLCV3	Y	[Market Data Snapshot Full Refresh] [Market Data Incremental Refresh]
GMACMessageOrderDecreaseV3	Y	[Market Data Incremental Refresh]
GMACMessageOrderDepthV3	Y	[Market Data Snapshot Full Refresh] [Market Data Incremental Refresh]
GMACMessageOrderExecutedV3	N	
GMACMessageResetV3	Y	[Market Data Incremental Refresh]
GMACMessageOrderUpdateV3	Y	[Market Data Snapshot Full Refresh] [Market Data Incremental Refresh]
GMACMessageQuoteRequestV3	Y	Quote Request
GMACMessageReferenceSecurityV3	Y	Security Definition Futures PRF Clearing File Options PRF Clearing File
GMACMessageSessionV3	N	
GMACMessageBundleMarkerV3	N	

GMAC Message	Mapped	Exchange Message
GMACMessageSnapshotUpdateV3	Y	Market Data Snapshot Full Refresh
GMACMessageTotalVolumeV3	N	
GMACMessageTradeV3	Y	[Market Data Snapshot Full Refresh] [Market Data Incremental Refresh]
GMACMessageTradingStatusV3	Y	Security Status Market Data Snapshot Full Refresh
GMACMessageUncrossingV3	N	
GMACMessageDummyV3	N	
GMACMessageOpenInterestV3	Y	[Market Data Snapshot Full Refresh] [Market Data Incremental Refresh]
GMACExtensionCMEBinaryFeedType	Y	[Security Definition]
GMACExtensionCMEBinaryInstAttrib	Y	[Security Definition] [Futures PRF Clearing File] [Options PRF Clearing File]
GMACExtensionCMEBinarySecDefMain	Y	[Security Definition] [Futures PRF Clearing File] [Options PRF Clearing File]
GMACExtensionCMEBinaryMatchEventInd	Y	[Market Data Incremental Refresh] [Security Definition] [Security Status] [Quote Request]

GMAC Message	Mapped	Exchange Message
GMACExtensionCMEBinaryTemplateHeader	Y	[Security Definition] [Security Status] [Market Data Snapshot Full Refresh] [Market Data Incremental Refresh] [Quote Request]
GMACExtensionCMEBinaryMatchOrders	Y	[Market Data Incremental Refresh]
GMACExtensionCMEBinaryTickRules	Y	[Futures PRF Clearing File] [Options PRF Clearing File]
GMACExtensionCMEBinaryOrderSnapshot	Y	[Market Data Snapshot Full Refresh]

1.6 Book Building

1.6.1 MBP Book

The configuration parameter `<book-type>` must be set to 'mbp' or 'both'.

The user needs to maintain two books using the GMAC update message GMACMessageOrderDepthV3:

- The outright book
- The implied book: flag QuoteConditions from the GMAC update message is set to Implied.

The multiple-depth book should be used in conjunction with the implied prices book to create an accurate book for all contracts with implied functionality. To create a consolidated book, the multiple-depth book and the implied book must be built and managed separately, then consolidated to reflect the current state of the market.

The user must limit the number of price levels (book depth) per book type (outright book and implied book) as specified by field MarketDepth in the GMAC message GMACExtensionCMEBinaryFeedType.

1.6.2 MBO Book

The configuration parameter `<book-type>` must be set to 'mbo' or 'both'.

The user needs to process GMACMessageOrderUpdateV3 (order creation and order update) and GMACMessageOrderDecreaseV3 (order delete) to manage the orders.

To build the full depth MBO order book, each order must be sorted by instrument side, and price (in descending order for Bids and ascending order for Asks). Then the order priority number must be applied only to the orders of the same price/ side.

Field Position in the GMAC message GMACMessageOrderUpdateV3, mapped to MDOrderPriority [37707], from lowest to highest values, is used to position the order against other orders of the same instrument side, and price.

Implied order book information is not sent in MBO format and is sent in MBP format only.

1.7 Certification

Users are advised to increase the market verbosity level during the certification process in order to get some CME MDP 3.0 fields which are not transcoded by the plugin such as the Session Low Offer and Session High Bid from the incremental message.

1.8 GMACPacketHeader

The following table lists the specific mapping of some GMACPacketHeader fields.

Field	Value
Messages	Incremented for each message received from the exchange
Sequence	CME packet MsgSeqNum
NextSequence	CME packet MsgSeqNum + 1
RawExchangeChannelID	Not provided
PacketEmissionTime	CME packet SendingTime

Field	Value
MulticastID	Set to the number of configured multicasts + 1 for the packet header of GMAC messages generated from the PRF Clearing File Otherwise set to the configured multicast

1.9 GMACExtensionCMEBinaryTemplateHeader

Generation conditions

This message provides the template ID of the original CME message. It is appended to all other GMAC messages generated from the original CME message.

One message GMACExtensionCMEBinaryTemplateHeader is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Extension length
ExtensionType	M	'CMEBinaryTemplateHeader'
TemplateID	M	Template ID of the original CME message

1.10 GMACExtensionCMEBinaryMatchEventInd

Generation conditions

This message provides the raw Globex event indicator.

This message is appended to the last GMAC message generated from the original CME message.

The end of a given event is managed by GMAC: bit 7 (most significant bit) of MatchEventIndicator is set accordingly.

One message GMACExtensionCMEBinaryMatchEventInd is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Extension length
ExtensionType	M	'CMEBinaryMatchEventInd'
MatchEventIndicator	Y	MatchEventIndicator [5799]

1.11 GMACMessageReferenceSecurityV3

1.11.1 Message Security Definition Mapping

Generation conditions

This message is immediately followed by extension messages:

- GMACExtensionCMEBinaryFeedType
- GMACExtensionCMEBinaryInstAttrib
- GMACExtensionCMEBinarySecDefMain.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_REFERENCE_SECURITY_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	SEQUENCE_UNDEFINED
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	SendingTime [52]
UnderlyingID	Y	'nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]

