ICE iMpact Multicast Feed

Message Specification

18 November 2020

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Revisions

Version	Date	Description of Changes
1.0.01	12/05/07	Initial draft, moved some messages from the TCP Feed 1.1 specs. Added new messages.
1.0.02	02/14/08	Updated multicast product group and market type mapping
1.0.05	04/09/08	Options multicast is being enhanced for an upcoming release. Removed option related messages from specification until enhancements are ready.
1.0.06	04/21/08	Added Market Event Message Added SystemPricedLegType field to Trade Message Added MinPrice, MaxPrice, ProductID, ProductName, HubID, HubAlias, StripID and StripName fields to Product Definition Response Added TextMessageExtraFld to System Text Message
1.0.07	06/12/08	Added unknown test message, which is sent out on test envs only.
1.0.08	08/14/08	Updated Appendix E – ICE Instrument Naming Convention with support of OTC contract symbol.
1.0.09	12/01/08	Added Pre-Open Price Indicator Message
1.0.09	09/16/09	Moved Supported Market Types list to a separate document on ICE web site. Moved ICE Instrument Naming Convention to a separate document on ICE web site.
1.0.09	10/15/09	Changed field name 'TotalVolume' to 'Volume' in Market Statistics Message and Market Snapshot Message.
1.1.01	11/05/09	Added SecurityType in Product Definition Request Added Options Product Definition Response
1.1.02	11/10/09	Added Option Open Interest Message Added Option Settlement Price Message
1.1.03	03/12/10	Added 'GetStripInfoMessages' and 'ReservedField1' fields in Login Request Added Strip Info Message Added 'ReservedField1' field in Product Definition Response Message and Market Snapshot Message
1.1.04	09/21/10	Added IsSerialOptionsSupported and IsTradable fields to Product Definitions Response Message. Added IsImpliedSpreadAtMarketOpen and IsAdjustedTrade fields to Trade Message. Added 'U' an option for 'SecurityType' field in Product Definition Request. Added Option Strategy Definition Response Message Added New Option Strategy Definition Message Added RFQ Message
1.1.05	02/03/11	Added new NumOfMarkets field (4 bytes) in Options Product Definition Response Message
1.1.06	02/28/11	Added SerialUnderlyingMarketID field to Options Product Definition Response Message
1.1.07	03/28/11	Added AggressorSide field to Trade Message
1.1.08	06/17/11	Added ContractSymbolExtra to Options Product Definition Response
1.1.08	06/20/11	Renamed "BlockTradeType" to 'OffMarketTradeType"
1.1.09	07/08/11	Added New Options Market Definition Message
1.1.09	08/05/11	Renamed "TotalVolume" to "Volume" to match Market Statistics Message
1.1.10	08/26/11	Added new 'Extra Flags' field to AddModifyOrder Message and Trade Message Added OpenInterestDate to Open Interest Message, Options Open Interest Message, and Market Snapshot Message
1.1.11	10/31/11	Added Old Style Options Trade and Market Stats Message
1.1.12	11/11/11	Added Interval Price Limit Notification Message
1.1.12	12/02/11	Added off market trade type for EFM trade
1.1.12	01/27/12	Corrected field types for message 'W'
1.1.12	02/16/12	Added new flag IsLegDealOutsideIPL in Trade Message
1.1.12	06/08/12	Added Block Trade Type F
1.1.12	06/12/12	Removed UDS HedgeDelta 1-300 restriction
1.1.13	07/25/12	Added IsSettlePriceOfficial in Market Snapshot Message
1.1.14	11/16/12	Added SettlePriceDenominator in ProductDefinitionResponse and OptionsProductDefinitionResponse Message

		Added new SettlementPrice field in Settlement Price, Options Settlement Price and MarketSnapshot Messages
1.1.15	10/16/13	Added Delta in Option Settlement Price Message Added SequenceWithinMillis in Add/Modify Order Message and Snapshot Order Message
1.1.16	01/24/14	Added Side in RFQ Message Added MICCode to Futures/OTC Product Definition Response Message Added Top10 Price Level Messages to new options depth channels Added Spot Market Trade Message for spot market channels Added Futures Strategy Definition Response Message Added New Futures Strategy Definition Message
1.1.17	03/20/14	Added UnitQtyDenominator in product definition response messages (both futures and options)
1.1.18-D	04/16/14	Draft for version 1.1.18: Added new block trade types '4' and '5' Updated: Marker/Index Price Message, UDS-Futures notification and market definition response New messages: Close Price Message and New Expiry Message
1.1.18-D	04/30/14	Added SecuritySubType to Message 'B'
1.1.18-D	05/20/14	Added HedgeOnly to Message 'B'
1.1.18-D	06/11/14	Added ExchangeSilo to Message 'B'
1.1.18-D	06/23/14	Added new fields to Message 'B': OffExchangeIncrementQtyDenominator OffExchangeIncrementQty OffExchangeIncrementPrice OffExchangeIncrementOptionPrice ProductID (4-byte integer) HubID (4-byte integer) StripID (4-byte integer) Changed StripID to 4-byte integer in Strip Info Message
1.1.18-D	07/02/14	Added IsSystemPricedLeg to Spot Market Trade Message Added SettlePriceDenominator and UnitQtyDenominator to New Options Market Definition Message
1.1.18	07/03/14	Remove Draft status
1.1.18	07/15/14	Added 3-char OffMarketTradeType to Trade Message, Cancelled Trade Message, and Investigated Trade Message
1.1.18	07/18/14	Added (new) Appendix E for Strategy Codes; Moved existing Appendix E to Appendix F
1.1.18	07/24/14	Adding more description to the OldOffMarketTradeType fields.
1.1.18	07/30/14	MessageType 'R': moved MarketID field to offset 3.
1.1.18	08/11/14	Added options settlement type code '0', '3', '4' for OptionsSettlementType in messages 'p' and 'l'.
1.1.19	09/15/14	Added new Fields to Message 'C' : HasPreviousDaySettlementPrice PreviousDaySettlementPrice Added new Fields to Message 'R' : OffExchangeIncrementQtyDenominator OffExchangeIncrementQty OffExchangeIncrementPrice OffExchangeIncrementOptionPrice Contract Symbol Appendix A: Removed pre-close '2'.
1.1.20	10/15/14	Added new field ISIN to Product Definition Response Message and New Expiry Message
1.1.20	10/24/14	Trade with OffExchangeTradeType='5' should be legitimate for being LastTrade
1.1.20	11/11/14	Added status code 'C', 'D', 'F' for MarkerIndexPriceMessage
1.1.21	12/04/14	Added ability to add optional fields to Message 'B' Added Special Field Message 'b' Added Appendix G

1.1.21	03/02/15	Message 'm,s,t,u' supports Special Field Message Added support for Special Field Message in price level channel
1.1.22	04/06/15	Added new Field TickValue to Message 'p', 'l' Added new Field NumDecimalsOptionsPrice to Message 'R' Added new Field SettlementType to Messages 'B', 'p', 'l' Added new Field IsBlockOnly to Messages 'B', 'p','l', '9', 'U', 'q', 'd' Added new Field FlexAllowed to Messages 'B', 'p', 'l' Added new Fields HasPreOpenVolume and PreOpenVolume to Message 'g' Added new Fields SequenceWithinMillis and new ExtraFlag IsImplied to Message 'G'
1.1.22	05/12/15	Add new Field HedgeMarketID to Messages 'B', 'R' Renamed SerialUnderlyingMarketID to HedgeMarketID for Messages 'p' and 'l' Renamed OptionsSettlementType to OptionsStyle for Messages
1.1.23	07/29/15	Added new Field SettlementType to Messages 'R' Added new Field ContractSymbolExtra to Message 'B' Added new Field SettlementPrice with settlement price precision to Message 'u' Added new 4 byte Field NumberOfMarket to Message 'B', 'q', 'd' Added Market Stat Update Rules to Appendix B Removed Trade Type 'F', '9' and 'J' and Added 'AA' to Appendix B
1.1.23	08/25/15	Added Appendix H: Full Implied Multicast Channels
1.1.23	09/08/15	Corrected the offset for SettlementPrice in Message 'u' and SettlementType for Message 'R' Added description for IncrementPrice and TickValue for Message B.
1.1.24	02/03/16	Added a description for Close Price
1.1.24	02/03/16	Added New messages: Fixing Transition Message and Fixing Lockdown Message
1.1.24	02/16/16	Added new Field UnitOfMeasure, CrossOrderSupported to Message 'B', 'p', 'R', '1' Added new Field GTAllowed to Message 'B', 'p', 'R', '1', 'd', 'q', 'U', '9' Added new Field GuaranteedCrossSupported to Message 'p' and 'l' Added new Fields StrategySymbol to Message 'd', 'q', 'U', '9' Updated the bundle marker description
1.1.24	03/30/16	Added new Fields GBP Price and EUR Price to Fixing Lockdown Message
1.1.25	07/26/16	Updated the description of HasPreOpenVolume in Msgtype 'g' Updated the description of GBP and EUR price in Fixing Lockdown Message Updated the description of SettlePriceDateTime in MesssageType 'C' from -1 to 0 to reflect actual behavior Added new Field StrategyPreference to Message '1' Added new Field AONAllowed to Message 'B' Added new Field MiFIDRegulatedMarket to 'B', 'p', 'R', ''l', 'd', 'q, 'U', '9' Added Special Field AON to Message 'D', 'E' in Appedix G Added new message Fixing Indicative Price Message Added following Fields to Message 'q', 'U': LegStrategyCode, LegRatioQtyNumerator, LegRatioQtyDenominator, LegRatioPriceNumerator, LegRatioPriceDenominator, HedgeStrategyCode, DealPriceDenominator, SettlePriceDenominator, UnitQtyDenominator Added following Fields to Message 'd', '9': LegStrategyCode, LegRatioQtyNumerator, LegRatioQtyDenominator, LegRatioPriceNumerator, LegRatioPriceDenominator, UnderlyingMarketId, MarketDesc, MaturityYear, MaturityMonth, MaturityDay, DealPriceDenominator, UnitQuantity, NumDecimalsOptionsPrice, AllowOptions, ClearedAlias, AllowImplied, MinPrice, MaxPrice, ProductName, HubAlias, StripName, IsTradable, SettlePriceDenominator, MicCode, UnitQtyDenominator, HedgeOnly, ExchangeSilo, OffExchangeIncrementQtyDenominator, OffExchangeIncrementQty, OffExchangeIncrementPrice, OffExchangeIncrementOptionPrice, ProductID, HubID, StripID, ISIN
	09/29/16	Corrected some fields which were overwritten in Message 9 and d
	10/05/16	Corrected the size of LegRatio fields from 8 to 4 Removed the offsets after the repeating groups in Message 9 Added description for LegRatio fields and Leg strategy code

		Updated the description of SettlePriceDateTime in MesssageType 'C'
	10/13/16	Changed underlyingMarketID to ReservedField in Message 9 and d Marked Bilateral Off Exchange Trade type for future removal since this type is not being sent now Updated the New Futures Strategy Definition - removed LotSize, IsSpread, IsCrackSpread, PrimaryMarketID, Secondary Market ID, Currency, TickValue, OptionsExpirationYear, OptionsExpirationMonth, OptionsExpirationDay, ReservedField1, IsSerialOptionSupported
1.1.26	4/06/17	Added New Message Indicative Quote Message Added DateTime and SequenceWithinMillis to Delete Order Message Added newField TestMarketIndicator to Message 'B', 'p', 'q', 'U', 'd', '9' Added BlockDetails to 'B','p','q','d' Added RefSpreadProductId to 'B'
1.1.26.1	4/26/17	Added Missing field BlockDetailLength to 'B','p','q','d'
	6/9/17	Updated the description of NumBlockDetails in 'q' and 'd'
1.1.27	7/31/17	Updated ExtraFlag bit 3 field in Trade Message as isVerticalSplit
1.1.28	9/7/17	Added ISIN to 'B', 'p' and renamed the old field to Underlying ISIN in B and d Added ModificationTimestamp to Add/Modify Order Message 'E' Added ContractSymbolExtra to 'U', 'q' Added RFQQuantity, SecurityType, OptionType, StartDate, EndDate to Indicative Quote message 'n' Updated the description of USD price for Fixing Lockdown Message Added Timestamp to Add, Change and Delete Price Level Message
	Sept 25, 2017	Updated the description of ValuationDateTime in O Updated the description of IsImplied bit field on the trade to reflect actual behavior Renamed ISIN to Underlying ISIN in 9 and R
	Sept 29, 2017	Updated the description of ValuationDateTime in Option Settlement Price Message (w)
1.1.29	Nov 22, 2017	Removed Indicative Quote Message
1.1.30	19 April 2018	Add pre-close state to Appendix A. Pre-close is still being used for some markets. Updated description of HasPreviousDaySettlementPrice and PreviousDaySettlementPrice Updates to the Fixing Lockdown Message Added links for additional documents for IRS and CDS Swaps in Appendix G Added NumberOfExtraLegDefinitions and subsequent Leg definitions to d and q Added MarketTransparencyType to B
1.1.31	1 May 2018	Added LegRatioPriceDenominator to q Added LegDealSuppressed to q, d, 9, and U
		Updated description of RepurchaseRate, RepurchaseDate, Factor, AccruedPremiumAmt and EventPaymentAmt in B
1.1.32	19 June 2018	Updated the version to match the ICE Impact Feed Multicast Technical Specification Updated the valid values for Block Trade Type
1.1.33	20 July 2018	Added Date special field type Added Special Field type "ScreenLastTradeDate" Added ScreenLastTradeYear, ScreenLastTradeMonth, and ScreenLastTradeDay to 'p', 'R', and 'l' Updated the description of Maturity Month, Day and Year
1.1.33.1	6 August 2018	Added the offset for ScreenLastTradeDate in New Expiry Message and New Option Market Definition Message
1.1.34	4 Sep 2018	Added TradeTransactionID and IsTransactionEnd fields to Message Bundle Marker 'T' Added New Message Transaction End Marker for Empty Last Bundle Message (e) Added IsDividendAdjusted, HubName, StripType, and LotSize to Product Definition Dynamic Fields Added dynamic fields to Futures Strategy Definition Response 'd' Added ReservedField field to Marker/Index Prices Message 'z'