Field	Presence	Exchange Field Translation
Tradable	**M**	1
►ReferenceSecurity	**M**	
PriceFactor	**Y**	DisplayFactor [9787]
DealPriceFactor	**N**	
TradePriceFactor	**N**	
ChannelID	**Y**	GMAC live main channel # where message has been received
SegmentID	**Y**	MarketSegmentID [1300]
SectorID	**N**	
InstrumentName	**Y**	Symbol [55]
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentGroupStr	**Y**	SecurityGroup [1151]
ActionType	**Y**	'D' if SecurityUpdateAction [980] = 'D' (Delete) 'N' otherwise
TradingStatus	**Y**	TSTATUS_UNKNOWN
Currency	**Y**	Currency [15]
TickSize	**Y**	MinPriceIncrement [969]
ReferencePrice	**Y**	TradingReferencePrice [1150]
ReferenceDate	**Y**	TradingReferenceDate [5796]
PriceType	**Y**	Rounded settlement prices are instrument's settlement prices rounded to the product's CME Globex trading tick. Unrounded settlement prices are instrument's settlement prices at the Clearing tick precision. PTYPE_PRELIMINARY_SETTLEMENT when: • SettlPriceType [731] [0] = 0 (Preliminary)

Field	Presence	Exchange Field Translation
		• SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_PRELIMINARY_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_PRELIMINARY_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_PRELIMINARY_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_REAL_SETTLEMENT when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_REAL_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_REAL_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday)

Field	Presence	Exchange Field Translation
		PTYPE_FINAL_REAL_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_THEORETICAL_SETTLEMENT when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_THEORETICAL_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_THEORETICAL_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_THEORETICAL_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 1 (Intraday)

Field	Presence	Exchange Field Translation
ImpliedPrices	**Y**	'Y' if InstAttribValue [872] = 19 (Implied Matching Eligibility) is set 'N' if InstAttribValue [872] = 19 (Implied Matching Eligibility) is not set
RoundLotSize	**Y**	1 * 10^GMAC_DECIMAL_PLACES
LowLimit	**Y**	LowLimitPrice [1148]
HighLimit	**Y**	HighLimitPrice [1149]
MinTradeVolume	**Y**	MinTradeVol [562]
MaxTradeVolume	**Y**	MaxTradeVol [1140]
MaxPriceVariation	**Y**	MaxPriceVariation [1143] * 10^GMAC_DECIMAL_PLACES
MinLotSize	**Y**	MinLotSize [1231] if LotType [1093] = 2 (minimum order entry quantity for an instrument) is provided
MinCabPrice	**Y**	MinCabPrice [9850]
UnitQuantity	**Y**	UnitOfMeasureQty [1147] * 10^GMAC_DECIMAL_PLACES
Unit	**Y**	UnitOfMeasure [996]
OrderBookDepth	**N**	
►ReferenceDerivatives	**Y**	
VenueID	**N**	
CFICode	**Y**	CFICode [461]
StrikePrice	**Y**	StrikePrice [202]
StrikeCurrency	**Y**	StrikeCurrency [947]
StrikePriceFactor	**N**	
MaturityYear	**Y**	Translated MaturityMonthYear [200]
MaturityMonth	**Y**	Translated MaturityMonthYear [200]

Field	Presence	Exchange Field Translation
MaturityDay	N	
LastTradeDate	Y	EventTime [1145] date if EventType [965] = 7 (Last eligible trade date)
LastTradeTime	Y	EventTime [1145] time if EventType [965] = 7 (Last eligible trade date)
ActivationDate	Y	EventTime [1145] date if EventType [965] = 5 (Activation)
ActivationTime	Y	EventTime [1145] time if EventType [965] = 5 (Activation)
NumOfMarkets	N	
ExpirationType	N	
PricingModel	N	
MatchAlgorithm	Y	MatchAlgorithm [1142]
UnderlyingCount	M	NoLegs [555] for the legs (spreads only) NoUnderlyings [711] for the underlying legs (options only)
► UnderlyingIDLink	M	'nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of LegSecurityID [602] for the legs (spreads only) 'nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of UnderlyingSecurityID [309] for the underlying legs (options only)
► Side	Y	For the legs (spreads only): SIDE_BID if LegSide [624] = '1' (Buy) SIDE_ASK if LegSide [624] = '2' (Sell) Presence = False for the underlying legs (options only)
► RatioQuantity	Y	LegRatioQty [623] for the legs (spreads only) Presence = False for the underlying legs (options only)
► OptionDelta	Y	LegOptionDelta [1017] for the legs (spreads only) Presence = False for the underlying legs (options only)
► LegPrice	Y	LegPrice [566] for the legs (spreads only)
		Presence = False for the underlying legs (options only)

1.11.2 Futures PRF Clearing File Mapping

Generation conditions

One message is generated per SecDef definition.

This message is immediately followed by extension messages:

- GMACExtensionCMEBinaryInstAttrib
- GMACExtensionCMEBinarySecDefMain
- GMACExtensionCMEBinaryTickRules

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_REFERENCE_SECURITY_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	SEQUENCE_UNDEFINED
Sequence	M	SEQUENCE_UNDEFINED
ExchangeTimestamp	M	SecDef.BizDt
UnderlyingID	Y	'nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecDef.Instrmt.AID.AltID when SecDef.Instrmt.AID.AltIDSrc = 103 (Globex alias)
Tradable	M	1
►ReferenceSecurity	M	
PriceFactor	N	
DealPriceFactor	N	
TradePriceFactor	N	

Field	Presence	Exchange Field Translation
ChannelID	N	
SegmentID	N	
SectorID	N	
InstrumentName	Y	SecDef.Instrmt.AID.AltID when SecDef.Instrmt.AID.AltIDSrc = 101 (ITC alias)
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecDef.Instrmt.AID.AltID when SecDef.Instrmt.AID.AltIDSrc = 103 (Globex alias)
InstrumentGroupStr	Y	SecDef.Instrmt.Sym
ActionType	Y	'N'
TradingStatus	Y	TSTATUS_UNKNOWN
Currency	Y	SecDef.Instrmt.PxQteCcy
TickSize	Y	SecDef.Instrmt.MinPxIncr
ReferencePrice	N	
ReferenceDate	N	
PriceType	N	
ImpliedPrices	N	
RoundLotSize	N	
LowLimit	N	
HighLimit	N	
MinTradeVolume	N	
MaxTradeVolume	N	
MaxPriceVariation	N	
MinLotSize	N	
MinCabPrice	N	