		Added IsTradable field to Option Product Definition Response ‘p’, Options Strategy Definition Response ‘q’, New Options Market Definition Message ‘l’, and New Options Strategy Definition Message ‘U’
1.1.35	4 October 2018	Moved Product Definition Dynamic Fields, BlockDetail Field Format, and Date Field Format to their own section within TCP Messages and added a message types column to the Dynamic fields Changed the field name to Reserved on Marker/Index Prices Message 'z' Added dynamic fields to Options Product Definition Response Message 'p' and Options Strategy Definition Response Message 'q' Added NumOfCycles to Product Definition Dynamic Fields Added NumOfCycles to New Futures Strategy Definition Message '9', New Expiry Message 'R', New Options Strategy Definition Message 'U', and New Options Market Definition Message 'l' Added a link to the supplemental document for price level bundling under message bundle marker Marked HubName, StripType and LotSize for future use in Product Definition Dynamic Fields
1.1.36	12 October 2018	Added StripBeginDate and StripEndDate to Product Definition Dynamic Fields , and updated when StripType is sent
	9 November 2018	Updated the description of StrategyPreference to indicate future deprecation
1.1.37	1 February 2019	Updated the applicable markets for HubName and StripType in Product Definition Dynamic Fields Add OptionsExpirationDate to Product Definition Dynamic Fields Removed LotSize in Product Definition Dynamic Fields for Combo Strategies Add OptionsExpiryYear, Month and Day to New Options Strategy Definition Message(‘U’)
1.1.38	19 March 2019	Added a new message type Multicast Channel Groups Message (X) Updated the description of LegRatioQtyNumerator and LegRatioQtyDenominator to reflect that it does not only apply to inter-product spreads Updated the description of SequenceWithinMillis that it can be used to get the microsecond
1.1.39	March 29, 2019	Added MarketTypeID to New Options Market Definition Increase list of market types on login response message Added IndexPriceDenominator to Marker/Index price for future use Removed the references for Futures Price for IRS products
1.1.39.1	May 20, 2019	Updated the decommission dates for StrategyPreference=0 to January 2020 Removed UDS HedgeDelta 1-300 restriction on Options Strategy Definition Response Message 'q'
1.1.39.2	June 19, 2019	Marked Transaction End Marker for Empty Last Bundle Message ‘e’ for removal
1.1.39.3	July 10, 2019	Updated the description of ISIN for Product Definition Dynamic Field 31 to reflect that some strategies can have ISIN for Futures Strategy definition ‘d’
1.1.40	September 6, 2019	Marked LegRatio for future removal and renamed it to LegRatioObsolete Increase length of HedgeDelta in q and U New Message type ‘Z’ - Fragment Wrapper Message Add MarketTypeID to New Futures Strategy Definition Message '9' and New Options Strategy Definition Message 'U' Add OverrideBlockMin in B, p, q and d
1.1.40.1	November 18, 2019	Add OverrideBlockMin in New Futures Strategy Definition Message '9' and New Options Strategy Definition Message 'U'
1.1.41	January 13, 2020	Add TradingEngineReceivedTimestamp to Add/Modify Order Message, Delete Order Message and Trade Message Updated the default value for StrategyPreference on Login message
1.1.42	February 28, 2020	Added ContractSize, ScreenTickValue, and BlockTickValue to Product Definition Dynamic Fields

	April 16, 2020	Added NumberOfExtraLegDefinitions and subsequent Leg definitions to New Futures Strategy Definition Message (9) and New Options Strategy Definition Message (U)
	April 24, 2020	Added ContractSizeDenominator and TickValueDenominator to Product Definition Dynamic Fields Updates to Description field for Fixing Lockdown Message and to Currency and price for Fixing Indicative Price Message
1.1.43	18 November 2020	Added the number of price levels to the Multicast Groups Message (X) Add Product ID to Option Product Add a new field NumOfCycles from 2 to 4 bytes and renaming the old field as OldNumOfCycles for Product Definition Dynamic Fields and MessageTypes 9, U, R and I Add MessageType Futures Strategy Definition Response 'd' to the messages that will contain ScreenTickValue, BlockTickValue and TickValueDenominator for Product Definition Dynamic Fields

iMpact Multicast Feed Message Spec

1. Introduction

This document covers all the messages that are supported in iMpact multicast feed.

1.1. Related Documents

ICE iMpact Multicast Feed Technical Specification

1.2. Conventions

This manual uses a set of terms, symbols, and typographic conventions to categorize specific information. Familiarity with these conventions will enable more effective use of this document:

Convention	Use
Grayed Out	Indicates reservation for future use
Yellowed Out	Indicates future deprecation
Green Highlight	Indicates addition in current specification
~~Red Highlight Strikethrough~~	Indicates removal in current specification
Blue Highlight	Indicates modification in current specification

2. High Level Message Specification

2.1. Complete List of Messages

2.1.1. TCP Messages

Client Messages	Type	Server Messages	Type
Login	1	Login Response	A
Product Definition	2	Futures/OTC Product Definition Response	B
		Strip Info Message (Optional)	i
		Options Product Definition Response	p
		Options Strategy Definition Response	q
		Futures Strategy Definition Response	d
Historical Replay	7	Historical Replay Response	8
Debug	5	Debug Response	P
Logout	6	Multicast Channel Groups Message	X
		Heartbeat	Q
		Error Response	S
		System Text Message	L

2.1.2. Multicast Messages

Category	Message	Type
Common Messages	Market Snapshot (snapshot channel)	C
	Trade	G
	Spot Market Trade	Y
	Investigated Trade	H
	Cancelled Trade	I
	Market Statistics	J
	Market State Change	K
	System Text	L
	Open Interest	M
	Open Price	N
	Close Price	c
	Settlement Price	O
	Marker/Index Prices(Futures/OTC only)	z
	End Of Day Market Summary	u
	Market Event Message	f
	Pre-Open Price Indicator Message	g
	Strip Info Message	i
	Interval Price Limit Notification Message	V
	New Futures Strategy Definition Message	9

	New Expiry Message	R
	Special Field Message	b
	Unknown Test Message (Test Environment Only)	?
	Snapshot Order Message (snapshot channel)	D
	Fragment Wrapper Message	Z
Full Order Depth Only (Futures/OTC Only)	Add/Modify Order	E
	Delete Order	F
	Message Bundle Marker	T
	Fixing Transition Message	3
	Fixing Lockdown Message	4
	Fixing Indicative Price Message	0
	Snapshot Price Level (snapshot channel)	m
	Add Price Level	t
Price Level Only Price Level Only	Change Price Level	s
	Delete Price Level	r
	New Options Strategy Definition Message	U
	New Options Market Definition Message	l
	RFQ Message	k
	Option Open Interest Message	v
	Option Settlement Price Message	w
	Old Style Options Trade and Market Stats Message	W

2.2. Message Type, Length and Unknown Message

The first byte of a message is always used for message type. And the next two bytes are used for the message body length, which is the message length minus 3 bytes. **Client should read the first 3 bytes, get the value of the message body length, and then use it to read the rest of the message, instead of using a hard-coded value.** Even though length is fixed for a message type at a particular time, it could change over time because new fields could be added. Reading message body using the received length value allows client to continue to work when new fields are added at the end of a message.

With message body length, client can also process unknown type because it can skip the rest of the message to get to the next one. This is very important, since new message types or new fields could be added in the future. **Client is required to handle any unknown messages or new fields. This is how iMpact feed supports backward compatibility.**

2.3. Alpha, Numeric, Time and Price Fields

All alpha fields are in ASCII format, left justified and null character padded. Numeric fields are in binary Big Endian (Network Byte Order) format. They are all signed for consistency, even though most likely only price fields (for certain spread markets) could be negative.

In product definition, field “OrderPriceDenominator” indicates the number of decimal places that should be used for order price in a particular market. And “DealPriceDenominator” is for deal related price fields, such as deal price, high, low, etc. For majority of the markets, those two denominators are the same. But they could be different for certain crack and spread markets. “SettlePriceDenominator” should also be used for SettlementPrice.

After client reads the value of a price field, it should apply the denominator to get the correct price. For example, if the value of a price field in an order message is 631400 and the order price denominator is 4, the real price is 63.1400.

Microsecond precision can be retrieved using the SequenceWithinMillis field. Microsecond can be calculated using *floor*(sequenceWithinMillis/1000). Please see the example below how to get the microsecond from SequenceWithinMillis field.

Timestamp (with millis resolution): 2016-10-11 08:24:20.249
Timestamp in milliseconds: 1476174260249
SequenceWithinMillis: 5003
Full timestamp: 2016-10-11 08:24:20.249005
Microseconds is 005

2.4. Request, Request Sequence ID and Error Response

Field “RequestSeqID” is specified in every request message. Client should assign a unique (per session) number so that the response message could be matched back to the request if needed.

When error occurs on the server processing an incoming request, message “Error Response” with the original request sequence ID will be sent back to client. Errors such as invalid request, invalid market type/ID or no permission to certain market type/ID could happen, though rare. “Error Response” message allows client to know what goes wrong when there is problem with a particular request.

2.5. Multicast Message Block

Each multicast packet contains a message block which could include multiple messages. Each block has a header with session number, sequence number, number of messages and sent timestamp. These are numeric fields in Big Endian format and are signed, consistent with other numeric fields in the feed messages. The following shows how a multicast datagram could look like.

Session Number (2 bytes)	Sequence Number (4 bytes)	Number of Msgs (2 bytes)	Sent DateTime (8 bytes)	Msg #1	……	Msg #n

Session Number and Sequence Number fields can be used for detecting whether a new session has started or there is a sequence gap. Please read “ICE iMpact Multicast Feed Technical Specification” for details on sequence gap detection.

“Number of Messages” field in the header indicates the number of messages contained in the block. It could be 0 in case of heartbeat. “SentDateTime” field is the timestamp of when the message block is sent. It is the number of milliseconds since Jan 1st, 1970, 00:00:00 GMT.

Message block is used for multicast only, not for TCP messages.

3. TCP Messages

With iMpact multicast feed, client still needs to connect to the TCP server for product definition download and historical replay. These are the messages used through TCP connection.

3.1. Login

3.1.1. Request Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '1'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	Request sequence ID assigned by client, unique per session
UserName	7	30	Alpha	
Password	37	30	Alpha	
GetStripInfoMessages	67	1	Alpha	Flag to indicate whether the client wants to get Strip Info Messages or not. 'Y' or 'N'. It is 'N' by default.
ReservedField1	68	2	N/A	Reserved for future use
StrategyPreference	70	1	Alpha	Indicates Strategy Publication Preference. '0' = Legacy Strategy Information (Not supported) '1' = New Strategy Information (Default)
MulticastInfo	71	1	Alpha	Flag to indicate whether the client wants to get Multicast Info Messages or not. 'Y' or 'N'. It is 'N' by default.

3.1.2. Login Response Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'A'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	The sequence ID in client's request.
Code	7	1	Alpha	'0' = Success '1' = Invalid Login '3' = Password Expired 'X' = Other
Text	8	120	Alpha	Success or failure messages

MarketTypesPermissioned	128	300	Alpha	Market type IDs allowed to access for the user. Char "," is used in between IDs.
ExtraMarketTypesPermissioned	428	300	Alpha	Extra field for permissioned market type ids when MarketTypesPermissioned field is not big enough. This should be appended to MarketTypesPermissioned if it is not empty

3.2. Product Definitions

3.2.1. Request Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '2'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	Request sequence ID assigned by client, unique per session
MarketType	7	2	Numeric	Market type ID, see Appendix C for the list.
SecurityType	9	1	Alpha	'F' – Futures/OTC (default, if not provided) 'O' – Options 'U' – UDS Options markets 'D' – UDS Futures markets

3.2.2. Futures/OTC Product Definition Response Message

If SecurityType is 'F' in the request, the server will return Futures/OTC Product Definition response messages.

There are multiple markets per market type. Field "NumOfMarkets" is used to identify how many messages can be expected in total for the given market type.

The multicast feed only supports pre-defined options markets, of which product definitions will be covered in the next section. In the Futures/OTC product definition response, there are some options related fields that are not used anymore. But we keep them there (instead of removing them) for backward compatibility of fixed length TCP messages. Users should ignore values in the options related fields as stated below.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'B'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	The original request sequence ID assigned by client, unique per session
RequestMarketType	7	2	Numeric	See Appendix C for the list of market types and IDs.

Field Name	Offset	Length	Type	Notes
NumOfMarketsObsolete	9	2	Numeric	Obsolete. Clients should use the new 'NumOfMarkets' field, which supports bigger value.
MarketID	11	4	Numeric	Unique identifier of a market
ContractSymbol	15	35	Alpha	See Naming Convention on Appendix D
TradingStatus	50	1	Alpha	See appendix A on trading status codes
OrderPriceDenominator	51	1	Alpha	Denominator for the order price fields in this market.
IncrementPrice	52	4	Numeric	Minimum increment price for this market. OrderPriceDenominator should be applied to this field. Please take note that this value can be different for the same markets with different expiry and that this value can change over time for a given market (ie MarketID)..
IncrementQty	56	4	Numeric	Minimum increment quantity for this market
LotSize	60	4	Numeric	The lot size is minimum size of contracts in lots. It is multiplier to determine the total lots. UnitQtyDenominator should be applied to get correct LotSize.
MarketDesc	64	120	Alpha	Description of the market
MaturityYear	184	2	Numeric	4 digit year. Last date that the market can be traded and should be removed from the system.
MaturityMonth	186	2	Numeric	Month range 1-12. Last date that the market can be traded and should be removed from the system.
MaturityDay	188	2	Numeric	Last date that the market can be traded and should be removed from the system.
IsSpread	190	1	Alpha	Indicate if the market is a spread
IsCrackSpread	191	1	Alpha	Indicate if the market is crack spread
PrimaryMarketID	192	4	Numeric	Ignored when it is not spread
SecondaryMarketID	196	4	Numeric	Ignored when it is not spread
IsOptions	200	1	Alpha	Not used. Kept here for backward compatibility.
OptionType	201	1	Alpha	Not used. Kept here for backward compatibility.
StrikePrice	202	8	Numeric	Not used. Kept here for backward compatibility.
SecondStrike	210	8	Numeric	Not used. Kept here for backward compatibility.
DealPriceDenominator	218	1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator. However, it could be different for some crack or spread markets.
MinQty	219	4	Numeric	Minimum quantity for this market
UnitQuantity	223	4	Numeric	The quantity in unit of measurement per lot. For example, it is 1000 barrels per lot for Brent. UnitQtyDenominator should be applied to get correct UnitQuantity.
Currency	227	20	Alpha	The currency that the market is traded on.
MinStrikePrice	247	8	Numeric	Not used. Kept here for backward compatibility.
MaxStrikePrice	255	8	Numeric	Not used. Kept here for backward compatibility.

Field Name	Offset	Length	Type	Notes
IncrementStrikePrice	263	4	Numeric	Not used. Kept here for backward compatibility.
NumDecimalsStrikePrice	267	1	Alpha	Not used. Kept here for backward compatibility.
MinOptionsPrice	268	8	Numeric	Not used. Kept here for backward compatibility.
MaxOptionsPrice	276	8	Numeric	Not used. Kept here for backward compatibility.
IncrementOptionsPrice	284	4	Numeric	Not used. Kept here for backward compatibility.
NumDecimalsOptionsPrice	288	1	Alpha	Only used for OffExchangeIncrementOptionPrice.
TickValue	289	8	Numeric	OrderPriceDenominator should be applied to get the real value. Please take note that this value can be different for the same markets with different expiry and that this value can change over time for a given market (ie MarketID).
AllowOptions	297	1	Alpha	Indicate if the market supports option markets, 'Y' or 'N'
ClearedAlias	298	15	Alpha	Clearing limit admin related
AllowsImplied	313	1	Alpha	'Y' or 'N'. 'Y' indicates this is a spread market, and, implied is allowed in this market
OptionsExpirationYear	314	2	Numeric	4 digit year
OptionsExpirationMonth	316	2	Numeric	Month range 1-12
OptionsExpirationDay	318	2	Numeric	
MinPrice	320	8	Numeric	Minimum Price. OrderPriceDenominator should be applied to this field.
MaxPrice	328	8	Numeric	Maximum Price. OrderPriceDenominator should be applied to this field.
OldProductID	336	2	Numeric	The replacement field for this is "ProductID". However, this old field will still support data dissemination. In some instances this old field may disseminate negative values. Use the replacement field to avoid negative values.
ProductName	338	62	Alpha	Name of the product that the contract/market is under
OldHubID	400	2	Numeric	The replacement field for this is "HubID". However, this old field will still support data dissemination. In some instances this old field may disseminate negative values. Use the replacement field to avoid negative values.
HubAlias	402	80	Alpha	Alias of the hub for the contract/market
OldStripID	482	2	Numeric	The replacement field for this is "StripID". However, this old field will still support data dissemination. In some instances this old field may disseminate negative values. Use the replacement field to avoid negative values.
StripName	484	39	Alpha	Name of the strip for the contract/market

Field Name	Offset	Length	Type	Notes
ReservedField1	523	1	N/A	Reserved for future use
IsSerialOptionsSupported	524	1	Alpha	Indicate if serial options is supported. 'Y' or 'N'.
IsTradable	525	1	Alpha	Indicate if the contract is tradable. 'Y' or 'N'.
SettlePriceDenominator	526	1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator.
MICCode	527	4	Alpha	Market Identifier Code for the market.
UnitQtyDenominator	531	1	Alpha	Denominator for UnitQuantity and LotSize. This field will be '0' for most of the markets.
SecuritySubType	532	2	Numeric	Contains the Strategy Code for defined market where applicable. See Appendix E for list of codes.
HedgeOnly	534	1	Alpha	Indicate if the contract is for hedge only. 'Y' or 'N'.
ExchangeSilo	535	1	Alpha	Exchange silo code for the market. '0' – ICE '1' – Endex '2' – LIFFE
OffExchangeIncrementQtyDenominator	536	1	Alpha	Denominator for OffExchangeIncrementQty.
OffExchangeIncrementQty	537	4	Numeric	Off exchange increment qty. OffExchangeIncrementQtyDenominator should be applied to this field.
OffExchangeIncrementPrice	541	4	Numeric	Off exchange increment price. OrderPriceDenominator should be applied to this field
OffExchangeIncrementOptionPrice	545	4	Numeric	Off exchange options increment price. NumDecimalsOptionsPrice should be applied to this field
ProductID	549	4	Numeric	ID of the product that the contract/market is under.
HubID	553	4	Numeric	ID of the hub for the contract/market
StripID	557	4	Numeric	ID of the strip for the contract/market
Underlying ISIN	561	12	Alpha	The ISIN of the security this market is associated with. This is currently only populated for Liffe Equity markets.
Number of Fields	573	2	Numeric	Number of Fields
-> FieldID		2	Numeric	Field Id. See Product Definition Dynamic Fields for full list of Fields
-> FieldLength		2	Numeric	Length of this field
-> Value		Field Length	Any	Value of given field. Type can be inferred by Field ID

The mechanism in which new fields are added to the Product Definition Response Message has been changed. As we continue to add new asset classes to the platform that continue to be supported via the same API interface, there is a need to support optionality for some fields in this message to reduce the impact of the new fields particularly where the new fields have no meaning for a specific product. For backwards compatibility purposes, all existing fields (pre v

1.1.21 of this spec) will remain unchanged. However, all new fields will follow the format of FieldId|Length|Value. The table below contains all new fields that will leverage this new format. The “Applicable Market” column specifies the set of markets for which the new fields are applicable for. Going forward, any new fields will leverage this new mechanism.

When there is an error on the server side (one likely reason would be user is not allowed to access a market type), “Error Response” message will be sent to the client. Please see the section about “Error Response” for details on the message format.

It is possible that error occurs for one but not another market type, especially in case of permission issue. On the server side, error for one request doesn’t affect the handling of another request. It is up to the client to decide how it would process the error response.

3.2.3. Strip Info Message

The strip info message defines the beginning and end of the strip. For example, a ‘Today’ strip type will specify the begin and end date as the current trading date and will change to the next trading day when the market rolls. The time when the market roll varies per product. This message is also useful for ‘custom’ strip types where the begin and end date are user specified. This message is returned after Product Definition Response messages if ‘GetStripInfoMessages’ was set to ‘Y’ in the login request for the session. Client can expect to receive the same number of Strip Info messages as that for Product Definition Response messages.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = ‘i’
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
OldStripID	3	2	Numeric	Not used. Kept here for backward compatibility. Client should use the new 4-byte StripID field.
StripType	5	20	Alpha	
BeginYear	25	2	Numeric	4 digit year
BeginMonth	27	2	Numeric	Month range 1-12
BeginDay	29	2	Numeric	
EndYear	31	2	Numeric	4 digit year
EndMonth	33	2	Numeric	Month range 1-12
EndDay	35	2	Numeric	
StripName	37	50	Alpha	
StripID	87	4	Numeric	StripID

3.2.4. Options Product Definition Response Message

If SecurityType is ‘O’ in the request, the server will return Options Product Definition response messages. Each option is related to a single underlying instrument. Users should utilize the underlying market id to link to a Futures/OTC product definition response for details on the instrument the option is derived from. All options for a given market type are returned in the response.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = ‘p’

Field Name	Offset	Length	Type	Notes
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	The original request sequence ID assigned by client, unique per session
RequestMarketType	7	2	Numeric	See Appendix C for the list of market types and IDs.
NumOfMarketsObsolete	9	2	Numeric	Obsolete. Clients should use the new 'NumOfMarkets' field (at offset 247), which supports bigger value.
MarketID	11	4	Numeric	Unique identifier of the option market
UnderlyingMarketID	15	4	Numeric	Underlying Futures/OTC market id. This market id links to the product definition of the futures market.
ContractSymbol	19	35	Alpha	See Naming Convention on Appendix D
TradingStatus	54	1	Alpha	See appendix A on trading status codes
OrderPriceDenominator	55	1	Alpha	Denominator for the order price fields in this market.
IncrementQty	56	4	Numeric	Minimum increment quantity for this market
LotSize	60	4	Numeric	The lot size is minimum size of contracts in lots. It is multiplier to determine the total lots.
MarketDesc	64	120	Alpha	Description of the market
OptionType	184	1	Alpha	"C" – Call "P" – Put
StrikePrice	185	8	Numeric	Strike Price of the option. Used in conjunction with the NumDecimalsStrikePrice. This is often different from the premium price decimals.
DealPriceDenominator	193	1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator.
MinQty	194	4	Numeric	Minimum quantity for this market
Currency	198	20	Alpha	The currency that the market is traded on.
NumDecimalsStrikePrice	218	1	Alpha	Denominator for the strike price field.
MinOptionsPrice	219	8	Numeric	Minimum premium price for the option.
MaxOptionsPrice	227	8	Numeric	Maximum premium price for the option.
IncrementPremiumPrice	235	4	Numeric	Price increment for the option market.
OptionsExpirationYear	239	2	Numeric	4 digit year
OptionsExpirationMonth	241	2	Numeric	Month range 1-12
OptionsExpirationDay	243	2	Numeric	Day of the month.
OptionsStyle	245	1	Alpha	'A' – American 'E' – European '0' – None '3' – Asian '4' – One Time
OptionsExpirationType	246	1	Alpha	'M' – Monthly 'D' – Daily
NumOfMarkets	247	4	Numeric	The number of options markets for the given market type
HedgeMarketID	251	4	Numeric	The underlying futures market ID for a serial option. The serial option market may or may not be a valid futures month and option will expire/exercise into a position held in this

Field Name	Offset	Length	Type	Notes
				underlying market. For equity option this will be the underlying cash/stock market ID. It will be set to -1 when not applicable.
ContractSymbolExtra	255	35	Alpha	Extra contract symbol. Some contract symbols might contain more than 35 characters. Clients should append this field to ContractSymbol (Offset 19) to get the complete contract symbol.
SettlePriceDenominator	290	1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator.
UnitQtyDenominator	291	1	Alpha	Denominator for UnitQuantity. This field will be '0' for most of the markets.
TickValue	292	8	Numeric	OrderPriceDenominator should be applied to get the real value.
FlexAllowed	300	1	Alpha	Indicates if flexible strikes can be created for the option market. 'Y' or 'N'
SettlementType	301	1	Alpha	Settlement Type '0' - financial '1' - physical
IsBlockOnly	302	1	Alpha	Indicates if Market is only tradable via ICE Block Trade. This also means the screen trading is not allowed for the market. 'Y' or 'N'
GTAllowed	303	1	Alpha	Indicates if GTC is allowed in the market. 'Y' or 'N'
CrossOrderSupported	304	1	Alpha	Indicates if Cross Order is supported in the market. 'Y' or 'N'
GuaranteedCrossSupported	305	1	Alpha	Indicates if Guarantee Cross is supported in the market. 'Y' or 'N'
UnitOfMeasure	306	30	Alpha	
MiFIDRegulatedMarket	336	1	Alpha	Indicates MIFID-II market. 'Y' or 'N'
TestMarketIndicator	337	1	Alpha	Indicates Test Market. 'Y' or 'N'
NumBlockDetails	338	1	Numeric	Number of block details
->BlockDetailLength		1	Numeric	Length of block detail.
->BlockType		1	Alpha	Valid values: 0 = Regular 1 = Private and Confidential 2 = Delayed Publication 3 = Large In Scale (LIS)
->TradeType		2	Alpha	Valid values: K - Block S - EFS E - EFP O - EFP/EFS Q - EOO I - EFM 5 - Guaranteed Cross 4 - Basis AA - Asset Allocation V - Bilateral