Field	Presence	Exchange Field Translation
UnitQuantity	Y	SecDef.Instrmt.UOMQty * 10^GMAC_DECIMAL_PLACES
Unit	Y	SecDef.Instrmt.UOM
OrderBookDepth	N	
►ReferenceDerivatives	Y	
VenueID	N	
CFICode	Y	SecDef.Instrmt.CFI
StrikePrice	N	
StrikeCurrency	N	
StrikePriceFactor	N	
MaturityYear	Y	Translated SecDef.Instrmt.MatDt
MaturityMonth	Y	Translated SecDef.Instrmt.MatDt
MaturityDay	Y	Translated SecDef.Instrmt.MatDt
LastTradeDate	Y	SecDef.Instrmt.Evnt.Dt when SecDef.Instrmt.Evnt.EventTyp = 7 (Last eligible trade date)
LastTradeTime	N	
ActivationDate	Y	SecDef.Instrmt.Evnt.Dt when SecDef.Instrmt.Evnt.EventTyp = 5 (Activation)
ActivationTime	N	
NumOfMarkets	N	
ExpirationType	N	
PricingModel	N	
MatchAlgorithm	N	
UnderlyingCount	M	0
► UnderlyingIDLink	M	Ignored

Field	Presence	Exchange Field Translation
► Side	N	
► RatioQuantity	N	
► OptionDelta	N	
► LegPrice	N	

1.11.3 Options PRF Clearing File Mapping

Generation conditions

One message is generated per DerivSecList.RelSym definition.

This message is immediately followed by extension messages:

- GMACExtensionCMEBinaryInstAttrib
- GMACExtensionCMEBinarySecDefMain
- GMACExtensionCMEBinaryTickRules

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_REFERENCE_SECURITY_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	SEQUENCE_UNDEFINED
Sequence	M	SEQUENCE_UNDEFINED
ExchangeTimestamp	M	DerivSecList.BizDt
UnderlyingID	Y	'nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of DerivSecList.RelSym.Instrmt.AID.AltID when DerivSecList.RelSym.Instrmt.AID.AltIDSrc = 103 (Globex alias)
Tradable	M	1

Field	Presence	Exchange Field Translation
►ReferenceSecurity	M	
PriceFactor	N	
DealPriceFactor	N	
TradePriceFactor	N	
ChannelID	N	
SegmentID	N	
SectorID	N	
InstrumentName	Y	DerivSecList.RelSym.Instrmt.AID.AltID when DerivSecList.RelSym.Instrmt.AID.AltIDSrc = 101 (ITC alias)
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of DerivSecList.RelSym.Instrmt.AID.AltID when DerivSecList.RelSym.Instrmt.AID.AltIDSrc = 103 (Globex alias)
InstrumentGroupStr	Y	DerivSecList.DerivSecDef.DerivInstrmt.Sym
ActionType	Y	'N'
TradingStatus	Y	TSTATUS_UNKNOWN
Currency	Y	DerivSecList.DerivSecDef.DerivInstrmt.PxQteCcy
TickSize	Y	DerivSecList.DerivSecDef.DerivInstrmt.MinPxIncr
ReferencePrice	N	
ReferenceDate	N	
PriceType	N	
ImpliedPrices	N	
RoundLotSize	N	
LowLimit	N	
HighLimit	N	

Field	Presence	Exchange Field Translation
MinTradeVolume	N	
MaxTradeVolume	N	
MaxPriceVariation	N	
MinLotSize	N	
MinCabPrice	N	
UnitQuantity	Y	DerivSecList.DerivSecDef.DerivInstrmt.UOMQty * 10^GMAC_DECIMAL_PLACES
Unit	Y	DerivSecList.DerivSecDef.DerivInstrmt.UOM
OrderBookDepth	N	
►ReferenceDerivatives	Y	
VenueID	N	
CFICode	Y	DerivSecList.RelSym.Instrmt.CFI
StrikePrice	Y	DerivSecList.RelSym.Instrmt.StrkPx
StrikeCurrency	N	
StrikePriceFactor	N	
MaturityYear	Y	Translated DerivSecList.DerivSecDef.DerivInstrmt.Instrmt.MatDt
MaturityMonth	Y	Translated DerivSecList.DerivSecDef.DerivInstrmt.Instrmt.MatDt
MaturityDay	Y	Translated DerivSecList.DerivSecDef.DerivInstrmt.Instrmt.MatDt
LastTradeDate	Y	DerivSecList.DerivSecDef.DerivInstrmt.Evnt.Dt when DerivSecList.DerivSecDef.DerivInstrmt.Evnt.EventTyp = 7 (Last eligible trade date)
LastTradeTime	N	
ActivationDate	Y	DerivSecList.DerivSecDef.DerivInstrmt.Evnt.Dt when DerivSecList.DerivSecDef.DerivInstrmt.Evnt.EventTyp = 5 (Activation)
ActivationTime	N	
NumOfMarkets	N	
ExpirationType	N	
PricingModel	N	
MatchAlgorithm	N	
UnderlyingCount	M	1
► UnderlyingIDLink	M	'nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of DerivSecList.Undly.UndAID.AltID when DerivSecList.Undly.UndAID.AltIDSrc = 103 (Globex alias)
► Side	N	
► RatioQuantity	N	
► OptionDelta	N	
► LegPrice	N	

1.12 GMACExtensionCMEBinaryFeedType

1.12.1 Message Security Definition Mapping

Generation conditions

This message is appended to GMACMessageReferenceSecurityV3 message to provide the repeating Feed Type group data.

There are as many GMACExtensionCMEBinaryFeedType as NoMdFeedTypes [1141] with a maximum of 8 supported.

One message GMACExtensionCMEBinaryFeedType is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	**M**	Extension length
ExtensionType	**M**	'CMEBinarySecDefRepeatGroupFeedType'
MDFeedType	**M**	MDFeedType [1022]
MarketDepth	**M**	MarketDepth [264]

1.13 GMACExtensionCMEBinaryInstAttrib

1.13.1 Message Security Definition Mapping

Generation conditions

This message is appended to GMACMessageReferenceSecurityV3 message to provide the repeating Instrument Attribute Type group data.

There are as many GMACExtensionCMEBinaryInstAttrib as NoInstAttrib [870] with a maximum of 64 supported.