Field Name	Offset	Length	Type	Notes
->MinQty		8	Numeric	Minimum Quantity. OffExchangeIncrementQtyDenominator should be applied to this field.
ISIN		12	Alpha	This ISIN is only supported for Mifid Regulated Markets. Of the MiFID markets, only Futures and Options markets will support ISINs; some strategies will have an ISIN.
ScreenLastTradeYear		2	Numeric	Screen last trade year, 4 digits
ScreenLastTradeMonth		2	Numeric	Screen last trade month, range 1-12
ScreenLastTradeDay		2	Numeric	Screen last trade day of the month
IsTradable		1	Alpha	Indicate if the contract is tradable. 'Y' or 'N'.
Number of Fields		2	Numeric	Number of Fields
-> FieldID		2	Numeric	Field Id. See Product Definition Dynamic Fields for full list of Fields
-> FieldLength		2	Numeric	Length of this field
-> Value		Field Length	Any	Value of given field. Type can be inferred by Field ID

3.2.5. Options Strategy Definition Response Message

If SecurityType is 'U' in the request, the server will return Options Strategy Definition Response messages.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'q'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	The original request sequence ID assigned by client, unique per session
RequestMarketType	7	2	Numeric	See Appendix C for the list of market types and IDs.
NumOfMarketsObsolete	9	2	Numeric	**Obsolete**. Clients should use the new 'NumOfMarkets' field , which supports bigger value.
MarketID	11	4	Numeric	Unique identifier of the market
UnderlyingMarketID	15	4	Numeric	Unique identifier of the underlying market
ContractSymbol	19	35	Alpha	
TradingStatus	54	1	Alpha	See appendix A on trading status codes
OrderPriceDenominator	55	1	Alpha	Denominator for the order price fields in this market.
IncrementPrice	56	4	Numeric	Minimum increment premium price for this market. OrderPriceDenominator should be applied to this field.
IncrementQty	60	4	Numeric	Minimum increment quantity for this market
MinQty	64	4	Numeric	Minimum quantity for this market

Field Name	Offset	Length	Type	Notes
NumberOfLegDefinition	68	1	Numeric	Number of strategy leg definitions. The leg info are in repeating group followed. This field only supports the first 127 legs. If there are more legs than 127, the remainder will be available starting in NumberOfExtraLegDefinition
-> LegBodyLength		1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. **New field could be added to the leg definition repeating group and client should be able to handle that.**
-> LegMarketID		4	Numeric	Market Id of the option leg market
-> LegUnderlyingMarketID		4	Numeric	Futures market id of the underlying futures market
-> LegRatioObsolete		2	Numeric	Number of option contracts per increment quantity.
-> LegSide		1	Alpha	'1' – Buy '2' – Sell
-> LegStrategyCode		2	Numeric	The strategy code for the leg. If set, this field can be used to obtain the next level of granularity of the strategy. If it is not set, the LegMarketID is the most granular level for the market. See Appendix E for list of codes.
-> LegRatioQtyNumerator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. Using Gas Oil crack as an example. This will be set to 4 for the Gas oil leg and 3 for the Brent leg.
-> LegRatioQtyDenominator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. The Leg ratio denominator will be set to 1 for most products not but will be used in future product launches.
-> LegRatioPriceNumerator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 1 as the LegRatioPriceNumerator.
-> LegRatioPriceDenominator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 3 as the LegRatioPriceDenominator.
NumberOfHedgeDefinition		1	Numeric	Number of strategy hedge definitions. The hedge info are in repeating group followed
-> HedgeBodyLength		1	Numeric	Message length, including this field, for a hedge. Client should get this value and read the repeating group based on this. **New field could be added to the hedge definition repeating group and client should be able to handle that.**
-> HedgeMarketID		4	Numeric	Future's market id of the hedge
-> HedgeSecurityType		1	Alpha	'F' – Future
-> HedgeSide		1	Alpha	'1' – Buy '2' – Sell
-> HedgePrice		8	Numeric	
-> HedgePriceDenominator		1	Alpha	

Field Name	Offset	Length	Type	Notes
-> HedgeDeltaObsolete		2	Numeric	Deprecated. Use HedgeDelta instead.
-> HedgeStrategyCode		2	Numeric	The strategy code for the leg. If set, this field can be used to obtain the next level of granularity of the strategy. If it is not set, the HedgeMarketID is the most granular level for the market. See Appendix E for list of codes.
-> HedgeDelta		4	Numeric	
SecuritySubType		2	Numeric	Contains the Strategy Code for defined market where applicable. See Appendix E for list of codes.
IsBlockOnly		1	Alpha	Indicates if Market is only tradable via ICE Block Trade. This also means the screen trading is not allowed for the market. 'Y' or 'N'
NumOfMarkets		4	Numeric	The number of options markets for the given market type
StrategySymbol		18	Alpha	See Naming Convention on Appendix D
GTAllowed		1	Alpha	Indicates if GTC is allowed in the market. 'Y' or 'N'
MiFIDRegulatedMarket		1	Alpha	Indicates MIFID-II market. 'Y' or 'N'
DealPriceDenominator		1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator.
SettlePriceDenominator		1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator.
UnitQtyDenominator		1	Alpha	Denominator for UnitQuantity. This field will be '0' for most of the markets.
TestMarketIndicator		1	Alpha	Indicates Test Market. 'Y' or 'N'
NumBlockDetails		1	Numeric	Number of block details. This will be set to 0 if the UDS does not have block information.
->BlockDetailLength		1	Numeric	Length of block detail.
->BlockType		1	Alpha	Valid values: 0 = Regular 1 = Private and Confidential 2 = Delayed Publication 3 = Large In Scale (LIS)
->TradeType		2	Alpha	Valid values: K - Block S - EFS E - EFP O - EFP/EFS Q - EOO I - EFM 5 - Guaranteed Cross 4 - Basis AA - Asset Allocation V - Bilateral
->MinQty		8	Numeric	Minimum Quantity. OffExchangeIncrementQtyDenominator should be applied to this field.
ContractSymbolExtra		35	Alpha	Extra contract symbol. Some contract symbols might contain more than 35 characters. Clients should append this field to ContractSymbol (Offset 19) to get the complete contract symbol.

Field Name	Offset	Length	Type	Notes
NumberOfExtraLegDefinitions		2	Numeric	Number of strategy leg definitions excluding the first 127 legs. The leg info are in repeating group followed. For example, if this market has 128 legs, the first 127 will be represented above in NumberOfLegDefinition and the Leg definitions, and the remaining 1 Leg will be defined here.
-> LegBodyLength		1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. **New field could be added to the leg definition repeating group and client should be able to handle that.**
-> LegMarketID		4	Numeric	Market Id of the option leg market
-> LegUnderlyingMarketID		4	Numeric	Futures market id of the underlying futures market
-> LegRatioObsolete		2	Numeric	Number of option contracts per increment quantity.
-> LegSide		1	Alpha	'1' – Buy '2' – Sell
-> LegStrategyCode		2	Numeric	The strategy code for the leg. If set, this field can be used to obtain the next level of granularity of the strategy. If it is not set, the LegMarketID is the most granular level for the market. See Appendix E for list of codes.
-> LegRatioQtyNumerator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. Using Gas Oil crack as an example. This will be set to 4 for the Gas oil leg and 3 for the Brent leg.
-> LegRatioQtyDenominator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. The Leg ratio denominator will be set to 1 for most products not but will be used in future product launches.
-> LegRatioPriceNumerator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 1 as the LegRatioPriceNumerator.
-> LegRatioPriceDenominator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 3 as the LegRatioPriceDenominator.
LegDealSuppressed		1	Alpha	Indicates whether leg deals are suppressed. 'Y' or 'N'
IsTradable		1	Alpha	Indicate if the contract is tradable. 'Y' or 'N'.
Number of Fields		2	Numeric	Number of Fields
-> FieldID		2	Numeric	Field Id. See Product Definition Dynamic Fields for full list of Fields
-> FieldLength		2	Numeric	Length of this field
-> Value		Field Length	Any	Value of given field. Type can be inferred by Field ID

3.2.6. Futures Strategy Definition Response Message

If SecurityType is ‘D’ in the request, the server will return Futures Strategy Definition Response messages.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = ‘d’
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	The original request sequence ID assigned by client, unique per session
RequestMarketType	7	2	Numeric	See Appendix C for the list of market types and IDs.
NumOfMarketsObsolete	9	2	Numeric	**Obsolete**. Clients should use the new ‘NumOfMarkets’ field, which supports bigger value.
MarketID	11	4	Numeric	Unique identifier of the market
ContractSymbol	15	70	Alpha	See Naming Convention on Appendix D
TradingStatus	85	1	Alpha	See appendix A on trading status codes
OrderPriceDenominator	86	1	Alpha	Denominator for the order price fields in this market.
IncrementPrice	87	4	Numeric	Minimum increment premium price for this market. OrderPriceDenominator should be applied to this field.
IncrementQty	91	4	Numeric	Minimum increment quantity for this market
MinQty	95	4	Numeric	Minimum quantity for this market
NumberOfLegDefinition	99	1	Numeric	Number of strategy leg definitions. The leg info are in repeating group followed. This field only supports the first 127 legs. If there are more legs than 127, the remainder will be available starting in NumberOfExtraLegDefinition
-> LegBodyLength		1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. **New field could be added to the leg definition repeating group and client should be able to handle that.**
-> LegMarketID		4	Numeric	Market Id of the futures leg market
-> LegRatioObsolete		2	Numeric	Number of futures contracts per increment quantity.
-> LegSide		1	Alpha	‘1’ – Buy ‘2’ – Sell
-> LegStrategyCode		2	Numeric	The strategy code for the leg. If set, this field can be used to obtain the next level of granularity of the strategy. If it is not set, the LegMarketID is the most granular level for the market. See Appendix E for list of codes.
-> LegRatioQtyNumerator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. Using Gas Oil crack as an example. This will be set to 4 for the Gas oil leg and 3 for the Brent leg.

Field Name	Offset	Length	Type	Notes
-> LegRatioQtyDenominator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. The Leg ratio denominator will be set to 1 for most products not but will be used in future product launches.
-> LegRatioPriceNumerator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 1 as the LegRatioPriceNumerator.
-> LegRatioPriceDenominator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 3 as the LegRatioPriceDenominator.
SecuritySubType		2	Numeric	Contains the Strategy Code for defined market where applicable. See Appendix E for list of codes.
IsBlockOnly		1	Alpha	Indicates if Market is only tradable via ICE Block Trade. This also means the screen trading is not allowed for the market. 'Y' or 'N'
NumOfMarkets		4	Numeric	The number of markets for the given market type
StrategySymbol		18	Alpha	See Naming Convention on Appendix D
GTAllowed		1	Alpha	Indicates if GTC is allowed in the market. 'Y' or 'N'
ReservedField		4	Numeric	Reserved for future use.
MiFIDRegulatedMarket		1	Alpha	Indicates MIFID-II market. 'Y' or 'N'
MarketDesc		120	Alpha	Description of the market
MaturityYear		2	Numeric	4 digit year
MaturityMonth		2	Numeric	Month range 1-12
MaturityDay		2	Numeric	
DealPriceDenominator		1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator. However, it could be different for some crack or spread markets.
UnitQuantity		4	Numeric	The quantity in unit of measurement per lot. For example, it is 1000 barrels per lot for Brent. UnitQtyDenominator should be applied to get correct UnitQuantity.
NumDecimalsOptionsPrice		1	Alpha	Only used for OffExchangeIncrementOptionPrice.
AllowOptions		1	Alpha	Indicate if the market supports option markets, 'Y' or 'N'
ClearedAlias		15	Alpha	Clearing limit admin related
AllowsImplied		1	Alpha	'Y' or 'N'. 'Y' indicates this is a spread market, and, implied is allowed in this market
MinPrice		8	Numeric	Minimum Price. OrderPriceDenominator should be applied to this field.
MaxPrice		8	Numeric	Maximum Price. OrderPriceDenominator should be applied to this field.
ProductName		62	Alpha	Name of the product that the contract/market is under
HubAlias		80	Alpha	Alias of the hub for the contract/market
StripName		39	Alpha	Name of the strip for the contract/market
IsTradable		1	Alpha	Indicate if the contract is tradable. 'Y' or 'N'.