One message GMACExtensionCMEBinaryInstAttrib is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	**M**	Extension length
ExtensionType	**M**	'CMEBinarySecDefRepeatGroupInstAttrib'
InstAttribType	**M**	InstAttribType [871]
InstAttribValue	**M**	InstAttribValue [872]

1.13.2 Futures PRF Clearing File Mapping

Generation conditions

This message is appended to GMACMessageReferenceSecurityV3 message to provide the repeating Instrument Attribute Type group data.

There are as many GMACExtensionCMEBinaryInstAttrib as there are SecDef.InstrmtExt definitions.

One message GMACExtensionCMEBinaryInstAttrib is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	**M**	Extension length
ExtensionType	**M**	'CMEBinarySecDefRepeatGroupInstAttrib'
InstAttribType	**M**	SecDef.InstrmtExt.Attrb.Typ
InstAttribValue	**M**	SecDef.InstrmtExt.Attrb.Val

1.13.3 Options PRF Clearing File Mapping

Generation conditions

This message is appended to GMACMessageReferenceSecurityV3 message to provide the repeating Instrument Attribute Type group data.

There are as many GMACExtensionCMEBinaryInstAttrib as there are DerivSeclist.DerivSecDef.DerivInstrmt.Attrb definitions.

One message GMACExtensionCMEBinaryInstAttrib is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	**M**	Extension length
ExtensionType	**M**	'CMEBinarySecDefRepeatGroupInstAttrib'

Field	Presence	Exchange Field Translation
InstAttribType	M	DerivSeclist.DerivSecDef.DerivInstrmt.Attrb.Typ
InstAttribValue	M	DerivSeclist.DerivSecDef.DerivInstrmt.Attrb.Val

1.14 GMACExtensionCMEBinarySecDefMain

1.14.1 Message Security Definition Mapping

Generation conditions

This message is appended to GMACMessageReferenceSecurityV3 message to provide additional security characteristics.

One message GMACExtensionCMEBinarySecDefMain is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Extension length
ExtensionType	M	'CMEBinarySecDefMain'
TotNumReports	M	TotNumReports [911]
NoMDFeedType	M	NoMdFeedTypes [1141]
NoInstAttrib	M	NoInstAttrib [870]
UserDefinedInstrument	M	UserDefinedInstrument [9779]
ClearedVolume	Y	ClearedVolume [5791]
OpenInterestQty	Y	OpenInterestQty [5792]
SecurityExchange	Y	SecurityExchange [207]
SecuritySubType	Y	SecuritySubType [762]
ApplID	Y	ApplID [1180]
PriceRatio	Y	PriceRatio [5770]
ContractMultiplierUnit	Y	ContractMultiplierUnit [1435]
ContractMultiplier	Y	ContractMultiplier [231]
FlowScheduleType	Y	FlowScheduleType [1439]
UnderlyingProduct	Y	UnderlyingProduct [462]
SettlCurrency	Y	SettlCurrency [120]
MinLotSize_BlockLot	Y	MinLotSize [1231] if LotType [1093] = 3 (Minimum quantity required for a block trade) is provided. Presence = False otherwise.
MinLotSize_RoundLotVar	Y	MinLotSize [1231] if LotType [1093] = 4 (Round lot variable quantity products) is provided. Presence = False otherwise.
OriginalContractSize	Y	OriginalContractSize [5849]
SecurityType	Y	SecurityType [167]
TickRule	Y	TickRule [6350]
MainFraction	Y	MainFraction [37702]
SubFraction	Y	SubFraction [37703]
PriceDisplayFormat	Y	PriceDisplayFormat [9800]
Asset	Y	Asset [6937]

1.14.2 Futures PRF Clearing File Mapping

Generation conditions

This message is appended to GMACMessageReferenceSecurityV3 message to provide additional security characteristics.

One message GMACExtensionCMEBinarySecDefMain is generated if configuration parameter <extension-messages> is enabled.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Extension length
ExtensionType	M	'CMEBinarySecDefMain'
TotNumReports	M	0
NoMDFeedType	M	0
NoInstAttrib	M	0
UserDefinedInstrument	M	'N'
ClearedVolume	N	
OpenInterestQty	N	
SecurityExchange	Y	SecDef.Instrmt.Exch
SecuritySubType	N	
ApplID	N	
PriceRatio	N	
ContractMultiplierUnit	N	
ContractMultiplier	Y	SecDef.Instrmt.Mult
FlowScheduleType	N	
UnderlyingProduct	N	
SettlCurrency	N	
MinLotSize_BlockLot	N	
MinLotSize_RoundLotVar	N	
OriginalContractSize	N	
SecurityType	Y	SecDef.Instrmt.SecTyp
TickRule	N	
MainFraction	N	
SubFraction	N	
PriceDisplayFormat	N	
Asset	N	

1.14.3 Options PRF Clearing File Mapping

Generation conditions

This message is appended to GMACMessageReferenceSecurityV3 message to provide additional security characteristics.

One message GMACExtensionCMEBinarySecDefMain is generated if configuration parameter <extension-messages> is enabled.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Extension length
ExtensionType	M	'CMEBinarySecDefMain'
TotNumReports	M	0
NoMDFeedType	M	0
NoInstAttrib	M	0
UserDefinedInstrument	M	'N'
ClearedVolume	N	
OpenInterestQty	N	

Field	Presence	Exchange Field Translation
SecurityExchange	Y	DerivSecList.DerivSecDef.DerivInstrmt.Exch
SecuritySubType	N	
ApplID	N	
PriceRatio	N	
ContractMultiplierUnit	N	
ContractMultiplier	Y	DerivSecList.DerivSecDef.DerivInstrmt.Mult
FlowScheduleType	N	
UnderlyingProduct	N	
SettlCurrency	N	
MinLotSize_BlockLot	N	
MinLotSize_RoundLotVar	N	
OriginalContractSize	N	
SecurityType	Y	DerivSecList.DerivSecDef.DerivInstrmt.SecTyp
TickRule	N	
MainFraction	N	
SubFraction	N	
PriceDisplayFormat	N	
Asset	N	

1.15 GMACExtensionCMEBinaryTickRules

1.15.1 Futures PRF Clearing File Mapping

Generation conditions This message is appended to GMACMessageReferenceSecurityV3 message to provide additional security characteristics.