Field Name	Offset	Length	Type	Notes
SettlePriceDenominator		1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator.
MICCode		4	Alpha	Market Identifier Code for the market.
UnitQtyDenominator		1	Alpha	Denominator for UnitQuantity. This field will be '0' for most of the markets.
HedgeOnly		1	Alpha	Indicate if the contract is for hedge only. 'Y' or 'N'.
ExchangeSilo		1	Alpha	Exchange silo code for the market. '0' – ICE '1' – Endex '2' – LIFFE
OffExchangeIncrementQtyDenominator		1	Alpha	Denominator for OffExchangeIncrementQty.
OffExchangeIncrementQty		4	Numeric	Off exchange increment qty. OffExchangeIncrementQtyDenominator should be applied to this field.
OffExchangeIncrementPrice		4	Numeric	Off exchange increment price. OrderPriceDenominator should be applied to this field
OffExchangeIncrementOptionPrice		4	Numeric	Off exchange options increment price. NumDecimalsOptionsPrice should be applied to this field
ProductID		4	Numeric	ID of the product that the contract/market is under.
HubID		4	Numeric	ID of the hub for the contract/market
StripID		4	Numeric	ID of the strip for the contract/market
Underlying ISIN		12	Alpha	The ISIN of the security this market is associated with. This is currently only populated for Liffe Equity markets.
TestMarketIndicator		1	Alpha	Indicates Test Market. 'Y' or 'N'
NumBlockDetails		1	Numeric	Number of block details. This will be set to 0 if the UDS does not have block information.
->BlockDetailLength		1	Numeric	Length of block detail.
->BlockType		1	Alpha	Valid values: 0 = Regular 1 = Private and Confidential 2 = Delayed Publication 3 = Large In Scale (LIS)
->TradeType		2	Alpha	Valid values: K - Block S - EFS E - EFP O - EFP/EFS Q - EOO I - EFM 5 - Guaranteed Cross 4 - Basis AA - Asset Allocation V - Bilateral
->MinQty		8	Numeric	Minimum Quantity. OffExchangeIncrementQtyDenominator should be applied to this field.
NumberOfExtraLegDefinitions		2	Numeric	Number of strategy leg definitions excluding the first 127 legs. The leg info are in repeating group followed.

Field Name	Offset	Length	Type	Notes
				For example, if this market has 128 legs, the first 127 will be represented above in NumberOfLegDefinition and the Leg definitions, and the remaining 1 Leg will be defined here.
-> LegBodyLength		1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. **New field could be added to the leg definition repeating group and client should be able to handle that.**
-> LegMarketID		4	Numeric	Market Id of the futures leg market
-> LegRatioObsolete		2	Numeric	Number of futures contracts per increment quantity.
-> LegSide		1	Alpha	'1' – Buy '2' – Sell
-> LegStrategyCode		2	Numeric	The strategy code for the leg. If set, this field can be used to obtain the next level of granularity of the strategy. If it is not set, the LegMarketID is the most granular level for the market. See Appendix E for list of codes.
-> LegRatioQtyNumerator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. Using Gas Oil crack as an example. This will be set to 4 for the Gas oil leg and 3 for the Brent leg.
-> LegRatioQtyDenominator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. The Leg ratio denominator will be set to 1 for most products not but will be used in future product launches.
-> LegRatioPriceNumerator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 1 as the LegRatioPriceNumerator.
-> LegRatioPriceDenominator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 3 as the LegRatioPriceDenominator.
LegDealSuppressed		1	Alpha	Indicates whether leg deals are suppressed. 'Y' or 'N'
Number of Fields		2	Numeric	Number of Fields
-> FieldID		2	Numeric	Field ID. See Product Definition Dynamic Fields for full list of Fields
-> FieldLength		2	Numeric	Length of this field
-> Value		Field Length	Any	Value of given field. Type can be inferred by Field ID

3.2.7. Product Definition Dynamic Fields

Field Id	Field Name	Field Type	Field Length	Applicable Market	Applicable Message Types	Description
1	AltPriceDenominator	Numeric	1	CDS	B	Denominator for the alternate deal price fields in the market.

2	CouponRate	Numeric	8	CDS,IRS	B	Fixed Rate: The fixed rate for an instrument
3	CouponRate Denominator	Numeric	1	CDS,IRS	B	Fixed Rate: The fixed rate Denominator for an instrument
4	DatedDate	Numeric	8	CDS,IRS	B	Cash Flow Alignment Date: The cash flow alignment date is a date not adjusted for holidays used to derive interest payment dates. Any calendar day. Milliseconds since Jan 1st, 1970, 00:00:00 GMT.
5	InterestAccrualDate	Numeric	8	IRS	B	Effective Date: The effective date of the swap future. Any business day. Milliseconds since Jan 1st, 1970, 00:00:00 GMT.
6	IssueDate	Numeric	8	IRS	B	First Fixing Date: The first Fixing Date is the date at which the float rate is set during the first float period. Any acceptable business day. Milliseconds since Jan 1st, 1970, 00:00:00 GMT.
7	RepurchaseRate	Numeric	8	IRS	B	Previous Fixing Rate: The rate set on the last reset date. Sent for float leg on aged or spot starting swap futures. Not sent for forward starting swap futures. Number of decimal places for RepurchaseRate is 5. 0 is valid for this field up until the First Fixing Date (IssueDate).
8	RepurchaseDate	Numeric	8	IRS	B	Previous Fixing Date: The date the floating rate was set for the next floating payment. Milliseconds since Jan 1st, 1970, 00:00:00 GMT. 0 is valid for this field up until the First Fixing Date (IssueDate).
9	Factor	Numeric	8	CDS	B	Index Factor: Percentage of the original index that is still accruing interest. Number of decimal places for Factor is 2.
10	InterpolationFactor	Numeric	8	IRS	B	Interpolation Factor: Multiplier that when applied to the longer rate in the CreditRating (Rate Descriptor) field results in

						RepurchaseRate (Previous Fixing Rate). Not sent for forward starting interest rate swap futures.
11	InterpolationFactor Denominator	Numeric	1	IRS	B	Denominator value for ContractMultiplier
12	InstrRegistry	Alpha	2	IRS	B	Payment Frequency: The interest rate swap future payment frequency. Supported values: Blank 3M - 3 Months 6M = 6 months 1Y = 1 year
13	CreditRating	Alpha	8	IRS	B	Rate Descriptor: The description of Float Rate. Sent for float leg on aged or spot starting swap futures.
14	AccruedPremiumAmt	Numeric	8	CDS	B	Total Premium Accrual: Premium that has accrued during the current quarterly payment period. Based on 100 Notional and will be applied to the 'A' value. Number of decimal places for AccruedPremiumAmt is 10.
15	EventPaymentAmt	Numeric	8	CDS,IRS	B	CDS - Premium & Credit Event Payments (B): This value represents historical premium and credit event payments for 100 notional, and is one of the primary inputs needed for calculating a futures price for a swap future. IRS - Accrued Coupons (B Value): This value represents historical fixed and floating payments for 100 notional, and is one of the primary inputs needed for calculating a futures price for an interest rate swap future. Number of decimal places for EventPaymentAmt is 10. This value can be negative.

16	AlignmentInterestRate	Numeric	8	CDS,IRS	B	Price Alignment Interest (C): Eris PAI is the cumulative daily interest on variation margin adjustment for 100 notional. Eris PAI is one of the primary inputs needed for calculating a futures price for a swap future. Number of decimal places for AlignmentInterestRate is 10.
17	SettlementType	Alpha	1	ALL	B	Settlement Type '0' - financial '1' - physical
18	IsBlockOnly	Alpha	1	ALL	B	Indicates if Market is only tradable via ICE Block Trade. This also means the screen trading is not allowed for the market. 'Y' or 'N'
19	FlexAllowed	Alpha	1	ALL	B	Indicates if flexible expiries can be created for the market. 'Y' or 'N'
20	HedgeMarketID	Numeric	4	ALL	B	Market ID for the corresponding hedge market. It will be set to -1 when not applicable.
21	NumOfMarkets	Numeric	4	ALL	B	The number of markets for the given market type
22	ContractSymbolExtra	Alpha	Varies	ALL	B	Only sent if contract symbol is greater than 35. Client should use this field if sent else use existing contract symbol field. The old ContractSymbol field would still be populated if this field is sent.
23	UnitOfMeasure	Alpha	Varies	ALL	B	UnitOfMeasure like oz, share, ton and etc.
24	GTAllowed	Alpha	1	ALL	B	Indicates if Good Till is allowed in the market. 'Y' or 'N'
25	CrossOrderSupported	Alpha	1	ALL	B	Indicates if Cross order is supported in the market. 'Y' or 'N'
26	AONAllowed	Alpha	1	ALL	B	Indicates if AON order is supported in the market. 'Y' or 'N'
27	MiFIDRegulatedMarket	Alpha	1	ALL	B	Indicates MIFID-II market. 'Y' or 'N'
28	TestMarketIndicator	Alpha	1	ALL	B	Indicates this is a test market. 'Y' or 'N'

29	BlockDetails	BlockDetail	Varies	ALL	B	Array of Block Detail which contains minimum quantity size for block. See table below for details
30	RefSpreadProductId	Numeric	4	ALL	B	Product Id to use when requesting new spread. (Optional)
31	ISIN	Alpha	12	MiFIDRegulatedMarkets	B, d	This ISIN is only supported for Mifid Regulated Markets. Of the MiFID markets, only Futures and Options markets will support ISINs; some strategies will have an ISIN.
32	MarketTransparencyType	Numeric	1	ALL	B	This field can be used to identify if a market is Platts or not. 0 - ICE market 1 - Platts market
33	ScreenLastTradeDate	Date	6	ALL	B	ScreenLastTradeDate is the last date, by Exchange rule, that the market is available for trading on the Central Order Book. It applies to all cleared instruments on the trading platform.
34	IsDividendAdjusted	Alpha	1	Equity Derivatives	B	
35	HubName	Alpha	Varies	ALL	d	
36	StripType	Alpha	Varies	ALL	d	
38	OldNumOfCycles	Numeric	2	ALL	B, d, p, q	Number of cycle(days, hours, MWh, etc.) for a contract. Use NumOfCycles (id=50) instead.
39	StripBeginDate	Date	6	Custom Strategies	d	Sent for customs with StrategyCodes 414, 550, 711, 713, 714, 715, and 716.
40	StripEndDate	Date	6	Custom Strategies	d	Sent for custom strategy codes 414, 550, 711, 713, 714, 715, and 716.
41	OptionsExpirationDate	Date	6	ALL	q	Last date that the option market can be traded and should be removed from the system.
42	OverrideBlockMin	Alpha	1	ALL	B,d,p,q	Indicates whether the Block Minimum can be overridden for the market. Valid values: 'Y' or 'N'
43	Reserved	Numeric	1	N/A	B	Reserved for future use
44	ContractSize	Numeric	4	ALL	B,p	The deliverable quantity of a stock, commodity, or other financial instrument that underlies a futures or options contract. Clients

						should also apply ContractSizeDenominator to this field.
45	ScreenTickValue	Numeric	8	ALL	B,p, d	Identifies the monetary amount per tick move when calculated from the Central Limit Order Book, Clients should apply TickValueDenominator to this field.
46	BlockTickValue	Numeric	8	ALL	B,p, d	Identifies the monetary amount per tick move when calculated for Off-Exchange trades. Clients should apply TickValueDenominator to this field.
47	TickValueDenominator	Numeric	1	ALL	B,p, d	Denominator for ScreenTickValue and BlockTickValue.
48	ContractSizeDenominator	Numeric	1	All	B,p	Denominator for ContractSize.
49	ProductID	Numeric	4	ALL	p, q	The product id for the market
50	NumOfCycles	Numeric	4	ALL	B, d, p, q	Number of cycles (days, hours, MWh, etc) for a contract. Replaces OldNumOfCycles (id=38).
	UnknownField			ALL	ALL	Client is required to handle any new field that could be added in the future. To ensure that client is able to handle unknown field, we randomly broadcast an unknown test field in all test environments.

BlockDetail Field Format

Field Name	Offset	Length	Type	Notes
NumBlockDetails	0	1	Numeric	Number of block details
->BlockDetailLength		1	Numeric	Length of block detail.
->BlockType		1	Alpha	Valid Values: 0 = Regular, 1 = Private and Confidential 2 = Delayed Publication 3 = Large In Scale (LIS)
->TradeType		2	Alpha	Valid values: K - Block S - EFS E - EFP O - EFP/EFS Q - EOO I - EFM 5 - Guaranteed Cross

Field Name	Offset	Length	Type	Notes
				4 - Basis AA - Asset Allocation V - Bilateral
-> MinQty		8	Numeric	Minimum Quantity. OffExchangeIncrementQtyDenominator should be applied to this field

Date Field Format

Field Name	Offset	Length	Type	Notes
Year	0	2	Numeric	4 digit year
Month	2	2	Numeric	Month range 1-12
Day	4	2	Numeric	Day of the month

3.3. Historical Replay

3.3.1. Request Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '7'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	Request sequence ID assigned by client, unique per session. This has nothing to do with the sequence number in multicast.
MulticastGroupAddr	7	15	Alpha	The multicast group address of the channel in which we want to get the historical messages.
MulticastPort	22	2	Numeric	The multicast group port of the channel in which we want to get the historical messages.
SessionID	24	2	Numeric	The ID of the multicast session in which we want to get the historical messages.
StartSequenceNumber	26	4	Numeric	
EndSequenceNumber	30	4	Numeric	

3.3.2. Response Message

If the server finds the messages for the requested sequence gap, it will send the following response and then those messages. Otherwise, Error Response message is sent to the client. Be aware that it is considered an error if the server can only find some but not all the messages requested.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '8'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	Request sequence ID assigned by client, unique per session

Field Name	Offset	Length	Type	Notes
MulticastGroupAddr	7	15	Alpha	The multicast group address of the channel in which we want to get the historical messages.
MulticastPort	22	2	Numeric	The multicast group port of the channel in which we want to get the historical messages.
SessionID	24	2	Numeric	The ID of the multicast session in which we want to get the historical messages.
StartSequenceNumber	26	4	Numeric	
EndSequenceNumber	30	4	Numeric	

3.4. Debug Message

Debug request could be used programmatically by client, or something as simple as telnet into the server port for troubleshooting connectivity related issues.