One message GMACExtensionCMEBinaryTickRules is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Message length
ExtensionType	M	'CMEBinaryTickRules'
NoTickRules	M	Number of TickRules
►TickRuleType	M	TickRuleTyp
►StartTickPxRng	M	StartTickPxRng
►EndTickPxRng	M	EndTickPxRng
►TickIncrement	M	TickIncr

1.15.2 Options PRF Clearing File Mapping

Generation conditions This message is appended to GMACMessageReferenceSecurityV3 message to provide additional security characteristics.

One message GMACExtensionCMEBinaryTickRules is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Message length
ExtensionType	M	'CMEBinaryTickRules'
NoTickRules	M	Number of TickRules

Field	Presence	Exchange Field Translation
►TickRuleType	M	TickRuleTyp
►StartTickPxRng	M	StartTickPxRng
►EndTickPxRng	M	EndTickPxRng
►TickIncrement	M	TickIncr

1.16 GMACMessageSnapshotUpdateV3

1.16.1 Message Snapshot Full Refresh Mapping

Generation conditions The message is sent in front of a snapshot update for the specified instrument.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_SNAPSHOT_UPDATE_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	SendingTime [52]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentContext	N	
PacketSyncSequence	Y	LastMsgSeqNumProcessed [369]
SymbolSyncSequence	Y	RptSeq [83]
TotNumReports	Y	TotNumReports [911]
NumberOfMessages	M	Number of messages related to the InstrumentIndex
RefreshStatus	N	
Trailer	N	
EndOfSnapshotCycle	N	

1.17 GMACMessageOrderDepthV3

1.17.1 Message Snapshot Full Refresh Mapping

Generation conditions The message is generated if configuration parameter `<book-type>` equals to 'mbp' or 'both'.

This message is generated only when MDEntryType [269] equals to:

- '0' Bid
- '1' Offer
- 'E' Implied bid
- 'F' Implied offer

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_ORDER_DEPTH_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
ActionType	M	'Z'

Field	Presence	Exchange Field Translation
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	**N**	
InstrumentContext	**N**	
Price	**Y**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Quantity	**Y**	MDEntrySize [271] * 10^GMAC_DECIMAL_PLACES
Level	**Y**	MDPriceLevel [1023] – 1 (top of book is level 0) Set to 0 if MDPriceLevel [1023] is not provided (case of top of book template)
Side	**M**	SIDE_BID if MDEntryType [269] equals to: • '0' Bid • 'E' Implied Bid SIDE_ASK if MDEntryType [269] equals to: • '1' Offer • 'F' Implied Offer
NumberOfOrders	**Y**	NumberOfOrders [346]
QuoteConditions	**Y**	Implied flag set if MDEntryType [269] equals to: • 'E' Implied Bid • 'F' Implied Offer Presence = False otherwise.
GapIndicator	**N**	
DataType	**N**	
CustomQuantitiesCount	**M**	0
►CustomQuantities[].Type	**M**	Not provided
►CustomQuantities[].Quantity	**M**	Not provided

1.17.2 Message Incremental Refresh Mapping

Generation conditions

The message is generated if configuration parameter `<book-type>` equals to 'mbp' or 'both'.

This message is generated only when MDEntryType [269] equals to:

- '0' Bid
- '1' Offer
- 'E' Implied bid
- 'F' Implied offer

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_ORDER_DEPTH_V3'
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	RptSeq [83]
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
ActionType	**M**	'N' if MDUpdateAction [279] = 0 (New) 'U' if MDUpdateAction [279] = 1 (Change) 'D' if MDUpdateAction [279] = 2 (Delete) 'F' (GMAC 'Delete level from') if MDUpdateAction [279] = 3 (Delete thru): CME 'Delete thru' indicates that all positions on one side of the book should be deleted. Tag 1023-MDPriceLevel (GMAC field Level) will always equal 1 (0 in GMAC field Level) in the Delete Thru block 'T' (GMAC 'Delete to level') if MDUpdateAction [279] = 4 (Delete from): CME 'Delete from' indicates that all positions

Field	Presence	Exchange Field Translation
		from the position stated in tag 1023-MDPriceLevel (GMAC field Level) to position 1 (GMAC level 0) should be deleted i.e. the top 'n' levels on one side of the book should be deleted; 'n' being specified in tag 1023-MDPriceLevel ('n-1' in GMAC field Level) 'L' if MDUpdateAction [279] = 5 (Overlay)
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	**N**	
InstrumentContext	**N**	
Price	**Y**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Quantity	**Y**	MDEntrySize [271] * 10^GMAC_DECIMAL_PLACES
Level	**Y**	MDPriceLevel [1023] – 1 (top of book is level 0) Set to 0 if MDPriceLevel [1023] is not provided (case of top of book template)
Side	**M**	SIDE_BID if MDEntryType [269] equals to: • '0' Bid • 'E' Implied Bid SIDE_ASK if MDEntryType [269] equals to: • '1' Offer • 'F' Implied Offer
NumberOfOrders	**Y**	NumberOfOrders [346]
QuoteConditions	**Y**	Implied flag set if MDEntryType [269] equals to: • 'E' Implied Bid • 'F' Implied Offer Presence = False otherwise.
GapIndicator	**N**	
DataType	**N**	
CustomQuantitiesCount	**M**	0
►CustomQuantities[].Type	**M**	Not provided
►CustomQuantities[].Quantity	**M**	Not provided

1.18 GMACMessageOHLCV3

1.18.1 Message Snapshot Full Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] equals to:

- '4' Opening price if OpenCloseSettlFlag [286] = 0 (Daily open price)
- '6' Settlement price
- '7' Trading session high price
- '8' Trading session low price
- 'W' Fixing price
- 'e' Electronic volume

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_OHLC_V3'
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	RptSeq [83]
Sequence	**M**	MsgSeqNum [34]

Field	Presence	Exchange Field Translation
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentContext	N	
Open	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = '4' (Opening price) and OpenCloseSettlFlag [286] = 0 (Daily open price)
High	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = '7' (Trading session high price)
Low	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = '8' (Trading session low price)
Close	N	
Settlement	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = '6' (Settlement price)
Fixing	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = 'W' (Fixing price)
LastTrade	N	
Currency	N	
TotalVolume	Y	MDEntrySize [271] if MDEntryType [269] = 'e' (Electronic volume)
PriceType	Y	Rounded settlement prices are instrument's settlement prices rounded to the product's CME Globex trading tick. Unrounded settlement prices are instrument's settlement prices at the Clearing tick precision. PTYPE_PRELIMINARY_SETTLEMENT when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_PRELIMINARY_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_PRELIMINARY_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_PRELIMINARY_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_REAL_SETTLEMENT when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_REAL_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_REAL_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_REAL_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined)