3.4.1. Request Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '5'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	Request sequence ID assigned by client, unique per session

3.4.2. Response Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'P'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	The original request sequence ID assigned by client, unique per session.
Text	7	60	Alpha	Debug text message from server

3.5. HeartBeat

This message is for TCP Only. For multicast, a heartbeat is just a message block with only the header.

3.5.1. HeartBeat Message (TCP only)

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'Q'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field

Field Name	Offset	Length	Type	Notes
DateTime	3	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

3.6. Logout

3.6.1. Request Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '6'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	Request sequence ID assigned by client, unique per session

3.6.2. Response Message

There is no dedicated response message to Logout request. The server simply logout the user from the system and closes the connection.

3.7. Error Response Message

3.7.1. Error Response Message

Error response message is sent to client when there is error processing a request. Client feed handler should be ready to handle error response after it submits a request. At minimum, it should log the error messages.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'S'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
RequestSeqID	3	4	Numeric	The original request sequence ID assigned by client, unique per session.
Code	7	1	Alpha	• '1' – Unknown request • '2' – Invalid market type • '3' – Market type access denied • '4' – Login session required for the request • 'X' – Other error
Text	8	100	Alpha	The error message

3.8. Multicast Channel Groups Message

This message will contain the multicast channel information for each silo. This will be sent if MulticastInfo is set to Y on the login message.

Clients should note that if they need to recover using Historical request on the TCP channel, they should login with MulticastInfo set to N to be able to retrieve missing messages faster.

If client needs to listen to multicast channels before connecting to TCP server for multicast channel group info, or in case of unexpected network issue in communication to the TCP server, it should use the last good copy of multicast channel group info it fetched and cached.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'X'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
NumberOfChannelGroups	3	2	Numeric	The number of channel groups
-> ChannelGroupBodyLength		2	Numeric	Message length, including this field, for a Channel Group. Clients should get this value and read the repeating group based on this. **New fields could be added to the channel group definitions and clients should be able to handle that.**
-> ChannelGroupId		2	Numeric	The ID for this Channel Group as found in the ICE Multicast Connectivity Guide.
-> ChannelGroupName		100	Alpha	The name of this Channel Group, as found in the ICE Multicast Connectivity Guide.
-> Type		1	Alpha	Indicates the type of this channel group '1' – Futures Regular '2' – Futures Full Implied '3' – Options TOB '4' – Options Top10PL
-> FODLiveUpdateIPAddress		15	Alpha	Multicast IP address for the Full Order Depth Live Updates Channel. Blank if none exists.
-> FODLiveUpdatePort		2	Numeric	Multicast Port for the Full Order Depth Live Updates Channel. 0 if none exists.
-> FODSnapshotIPAddress		15	Alpha	Multicast IP address for the Full Order Depth Snapshots Channel. Blank if none exists.
-> FODSnapshotPort		2	Numeric	Multicast Port for the Full Order Depth Snapshots Channel. 0 if none exists.
-> PLLiveUpdateIPAddress		15	Alpha	Multicast IP address for the Price Level Live Updates Channel. Blank if none exists.
-> PLLiveUpdatePort		2	Numeric	Multicast Port for the Price Level Live Updates Channel. 0 if none exists.
-> PLSnapshotIPAddress		15	Alpha	Multicast IP address for the Price Level Snapshots Channel. Blank if none exists.
-> PLSnapshotPort		2	Numeric	Multicast Port for the Price Level Snapshots Channel. 0 if none exists.
-> NumberOfMarketTypes		2	Numeric	The number of market types served by this Channel Group.

Field Name	Offset	Length	Type	Notes
--> MarketTypeID		2	Numeric	Market type ids served by this channel. There will be as many of these as the value of NumberOfMarketTypes
-> NumberOfPriceLevels		1	Numeric	Number of price levels on this channel.

4. Multicast Messages

These are the messages used in the multicast channels.

4.1. Common Messages

These are the messages common to all multicast channels, regardless it is full order depth or price level.

4.1.1. Market Snapshot Message

The market snapshot message is the same for full order depth and price level snapshot channel. The field “NumOfBookEntries” indicates the number of book entries in the snapshot for a given market. It is the number of MarketSnapshotOrder messages that will follow in case of full order depth snapshot channel, and the number of MarketSnapshotPriceLevel messages in case of price level snapshot channel.

Note: for any given market, if the “NumOfBookEntries” is greater than 0, it is possible to receive the entire market snapshot (which comprises of Market Snapshot Message and, MarketSnapshotOrder or MarketSnapshotPriceLevel Messages) in multiple multicast message blocks. Clients should NOT assume the entire market snapshot would be contained in one message block.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = ‘C’
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
MarketType	7	2	Numeric	
TradingStatus	9	1	Alpha	See Appendix A on the trading status codes
Volume	10	4	Numeric	Electronic trade volume only, excluding block and other volumes.
BlockVolume	14	4	Numeric	
EFSVolume	18	4	Numeric	
EFPVolume	22	4	Numeric	
OpenInterest	26	4	Numeric	
OpeningPrice	30	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
SettlementPriceWithDealPrice Precision	38	8	Numeric	DealPriceDenominator for the market should be applied to get this price. This field is kept here for backward compatibility. Client should use the new SettlementPrice field (added in 1.1.14) for better precision. DealPriceDenominator and SettlePriceDenominator might be different for some markets.

Field Name	Offset	Length	Type	Notes
High	46	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
Low	54	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
VWAP	62	8	Numeric	Weighted Average Price. DealPriceDenominator for the market should be applied to get the real price.
NumOfBookEntries	70	4	Numeric	Number of book entries in the market. It is the number of order messages followed for full order depth snapshot channel. In case of price level snapshot, it is the number of price level messages that followed for the market.
LastTradePrice	74	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
LastTradeQuantity	82	4	Numeric	
LastTradeDateTime	86	8	Numeric	Milliseconds since Jan 1st, 1970, 00:00:00 GMT
SettlePriceDateTime	94	8	Numeric	Milliseconds since Jan 1st, 1970, 00:00:00 GMT. If there is no settlement price for endex silo, default value is 0. For other silos, the default value is -1.
LastMessageSequenceID	102	4	Numeric	This should be used for synchronization with live update messages. Please see the main tech spec for details on how it can be done.
ReservedField1	106	2	N/A	Reserved for future use
OpenInterestDate	108	10	Alpha	The date Open Interest is effective for, in the format of YYYY-MM-DD. It will be blank if there is no Open Interest for the market.
IsSettlePriceOfficial	118	1	Alpha	Indicate if the SettlementPrice is official, 'Y' or 'N'.
SettlementPrice	119	8	Numeric	SettlePriceDenominator for the market should be applied to get the real settlement price.
HasPreviousDaySettlementPrice	127	1	Alpha	Indicate if the PreviousSettlementDayPrice is populated, 'Y' or 'N'. This field will always be set to N for options.
PreviousDaySettlementPrice	128	8	Numeric	SettlePriceDenominator for the market should be applied to get the real previous day settlement price. This field should be ignored if HasPreviousDaySettlementPrice is set to N. PreviousDaySettlementPrice will be sent for futures markets(not options). From the start of the day until the settlement price is published, the value of PDSP and settlement price would be the same. Once the settlement price is published, PDSP would stay the same and the settlement price would be updated to the current day settlement price. If there is a holiday, the exchange will distribute the PreviousDaySettlementPrice for the date that is specified on SettlePriceDateTime(day before holiday) and HasPreviousDaySettlementPrice will be set to 'Y'.

4.1.2. Trade Message

A trade with IsSystemPricedLeg equal to 'Y' should not be used for the last price, High, Low and Open. Also please refer to Appendix B on how to handle market stats for given OffTradeMarketType. This message will not be sent for trades in Endex Spot markets.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'G'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	MarketID of the instrument that was traded.
TradeID	7	8	Numeric	Unique identifier of the trade message, unique per market.
IsSystemPricedLeg	15	1	Alpha	Indicate if it is a system priced leg, 'Y' or 'N'
Price	16	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
Quantity	24	4	Numeric	
OldOffMarketTradeType	28	1	Alpha	Legacy field that supports all **single character** trade types on ICE. The new 3-character "OffMarketTradeType" field replaces this field. In the future (no earlier than 2015), ICE anticipates the introduction of 3 character trade types that will only be available in the new field. Trade types that are longer than a single character will be represented with "#" in this field. Only for off market trade. The first character is ' ' when it is a regular trade.
TransactDateTime	29	8	Numeric	Deal date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
SystemPricedLegType	37	1	Alpha	'C' – System Priced Crack Spread Leg 'S' – System Priced Leg This can be ignored if IsSystemPricedLeg='N'
IsImpliedSpreadAtMarketOpen	38	1	Alpha	Indicate if the trade happens at market open due to spread implied. When set to 'Y', such deal should not be included in market stats.
IsAdjustedTrade	39	1	Alpha	Indicate if the trade is an adjusted trade, 'Y' or 'N'
AggressorSide	40	1	Alpha	' ' – No Aggressor '1' – Buy '2' – Sell
ExtraFlags	41	1	Numeric	Bit 0 (Least Significant Bit): IsRFCCrossing – indicate this is a RFC Crossing Deal if set to 1. Bit 1: IsLegDealOutsideIPL – indicate the deal is outside of IPL (when IPL is enabled) if set to 1. When set to 1, such deal should not be included in market stats. This could only happen in leg markets due to implied orders. Bit 2: IsImplied - indicate that the originator side of the deal resulted from implied order if set to 1. This field should not be used to determine how market statistics are calculated. Bit 3 : isVerticalSplit - indicates if the trade is a system priced leg from a composite strategy Bit 4 thru 7: Reserved for future use. For backward compatibility, client should always look at each individual bit for the corresponding

Field Name	Offset	Length	Type	Notes
				flag. Otherwise problems might occur when bits 4 thru 7 start to be utilized.
OffMarketTradeType	42	3	Alpha	Only for off market trade. The first character is ' ' when it is a regular trade. One or two null characters ('\0') will be appended to the end of this field when applicable. See Appendix B for the codes and descriptions.
SequenceWithinMillis	45	4	Numeric	Can be used in conjunction with TransactDateTime field for sequence of deals within same milliseconds time. This field can be used to derive the transaction time in microsecond granularity.
RequestTradingEngineReceivedTimestamp	49	8	Numeric	This field can be used to get the time the trading engine received the request that triggers this message. The format is nanoseconds since Jan 1st, 1970, 00:00:00 GMT. The nanosecond part is currently 000 and might be supported later. **Note**: This field could be set to different values or 0 for some scenarios. Please refer to the FAQs for more details.

4.1.3. Spot Market Trade Message

This message will be sent only upon trade in spot markets and it will be rendered on spot market channels.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'Y'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	MarketID of the instrument that was traded.
TradeID	7	8	Numeric	Unique identifier of the trade message, unique per market.
Price	15	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
Quantity	23	4	Numeric	
TransactDateTime	27	8	Numeric	Deal date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
ExtraFlags	35	1	Numeric	For Future use
DeliveryBeginDateTime	36	8	Numeric	Delivery begin date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
DeliveryEndDateTime	44	8	Numeric	Delivery end date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
IsSystemPricedLeg	52	1	Alpha	Indicate if it is a system priced leg, 'Y' or 'N'.

4.1.4. Investigated Trade Message

This message is sent when a trade is put under investigation or the investigation is completed. Client can use the market ID and order ID to find and flag the original trade if needed.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'H'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
TradeID	7	8	Numeric	
Price	15	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
Quantity	23	4	Numeric	
OldOffMarketTradeType	27	1	Alpha	Legacy field that supports all **single character** trade types on ICE. The new 3-character "OffMarketTradeType" field replaces this field. In the future (no earlier than 2015), ICE anticipates the introduction of 3 character trade types that will only be available in the new field. Trade types that are longer than a single character will be represented with "#" in this field. Only for off market trade. The first character is ' ' when it is a regular trade.
DateTime	28	8	Numeric	Date time the trade was investigated. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
Status	36	1	Alpha	'1' – Under Investigation '2' – Investigation Completed
OffMarketTradeType	37	3	Alpha	Only for off market trade. The first character is ' ' when it is a regular trade. One or two null characters ('\0') will be appended to the end of this field when applicable. See Appendix B for the codes and descriptions.

4.1.5. Cancelled Trade Message

This message is sent when a trade is cancelled. Client can use the market ID and order ID to find and update the original trade if needed. But it has no effect on the book.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'I'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
TradeID	7	8	Numeric	
Price	15	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
Quantity	23	4	Numeric	
OldOffMarketTradeType	27	1	Alpha	Legacy field that supports all **single character** trade types on ICE. The new 3-character "OffMarketTradeType" field replaces this field. In the future (no earlier than 2015), ICE anticipates the introduction of 3 character trade types that will only be available in the new field. Trade types that are longer than a single character will be represented with "#" in this field. Only for off market trade. The first character is ' ' when it is a regular trade.
DateTime	28	8	Numeric	Date time the trade was cancelled. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
OffMarketTradeType	36	3	Alpha	Only for off market trade. The first character is ' ' when it is a regular trade. One or two null

Field Name	Offset	Length	Type	Notes
				characters (‘\0’) will be appended to the end of this field when applicable. See Appendix B for the codes and descriptions.

4.1.6. Market Statistics Message

This is usually sent after a trade or cancelled trade message. Sometimes, you may get a statistics message without getting a trade message.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = ‘J’
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Volume	7	4	Numeric	Electronic trade volume only, excluding block and other volumes.
BlockVolume	11	4	Numeric	
EFSVolume	15	4	Numeric	
EFPVolume	19	4	Numeric	
High	23	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
Low	31	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
VWAP	39	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
DateTime	47	8	Numeric	Date time the stat was updated. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

4.1.7. Market State Change Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = ‘K’
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
TradingStatus	7	1	Alpha	See Appendix A on the trading status codes
DateTime	8	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

4.1.8. System Text Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = ‘L’
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
TextMessage	3	200	Alpha	
DateTime	203	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
TextMessageExtraFld	211	800	Alpha	Extra field for text message when TextMessage field is not big enough. This should be appended to TextMessage if it is not empty.

4.1.9. Open Interest Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'M'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
OpenInterest	7	4	Numeric	
OpenInterestChange	11	4	Numeric	
DateTime	15	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
OpenInterestDate	23	10	Alpha	The date this Open Interest is effective for, in the format of YYYY-MM-DD

4.1.10. Open Price Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'N'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
OpenPrice	7	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
DateTime	15	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

4.1.11. Close Price Message

Currently IFLX, IFLL and IFLO support a close price published thru the iMpact Price feed and WebICE when the market closes. For IFLL and IFLO, the close price is an anchor price per market at the time market closes. For IFLX, it is merely a copy of the markets' settlement price. Beginning 22 February 2016 ICE will no longer publish a close price on the front end systems for IFLX. All exchange web reports will display close price as Last traded price per market, as we do for IFUS Ags. IFLL and IFLO will continue to publish close price as it does today.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'c'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
ClosePrice	7	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
DateTime	15	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

4.1.12. Settlement Price Message

Settlement prices could be official or unofficial. For a given market, the exchange usually sends out unofficial price before the official one.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'O'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
SettlementPriceWithDealPricePrecision	7	8	Numeric	DealPriceDenominator for the market should be applied to get this price. This field is kept here for backward compatibility. Client should use the new SettlementPrice field (added in 1.1.14) for better precision. DealPriceDenominator and SettlePriceDenominator might be different for some markets.
DateTime	15	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
IsOfficial	23	1	Alpha	Flag to indicate this is official settlement price or not. 'Y' or 'N'.
ValuationDateTime	24	8	Numeric	Date time the settlement price is for. Milliseconds since Jan 1st, 1970, 00:00:00 GMT. Only date (in GMT) is applicable, though time value is populated for legacy reason.
SettlementPrice	32	8	Numeric	SettlePriceDenominator for the market should be applied to get the actual settlement price.

4.1.13. Marker/Index Prices

The exchange sends out Marker/Index Prices when there is an update. It is possible that the same Marker/Index price is sent out more than once for a market sometime. Client can compare messages with PublishedDateTime for a given market and valuation date, and only does update when a message is the latest.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'z'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Price	7	8	Numeric	IndexPriceDenominator for the market should be applied to get the real price. N/A if set to -1
ShortName	15	30	Alpha	The short name date of the Marker/Index. For example *"Morn5Min"*
PublishedDateTime	45	8	Numeric	The date and time the marker was put into. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

Field Name	Offset	Length	Type	Notes
ValuationDate/ ApplyingDate	53	10	Alpha	The date this price is effective for, in the format of YYYY-MM-DD
Status	63	1	Alpha	For Endex Spot markets, the possible values are below: 'C' – Current 'D' – Default 'F' – Final For non-Endex Spot markets this field will be set to ' '.
Reserved	64	4		Reserved for future use.
IndexPriceDenominator	68	1	Alpha	This field should be applied to the Price field to get the number of decimals for the Marker/Index.

4.1.14. End of Day Market Summary Message

The message is streamed to client when market is closed and settlement price is available for the current trading day. This message is supported for both options and non-options markets.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'u'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Volume	7	4	Numeric	
BlockVolume	11	4	Numeric	
EFSVolume	15	4	Numeric	
EFPVolume	19	4	Numeric	
OpeningPrice	23	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
High	31	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
Low	39	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
VWAP	47	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
SettlementPriceWithDealPricePrecision	55	8	Numeric	DealPriceDenominator for the market should be applied to get the real price. This field is kept here for backward compatibility. Client should use the new SettlementPrice field (added in 1.1.23) for better precision. DealPriceDenominator and SettlePriceDenominator might be different for some markets.
OpenInterest	63	4	Numeric	
DateTime	67	8	Numeric	Date time this message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
SettlementPrice	75	8	Numeric	SettlePriceDenominator for the market should be applied to get the real settlement price.

4.1.15. Market Event Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'f'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
EventType	7	1	Alpha	'A' – Implication Disabled for the Market
DateTime	8	8	Numeric	Date time this message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

4.1.16. Pre-Open Price Indicator Message

This message contains the estimate of what the opening price could be, based on the orders in the market or previous settlement price.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'g'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
PreOpenPrice	7	8	Numeric	DealPriceDenominator for the market should be applied to get the real price.
DateTime	15	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
HasPreOpenVolume	23	1	Alpha	This field will always be set to 'Y'. PreOpenVolume will be set to 0 if there is no volume that will trade during pre-open.
PreOpenVolume	24	4	Numeric	Indicative volume that would trade at the preOpenPrice

4.1.17. Strip Info Message

This message will be sent out if there is strip date change during the trading session. If client does not care about strip date changes, client should ignore these messages.
Please refer to section 3.2.3 for the message format.

4.1.18. Interval Price Limit Notification Message

Interval Price Limit (IPL) might be enabled for certain markets. IPL check is to prevent sudden movements (in both directions) in the market during a short period of time. If IPL is violated, there will be a Hold period where prices outside of IPL will not be allowed. IPL notifications will be sent out to market participants about such violation (IPL Hold Start). Notifications will be sent out after the Hold period expires (IPL Hold End). Note that trading within the IPL limit is still allowed during IPL Hold period.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'V'

Field Name	Offset	Length	Type	Notes
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
IPLHoldType	7	1	Alpha	IPL Hold Type: 'S' – IPL Hold Start 'E' – IPL Hold End
NotificationDateTime	8	8	Numeric	Date time of the IPL Hold notification. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
IsUp	16	1	Alpha	'Y' – IPL Upper bound violation (Bidding too high) 'N' – IPL Lower bound violation (Asking too low) N/A when IPLHoldType = 'E'
IPLHoldDuration	17	4	Numeric	Hold duration, in milliseconds. N/A when IPLHoldNotifyType = 'E'
IPLUp	21	8	Numeric	IPL upper bound. OrderPriceDenominator for the market should be applied to get the real price limit. N/A when IPLHoldNotifyType = 'E'
IPLDown	29	8	Numeric	IPL lower bound. OrderPriceDenominator for the market should be applied to get the real price limit. N/A when IPLHoldNotifyType = 'E'

4.1.19. New Futures Strategy Definition Message

New Futures Strategy Definition messages will be sent out when new UDS markets for futures are created. These messages can be ignored if clients are not interested in the UDS markets.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '9'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	Unique identifier of the market
ContractSymbol	7	70	Alpha	
TradingStatus	77	1	Alpha	See appendix A on trading status codes
OrderPriceDenominator	78	1	Alpha	Denominator for the order price fields in this market.
IncrementPrice	79	4	Numeric	Minimum increment premium price for this market. OrderPriceDenominator should be applied to this field.
IncrementQty	83	4	Numeric	Minimum increment quantity for this market
MinQty	87	4	Numeric	Minimum quantity for this market
NumberOfLegDefinition	91	1	Numeric	Number of strategy leg definitions. The leg info are in repeating group followed
-> LegBodyLength		1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. **New field could be added to the leg definition repeating group and client should be able to handle that.**
-> LegMarketID		4	Numeric	Market Id of the futures leg market

Field Name	Offset	Length	Type	Notes
-> LegRatioObsolete		2	Numeric	Number of futures contracts per increment quantity.
-> LegSide		1	Alpha	'1' – Buy '2' – Sell
-> LegStrategyCode		2	Numeric	
-> LegRatioQtyNumerator		4	Numeric	
-> LegRatioQtyDenominator		4	Numeric	
-> LegRatioPriceNumerator		4	Numeric	
-> LegRatioPriceDenominator		4	Numeric	
SecuritySubType		2	Numeric	Contains the Strategy Code for defined market where applicable. See Appendix E for list of codes.
IsBlockOnly		1	Alpha	Indicates if Market is only tradable via ICE Block Trade. This also means the screen trading is not allowed for the market. 'Y' or 'N'
StrategySymbol		18	Alpha	See Naming Convention on Appendix D
GTAllowed		1	Alpha	Indicates if GTC is allowed in the market. 'Y' or 'N'
ReservedField		4	Numeric	Reserved for future use
MiFIDRegulatedMarket		1	Alpha	Indicates MIFID-II market. 'Y' or 'N'
MarketDesc		120	Alpha	Description of the market
MaturityYear		2	Numeric	4 digit year
MaturityMonth		2	Numeric	Month range 1-12
MaturityDay		2	Numeric	
DealPriceDenominator		1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator. However, it could be different for some crack or spread markets.
UnitQuantity		4	Numeric	The quantity in unit of measurement per lot. For example, it is 1000 barrels per lot for Brent. UnitQtyDenominator should be applied to get correct UnitQuantity.
NumDecimalsOptionsPrice		1	Alpha	Only used for OffExchangeIncrementOptionPrice.
AllowOptions		1	Alpha	Indicate if the market supports option markets, 'Y' or 'N'
ClearedAlias		15	Alpha	Clearing limit admin related
AllowsImplied		1	Alpha	'Y' or 'N'. 'Y' indicates this is a spread market, and, implied is allowed in this market
MinPrice		8	Numeric	Minimum Price. OrderPriceDenominator should be applied to this field.
MaxPrice		8	Numeric	Maximum Price. OrderPriceDenominator should be applied to this field.
ProductName		62	Alpha	Name of the product that the contract/market is under
HubAlias		80	Alpha	Alias of the hub for the contract/market
StripName		39	Alpha	Name of the strip for the contract/market

Field Name	Offset	Length	Type	Notes
IsTradable		1	Alpha	Indicate if the contract is tradable. 'Y' or 'N'.
SettlePriceDenominator		1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator.
MICCode		4	Alpha	Market Identifier Code for the market.
UnitQtyDenominator		1	Alpha	Denominator for UnitQuantity. This field will be '0' for most of the markets.
HedgeOnly		1	Alpha	Indicate if the contract is for hedge only. 'Y' or 'N'.
ExchangeSilo		1	Alpha	Exchange silo code for the market. '0' – ICE '1' – Endex '2' – LIFFE
OffExchangeIncrementQtyDenominator		1	Alpha	Denominator for OffExchangeIncrementQty.
OffExchangeIncrementQty		4	Numeric	Off exchange increment qty. OffExchangeIncrementQtyDenominator should be applied to this field.
OffExchangeIncrementPrice		4	Numeric	Off exchange increment price. OrderPriceDenominator should be applied to this field
OffExchangeIncrementOptionPrice		4	Numeric	Off exchange options increment price. NumDecimalsOptionsPrice should be applied to this field
ProductID		4	Numeric	ID of the product that the contract/market is under.
HubID		4	Numeric	ID of the hub for the contract/market
StripID		4	Numeric	ID of the strip for the contract/market
Underlying ISIN		12	Alpha	The ISIN of the security this market is associated with. This is currently only populated for Liffe Equity markets.
TestMarketIndicator		1	Alpha	Indicates Test Market. 'Y' or 'N'
LegDealSuppressed		1	Alpha	Indicates whether leg deals are suppressed. 'Y' or 'N'
OldNumOfCycles		2	Numeric	Number of cycle(days, hours, MWh, etc.) for a contract. Use NumOfCycles instead.
MarketTypeID		2	Numeric	See Appendix C for the list of market types and IDs.
OverrideBlockMin		1	Alpha	
NumberOfExtraLegDefinitions		2	Numeric	Number of strategy leg definitions excluding the first 127 legs. The leg info is in the following repeating group. For example, if this market has 128 legs, the first 127 will be represented above in NumberOfLegDefinition and the Leg definitions, and the remaining 1 Leg will be defined here.
-> LegBodyLength		1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. New field could be added to the leg definition repeating group and client should be able to handle that.