Field	Presence	Exchange Field Translation
		• SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_THEORETICAL_SETTLEMENT when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_THEORETICAL_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_THEORETICAL_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_THEORETICAL_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 1 (Intraday)
DataType	**N**	
BestPrice	**N**	
SettlementDateTime	**Y**	TradingReferenceDate [5796]

1.18.2 Message Incremental Refresh Mapping

Generation conditions

This message is generated only when MDEntryType [269] equals to:

- '4' Opening price if OpenCloseSettlFlag [286] = 0 (Daily open price)
- '6' Settlement price
- '7' Trading session high price
- '8' Trading session low price
- 'W' Fixing price
- 'e' Electronic volume

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_OHLC_V3'
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	RptSeq [83]
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentContext	**N**	
Open	**Y**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = '4' (Opening price) and OpenCloseSettlFlag [286] = 0 (Daily open price)
High	**Y**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = '7' (Trading session high price)
Low	**Y**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if

Field	Presence	Exchange Field Translation
		MDEntryType [269] = '8' (Trading session low price)
Close	**N**	
Settlement	**Y**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = '6' (Settlement price)
Fixing	**Y**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES if MDEntryType [269] = 'W' (Fixing price)
LastTrade	**N**	
Currency	**N**	
TotalVolume	**Y**	MDEntrySize [271] if MDEntryType [269] = 'e' (Electronic volume)
PriceType	**Y**	Rounded settlement prices are instrument's settlement prices rounded to the product's CME Globex trading tick. Unrounded settlement prices are instrument's settlement prices at the Clearing tick precision. PTYPE_PRELIMINARY_SETTLEMENT when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_PRELIMINARY_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_PRELIMINARY_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_PRELIMINARY_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 0 (Preliminary) • SettlPriceType [731] [2] = 0 (Unrounded or

Field	Presence	Exchange Field Translation
		Undefined) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_REAL_SETTLEMENT when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_REAL_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_REAL_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_REAL_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 1 (Actual) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_THEORETICAL_SETTLEMENT when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_THEORETICAL_SETTLEMENT_NOT_ROUNDED when: • SettlPriceType [731] [0] = 1 (Final)

Field	Presence	Exchange Field Translation
		• SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 0 (Undefined) PTYPE_FINAL_THEORETICAL_SETTLEMENT_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 1 (Rounded) • SettlPriceType [731] [3] = 1 (Intraday) PTYPE_FINAL_THEORETICAL_SETTLEMENT_NOT_ROUNDED_INTRADAY when: • SettlPriceType [731] [0] = 1 (Final) • SettlPriceType [731] [1] = 0 (Theoretical or Undefined) • SettlPriceType [731] [2] = 0 (Unrounded or Undefined) • SettlPriceType [731] [3] = 1 (Intraday)
DataType	**N**	
BestPrice	**N**	
SettlementDateTime	**Y**	TradingReferenceDate [5796]

1.19 GMACMessageTradeV3

1.19.1 Message Snapshot Full Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] = ‘2’ (Trade).

Field	Presence	Exchange Field Translation
MsgType	**M**	‘GMAC_TYPE_TRADE_V3’
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	RptSeq [83]
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentContext	**N**	
TradeID	**N**	
Side	**N**	
GapIndicator	**N**	
Price	**M**	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Quantity	**Y**	MDEntrySize [271] * 10^GMAC_DECIMAL_PLACES
TotalVolume	**N**	
TradeConditions	**N**	
Action	**N**	
NumberOfOrders	**N**	

1.19.2 Message Incremental Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] = ‘2’ (Trade Summary).

Field	Presence	Exchange Field Translation

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_TRADE_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentContext	N	
TradeID	Y	MDTradeEntryID [37711]
Side	Y	Side denotes the aggressor side. SIDE_BID if AggressorSide [5797] = 1 (Buy) SIDE_ASK if AggressorSide [5797] = 2 (Sell) Presence = False otherwise.
GapIndicator	N	
Price	M	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Quantity	Y	MDEntrySize [271] * 10^GMAC_DECIMAL_PLACES
TotalVolume	N	
TradeConditions	N	
Action	Y	ACTION_NEW if MDUpdateAction [279] = 0 (New) ACTION_UPDATE if MDUpdateAction [279] = 1 (Change) ACTION_CANCELLED if MDUpdateAction [279] = 2 (Delete)
NumberOfOrders	Y	NumberOfOrders [346]

1.20 GMACMessageInformationV3

1.20.1 Message Snapshot Full Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] equals to:

- 'N' Session high bid
- 'O' Session low offer
- 'B' Trade Volume

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_INFORMATION_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	N	
MarketDataEntry	Y	MDEntryType [269]
CycleStatus	N	
OpenInterest	N	

1.20.2 Message Incremental Refresh Mapping

Generation This message is generated only when MDEntryType [269] equals to:

conditions

- ‘N’ Session high bid
- ‘O’ Session low offer
- ‘B’ Trade volume
- ‘X’ Cash note
- ‘g’ Threshold limits and price band variation

This message is also generated when the MDEntry group is not present but the matched order group is present. This is the case of a trade summary which handles the matched orders using more than one packet.

Field	Presence	Exchange Field Translation
MsgType	**M**	‘GMAC_TYPE_INFORMATION_V3’
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	RptSeq [83]
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	**N**	
MarketDataEntry	**Y**	MDEntryType [269]
CycleStatus	**N**	
OpenInterest	**N**	

1.21 GMACMessageTradingStatusV3

1.21.1 Message Security Status Mapping

Field	Presence	Exchange Field Translation
MsgType	**M**	‘GMAC_TYPE_TRADING_STATUS_V3’
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	SEQUENCE_UNDEFINED
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
ChannelID	**Y**	GMAC live main channel # where message has been received
SegmentID	**N**	
SectorID	**N**	
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48] Presence = False otherwise.
InstrumentName	**N**	
InstrumentGroupStr	**Y**	SecurityGroup [1151] when provided Presence = False otherwise.
InstrumentContext	**N**	
TradingStatus	**M**	TSTATUS_OPEN if SecurityTradingStatus [326] equals to: • 17 Ready to trade TSTATUS_QUOTE if SecurityTradingStatus [326] equals to: • 15 New Price Indication

Field	Presence	Exchange Field Translation
		• 21 Pre-open • 26 Post-close TSTATUS_CLOSE if SecurityTradingStatus [326] equals to: • 4 Close • 18 Not available for trading TSTATUS_SUSPEND if SecurityTradingStatus [326] equals to: • 2 Trading halt TSTATUS_UNKNOWN if SecurityTradingStatus [326] equals to: • 20 Unknown or invalid • 24 Pre-cross • 25 Cross • 103 No change
RawExchangeTradingStatusBin	**Y**	SecurityTradingStatus [326]
DataType	**N**	
TradingStatusConditions	**Y**	SurveillanceIntervention set if HaltReason [327] = 1 (Surveillance intervention) MarketEvent set if HaltReason [327] = 2 (Market event) InstrumentActivation set if HaltReason [327] = 3 (Instrument activation) InstrumentExpiration set if HaltReason [327] = 4 (Instrument expiration) NoCancel set if SecurityTradingEvent [1174] = 1 (No Cancel) ChangeTradingSession set if SecurityTradingEvent [1174] = 4 (Change of Trading Session, reset statistics) NoMatchingFollows set if

Field	Presence	Exchange Field Translation
		SecurityTradingStatus [326] = 26 (Post-close) ImpliedOn set if SecurityTradingEvent [1174] = 5 (Implied Matching On) ImpliedOff set if SecurityTradingEvent [1174] = 6 (Implied Matching Off) Presence = False otherwise.

1.21.2 Message Snapshot Full Refresh Mapping

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_TRADING_STATUS_V3'
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	RptSeq [83]
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
ChannelID	**Y**	GMAC live main channel # where message has been received
SegmentID	**N**	
SectorID	**N**	
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48] if present
InstrumentName	**N**	
InstrumentContext	**N**	
TradingStatus	**M**	TSTATUS_OPEN if

Field	Presence	Exchange Field Translation
		MDSecurityTradingStatus [1682] equals to: • 17 Ready to trade TSTATUS_QUOTE if MDSecurityTradingStatus [1682] equals to: • 15 New Price Indication • 21 Pre-open • 26 Post-close TSTATUS_CLOSE if MDSecurityTradingStatus [1682] equals to: • 4 Close • 18 Not available for trading TSTATUS_SUSPEND if MDSecurityTradingStatus [1682] equals to: • 2 Trading halt TSTATUS_UNKNOWN if MDSecurityTradingStatus [1682] equals to: • 20 Unknown or invalid • 24 Pre-cross • 25 Cross
RawExchangeTradingStatusBin	**Y**	MDSecurityTradingStatus [1682]
DataType	**N**	
TradingStatusConditions	**N**	

1.22 GMACMessageQuoteRequestV3

1.22.1 Message Quote Request Mapping

Generation conditions This message is generated as many times as NoRelatedSym [146].

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_QUOTE_REQUEST_V3'
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	SEQUENCE_UNDEFINED
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
InstrumentIndex	**Y**	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	**N**	
RequestID	**M**	QuoteReqID [131]
Quantity	**M**	OrderQty [38]
Side	**Y**	SIDE_BID if Side [54] = 1 (Buy) SIDE_ASK if Side [54] = 2 (Sell) SIDE_UNKNOWN otherwise
TransactTime	**Y**	TransactTime [60]
QuoteType	**Y**	2 if QuoteType [537] = 1 (Tradable)

1.23 GMACMessageOpenInterestV3

1.23.1 Message Snapshot Full Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] equals to:

- 'C' Open Interest

Field	Presence	Exchange Field Translation

Field	Presence	Exchange Field Translation
MsgType	M	‘GMAC_TYPE_OPEN_INTEREST_V3’
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	N	
OpenInterest	Y	MDEntrySize [271] * 10^GMAC_DECIMAL_PLACES
TradingDate	Y	TradingReferenceDate [5796]

1.23.2 Message Incremental Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] equals to:

- ‘C’ Open Interest

Field	Presence	Exchange Field Translation
MsgType	M	‘GMAC_TYPE_OPEN_INTEREST_V3’
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	N	
OpenInterest	Y	MDEntrySize [271] * 10^GMAC_DECIMAL_PLACES
TradingDate	Y	TradingReferenceDate [5796]

1.24 GMACMessageImbalanceV3

1.24.1 Message Snapshot Full Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] = ‘4’ (Opening price) and OpenCloseSettlFlag [286] = 5 (Indicative Opening Price IOP).

Field	Presence	Exchange Field Translation
MsgType	M	‘GMAC_TYPE_IMBALANCE_V3’
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	N	
CrossType	N	
Direction	N	
Variation	N	

Field	Presence	Exchange Field Translation
Reference	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Far	N	
Near	N	
Paired	N	
Imbalance	N	
MktImbalance	N	
ImbalanceConditions	N	

1.24.2 Message Incremental Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] = '4' (Opening price) and OpenCloseSettlFlag [286] = 5 (Indicative Opening Price IOP).

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_IMBALANCE_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	N	
CrossType	N	
Direction	N	
Variation	N	
Reference	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Far	N	
Near	N	
Paired	Y	MDEntrySize [271] * 10^GMAC_DECIMAL_PLACES
Imbalance	N	
MktImbalance	N	
ImbalanceConditions	N	

1.25 GMACExtensionCMEBinaryMatchOrders

1.25.1 Message Incremental Refresh Mapping

Generation conditions This message is used to provide the list of orders that participated in a match event. It is appended to:

- GMACMessageTradeV3 message: this is the case of a trade summary which handles the matched orders using one single packet
- GMACMessageInformationV3 message: this is the case of a trade summary which handles the matched orders using more than one packet. The first extension is appended to GMACMessageTradeV3, the subsequent extension being appended to GMACMessageInformationV3.

  Note pertaining to the GMAC instrument filtering feature: GMACExtensionCMEBinaryMatchOrders appended to GMACMessageInformationV3 are not filtered by the GMAC instrument filtering feature unlike GMACExtensionCMEBinaryMatchOrders appended to GMACMessageTradeV3 which are filtered. Users are advised to

drop these messages when they are not preceded by GMACExtensionCMEBinaryMatchOrders appended to GMACMessageTradeV3 (this means that the trade summary spans over more than one packet and that the trade is filtered by the GMAC instrument filtering feature).

One message GMACExtensionCMEBinaryMatchOrders is generated if configuration parameter `<extension-messages>` is enabled.

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	**M**	Extension length
ExtensionType	**M**	'CMEBinaryMatchedOrders'
NumberOfMatchedOrders	**M**	NoOrderIDEntries [37705]
►MatchedOrders.MatchedOrderId	**M**	OrderID [37]
►MatchedOrders.LastQty	**M**	LastQty [32]

1.26 GMACMessageResetV3

1.26.1 Message Incremental Refresh Mapping

Generation conditions This message is generated only when MDEntryType [269] equals to:

- 'J' Empty Book

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_RESET_V3'
Length	**M**	Message length
ExtensionsLength	**M**	Extension length
SymbolSequence	**M**	RptSeq [83]
Sequence	**M**	MsgSeqNum [34]
ExchangeTimestamp	**M**	TransactTime [60]
InstrumentIndex	**N**	
Scope	**M**	RESET_SCOPE_CHANNEL

1.27 GMACMessageOrderUpdateV3

1.27.1 Message Snapshot Full Refresh Mapping

Exchange notes To build the full depth MBO order book, each order must be sorted by instrument side, and price (in descending order for Bids and ascending order for Asks). Then the order priority number must be applied only to the orders of the same price/ side.

Member Position, mapped to MDOrderPriority [37707] (GMAC field Position from message GMACMessageOrderUpdateV3), from lowest to highest values, is used to position the order against other orders of the same instrument side, and price.

Generation conditions Presence map bit field UseIndexForIdentification is set.

The message is generated if configuration parameter `<book-type>` equals to 'mbo' or 'both'.

Field	Presence	Exchange Field Translation
MsgType	**M**	'GMAC_TYPE_ORDER_UPDATE_V3'
Length	**M**	Message length

Field	Presence	Exchange Field Translation
ExtensionsLength	M	Extension length
SymbolSequence	M	SEQUENCE_UNDEFINED
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
ActionType	M	'N'
Side	Y	SIDE_BID if MDEntryType [269] equals to: • '0' Bid SIDE_ASK if MDEntryType [269] equals to: • '1' Offer
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	N	
OrderID	M	OrderID [37]
TraderID	N	
PreviousOrderID	N	
Price	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Quantity	Y	MDDisplayQty [37706] * 10^GMAC_DECIMAL_PLACES
Position	Y	MDOrderPriority [37707]

1.27.2 Message Incremental Refresh Mapping

Exchange notes

To build the full depth MBO order book, each order must be sorted by instrument side, and price (in descending order for Bids and ascending order for Asks). Then the order priority number must be applied only to the orders of the same price/ side.

Member Position, mapped to MDOrderPriority [37707] (GMAC field Position from message GMACMessageOrderUpdateV3), from lowest to highest values, is used to position the order against other orders of the same instrument side, and price.

Generation conditions

Presence map bit field UseIndexForIdentification is set.

The message is generated if configuration parameter `<book-type>` equals to 'mbo' or 'both'.

This message is generated only when OrderUpdateAction [37708] equals to:

- '0' New
- '1' Update

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_ORDER_UPDATE_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
ActionType	M	'N' if OrderUpdateAction [37708] = 0 (New) 'U' if OrderUpdateAction [37708] = 1 (Update)
Side	Y	SIDE_BID if MDEntryType [269] equals to: • '0' Bid SIDE_ASK if MDEntryType [269] equals to: • '1' Offer
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
InstrumentName	N	
OrderID	M	OrderID [37]
TraderID	N	

Field	Presence	Exchange Field Translation
PreviousOrderID	N	
Price	Y	MDEntryPx [270] * 10^GMAC_DECIMAL_PLACES
Quantity	Y	MDDisplayQty [37706] * 10^GMAC_DECIMAL_PLACES
Position	Y	MDOrderPriority [37707]

1.28 GMACMessageOrderDecreaseV3

1.28.1 Message Incremental Refresh Mapping

Generation conditions

Presence map bit field UseIndexForIdentification is set.

The message is generated if configuration parameter `<book-type>` equals to 'mbo' or 'both'.

This message is generated only when OrderUpdateAction [37708] equals to:

- '2' Delete

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_ORDER_DECREASE_V3'
Length	M	Message length
ExtensionsLength	M	Extension length
SymbolSequence	M	RptSeq [83]
Sequence	M	MsgSeqNum [34]
ExchangeTimestamp	M	TransactTime [60]
InstrumentIndex	Y	'/nxxxxxxxx' with xxxxxxxx the n hexadecimal-encoded bytes of SecurityID [48]
OrderID	M	OrderID [37]
Quantity	Y	Quantity reduction = MDDisplayQty [37706] * 10^GMAC_DECIMAL_PLACES The order must be deleted if the remaining quantity = 0 after the quantity reduction.
Side	Y	SIDE_BID if MDEntryType [269] equals to: • '0' Bid SIDE_ASK if MDEntryType [269] equals to: • '1' Offer

1.29 GMACExtensionCMEBinaryOrderSnapshot

1.29.1 Message Snapshot Full Refresh Mapping

Exchange notes

The MBO market recovery feed supports recovery chunk tag NoChunks [37709] (GMAC field NoChunk from message GMACExtensionCMEBinaryOrderSnapshot) and tag CurrentChunk [37710] (GMAC field CurrentChunk from message GMACExtensionCMEBinaryOrderSnapshot) to allow client systems to determine the number of packets required to recover an MBO book.

GMAC field NoChunks is the total number of packets that constitute a single instrument order book and field CurrentChunk is the current chunk in the sequence.

Generation conditions

The message is generated if configuration parameter `<extension-messages>` is enabled and if configuration parameter `<book-type>` equals to 'mbo' or 'both'.

Field	Presence	Exchange Field Translation
MsgType	M	'GMAC_TYPE_EXTENSION_CME_BINARY_V3'
Length	M	Extension length

Field	Presence	Exchange Field Translation
ExtensionType	**M**	‘CMEBinaryOrderSnapshot’
NoChuncks	**M**	NoChuncks [37709]
CurrentChunck	**M**	CurrentChunck [37710]