Field Name	Offset	Length	Type	Notes
-> LegMarketID		4	Numeric	Market Id of the futures leg market
-> Reserved		2	Numeric	
-> LegSide		1	Alpha	'1' – Buy '2' – Sell
-> LegStrategyCode		2	Numeric	The strategy code for the leg. If set, this field can be used to obtain the next level of granularity of the strategy. If it is not set, the LegMarketID is the most granular level for the market. See Appendix E for list of codes.
-> LegRatioQtyNumerator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. Using Gas Oil crack as an example. This will be set to 4 for the Gas oil leg and 3 for the Brent leg.
-> LegRatioQtyDenominator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. The Leg ratio denominator will be set to 1 for most products not but will be used in future product launches.
-> LegRatioPriceNumerator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 1 as the LegRatioPriceNumerator.
-> LegRatioPriceDenominator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 3 as the LegRatioPriceDenominator.
NumOfCycles		4	Numeric	Numeric Number of cycles (days, hours, MWh, etc) for a contract. Replaces OldNumOfCycles

4.1.20. New Expiry Message

New Expiry message will be sent out when a new equity market is created during the day. These messages can be ignored if clients are not interested in equity markets

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'R'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	Unique identifier of a market
MarketTypeID	7	2	Numeric	See Appendix C for the list of market types and IDs.
OrderPriceDenominator	9	1	Alpha	Denominator for the order price fields in this market.

Field Name	Offset	Length	Type	Notes
IncrementPrice	10	4	Numeric	Minimum increment price for this market. OrderPriceDenominator should be applied to this field.
IncrementQty	14	4	Numeric	Minimum increment quantity for this market
LotSize	18	4	Numeric	The lot size is minimum size of contracts in lots. It is multiplier to determine the total lots.
MarketDesc	22	120	Alpha	Description of the market
MaturityYear	142	2	Numeric	4 digit year
MaturityMonth	144	2	Numeric	Month range 1-12
MaturityDay	146	2	Numeric	
DealPriceDenominator	148	1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator. However, it could be different for some crack or spread markets.
MinQty	149	4	Numeric	Minimum quantity for this market
UnitQuantity	153	4	Numeric	The quantity in unit of measurement per lot. For example, it is 1000 barrels per lot for Brent.
Currency	157	20	Alpha	The currency that the market is traded on.
ClearedAlias	177	15	Alpha	Clearing limit admin related
MinPrice	192	8	Numeric	Minimum Price. OrderPriceDenominator should be applied to this field.
MaxPrice	200	8	Numeric	Maximum Price. OrderPriceDenominator should be applied to this field.
ProductID	208	4	Numeric	ID of the product that the contract/market is under.
ProductName	212	62	Alpha	Name of the product that the contract/market is under
HubID	274	4	Numeric	ID of the hub for the contract/market
HubAlias	278	80	Alpha	Alias of the hub for the contract/market
StripID	358	4	Numeric	ID of the strip for the contract/market
StripName	362	39	Alpha	Name of the strip for the contract/market
SettlePriceDenominator	401	1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator.
MICCode	402	4	Alpha	Market Identifier Code for the market.
UnitQtyDenominator	406	1	Alpha	Denominator for UnitQuantity. Clients should also apply UnitQtyDenominator when calculating LotSize. This field will be ‘0’ for most of the markets.
OffExchangeIncrementQtyDenominator	407	1	Alpha	Denominator for OffExchangeIncrementQty.
OffExchangeIncrementQty	408	4	Numeric	Off exchange increment qty. OffExchangeIncrementQtyDenominator should be applied to this field.
OffExchangeIncrementPrice	412	4	Numeric	Off exchange increment price. OrderPriceDenominator should be applied to this field
OffExchangeIncrementOptionPrice	416	4	Numeric	Off exchange options increment price. NumDecimalsOptionsPrice should be applied to this field

Field Name	Offset	Length	Type	Notes
ContractSymbol	420	35	Alpha	
Underlying ISIN	455	12	Alpha	The ISIN of the security this market is associated with. This is currently only populated for Liffe Equity markets.
NumDecimalsOptionsPrice	467	1	Alpha	NumDecimalsOptionsPrice
HedgeMarketID	468	4	Numeric	Market ID for the corresponding hedge market. It will be set to -1 when not applicable.
SettlementType	472	1	Alpha	Settlement Type '0' - financial '1' - physical
GTAllowed	473	1	Alpha	Indicates if GTC is allowed in the market. 'Y' or 'N'
CrossOrderSupported	474	1	Alpha	Indicates if Cross Order is supported in the market. 'Y' or 'N'
UnitOfMeasure	475	30	Alpha	
MiFIDRegulatedMarket	505	1	Alpha	Indicates MIFID-II market. 'Y' or 'N'
ScreenLastTradeYear	506	2	Numeric	Screen last trade year, 4 digits
ScreenLastTradeMonth	508	2	Numeric	Screen last trade month, range 1-12
ScreenLastTradeDay	510	2	Numeric	Screen last trade day of the month
OldNumOfCycles	512	2	Numeric	Number of cycle(days, hours, MWh, etc.) for a contract. Use NumOfCycles instead.
NumOfCycles	514	4	Numeric	Numeric Number of cycles (days, hours, MWh, etc) for a contract. Replaces OldNumOfCycles.

4.1.21. Special Field Message

The Special Field Message is used to send extra information on existing messages. These extra fields are not broadly applicable to all markets across all asset classes on ICE. Rather, they are unique to a particular market or set of markets. Support of this message is only needed for clients who intend to support the markets for which the special message is applicable for, therefore resulting in no impact to all other clients.

It should be noted that **this message will PRECEDE existing messages**. When a client receives the Special Field Message, it is necessary to wait for the following message so that the client application can consume the messages as a single *contiguous* message. This message can be dropped if the client is not interested in any of the extra fields. In addition, an important implementation note is that the exchange may need to add new fields in the future so **client applications must be able to skip unwanted new fields**.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'b'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
NumberOfFields	3	1	Numeric	Number of Fields present on this message
-> FieldID		1	Numeric	See Appendix G for full list of Fields
-> FieldLength		2	Number	Length of this field

Field Name	Offset	Length	Type	Notes
-> Value		Field Length		Value for given field. Type can be inferred by Field Id

4.1.22. Fragment Wrapper Message

When multicast messages become too large to fit within a single packet, their serialized content will be split into byte fragments and sent within this Fragment Wrapper Message. Once all the fragments have been received, the message can be reconstructed using the position and length headers. At the time of writing, only the dynamically-sized new market messages may become so large that they need to be fragmented.

Fragment Wrapper messages will not be interleaved with other messages on the same multicast channel. When the first Fragment Wrapper message arrives, the next messages will also be Fragment Wrapper messages until the final one arrives.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'Z'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
TotalLength	3	2	Numeric	The total length of the fragmented message. This value can be used when the first fragment is received to reserve a buffer for the whole message. The last fragment can recognized when TotalLength = FragmentOffset + FragmentLength.
FragmentOffset	5	2	Numeric	The index of the byte where this fragment starts within the total length of the fragmented message. The first fragment will have a FragmentOffset = 0. For example, when FragmentOffset = 1000, the first byte of this fragment goes in index 1000 of the message.
FragmentLength	7	2	Numeric	The number of bytes in this fragment.
FragmentBytes	9		Bytes	The serialized bytes of the fragmented message.

4.1.23. Unknown Test Message (For Test Environments Only)

Client is required to handle any new type of messages that could be added in the future. Please read section 2.2 on how to process unknown messages.

To ensure that client is able to handle unknown messages, we broadcast an unknown test message in all test environments periodically (currently every 5 minutes).

4.2. Messages for Full Order Depth Only (Futures/OTC)

The messages under this section are for full order depth channels only. You can ignore them if you don't subscribe to those channels.

4.2.1. Market Snapshot Order Message

This message is for orders in snapshot only. It is different from the order message for incremental updates. For a given market, these messages follow right after Market Snapshot Message.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'D'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
OrderID	7	8	Numeric	Unique per market
OrderSequenceID	15	2	Numeric	Sequence ID of the order. When an order is modified, this will be incremented while OrderID remains the same. It is for legacy reason and can be ignored.
Side	17	1	Alpha	1 = Bid, 2 = Offer
Price	18	8	Numeric	OrderPriceDenominator for the market should be applied to get the real price.
Quantity	26	4	Numeric	
IsImplied	30	1	Alpha	Indicate if this is an implied order or not
IsRFQ	31	1	Alpha	Indicate whether it is just an RFQ or not. **Client should filter the order if it doesn't care about RFQ.**
OrderEntryDateTime	32	8	Numeric	Order entry date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT.
SequenceWithinMillis	40	4	Numeric	Can be used in conjunction with "OrderEntryDate Time" field for priority of orders within same milliseconds time. This field can be used to derive the transaction time in microsecond granularity.

4.2.2. Add/Modify Order Message

Both add and modify order notifications use one message format. Client should add the order to book if it is not there already. Otherwise, just overwrite the existing order.

Orders outside daily price limit are not in the matching engine, and thus are excluded.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'E'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
OrderID	7	8	Numeric	Unique per market

Field Name	Offset	Length	Type	Notes
OrderSequenceID	15	2	Numeric	Sequence ID of the order. When an order is modified, this will be incremented while OrderID remains the same. It is for legacy reason and can be ignored.
Side	17	1	Alpha	1 = Bid, 2 = Offer Side might not be available for RFQ (IsRFQ=Y). This field will contain an empty space when RFQ Side is not available.
Price	18	8	Numeric	OrderPriceDenominator for the market should be applied to get the real price.
Quantity	26	4	Numeric	
IsImplied	30	1	Alpha	Indicate if this is an implied order or not
IsRFQ	31	1	Alpha	Indicate whether it is just an RFQ or not. **Client should filter the order if it doesn't care about RFQ.**
OrderEntryDateTime	32	8	Numeric	Order entry date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT.
ExtraFlags	40	1	Numeric	Least Significant Bit (Bit 0): IsModifyOrder – indicate this is to Modify existing order if set to 1. Bit 1 thru 7: Reserved for future use. For backward compatibility, client should always look at each individual bit for the corresponding flag. Otherwise problems might occur when bits 1 thru 7 start to be utilized.
SequenceWithinMillis	41	4	Numeric	Can be used in conjunction with "OrderEntryDate Time" field for priority of orders within same milliseconds time. This field can be used to derive the transaction time in microsecond granularity.
ModificationTimestamp	45	8	Numeric	This field can be used to get the order modification time. The format is nanoseconds since Jan 1st, 1970, 00:00:00 GMT. The nanosecond part is currently 000 and might be supported later.
RequestTradingEngineReceivedTimestamp	53	8	Numeric	This field can be used to get the time the trading engine received the request that triggers this message. The format is nanoseconds since Jan 1st, 1970, 00:00:00 GMT. The nanosecond part is currently 000 and might be supported later. **Note**: This field could be set to different values or 0 for some scenarios. Please refer to the FAQs for more details.

4.2.3. Delete Order Message

Upon receipt of this message, client should remove the order from its local book. Under certain scenarios, the message could be sent from backend with an OrderID that doesn't exist on client's book, in which case client can just ignore it.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'F'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	

Field Name	Offset	Length	Type	Notes
OrderID	7	8	Numeric	
DateTime	15	8	Numeric	Order delete date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT.
SequenceWithinMillis	23	4	Numeric	Can be used in conjunction with “Date Time” field for priority of orders within same milliseconds time. This field can be used to derive the transaction time in microsecond granularity.
RequestTradingEngineReceivedTimestamp	27	8	Numeric	This field can be used to get the time the trading engine received the request that triggers this message. The format is nanoseconds since Jan 1st, 1970, 00:00:00 GMT. The nanosecond part is currently 000 and might be supported later. **Note**: This field could be set to different values or 0 for some scenarios. Please refer to the FAQs for more details.

4.2.4. Trade Message

Trade message was defined in “Common Messages” section**. Upon receipt of this message, client is required to remove the order referenced (of which order ID equals to trade ID in the trade message)**, instead of just deducting the quantity, because in case of partial fill for a resting order, the backend creates a new order with the remaining quantity using a new ID (though priority and entry timestamp remains the same). Read the section on message bundle marker if you want to do special processing in the case of partial fill.

4.2.5. Message Bundle Marker

This message indicates where a bundle of messages starts or ends. For example, if it is the start marker, the messages followed in the stream are part of a bundle, until the end marker. For non-full implied channels, the messages in the same bundle are results from one transaction in the backend.

The message bundle is specifically added so that customers can process messages that result from a partial fill scenario in a different manner, if desired. However, the message bundle does not always indicate partial fill. Currently, when a resting order is partially filled, a new order is created for the remaining quantity using a new ID (though priority and entry timestamp remain the same). The client receives a trade message and an add/modify order message. Instead of treating them as two distinct events, which would result in a removal of the whole quantity of the order (because of the trade) first, and then add the remaining quantity back, some customers prefer to process them in one transaction.

For example, for a given market, there are two offers at the top of the book. A transaction happens with the two offers getting partially filled for a quantity 1 each.

Resting Top Offers:
OrderID:100000, Qty: 10, Price:100
OrderID:200000, Qty: 8, Price:100

<Message Bundle Marker> - StartOrEnd: ‘S’
<Trade Message> - TradeID: 100000, Qty: 1
<Trade Message> - TradeID: 200000, Qty: 1
<Add/Modify Message> - OrderID:500010, Qty: 9, Price:100
<Add/Modify Message> - OrderID:500011, Qty:7, Price:100
<Message Bundle Marker> - StartOrEnd: ‘E’

After Processing of All Messages in the Bundle
Resting Top Offers:
OrderID: 500010, Qty: 9, Price:100
OrderID: 500011, Qty: 7, Price:100

If processed sequentially without consideration of bundle, the top offer aggregate quantity will be changed from 18 to 8, 0, 9 and 16 at the end.

Buy Qty	Buy Price	Sell Qty	Sell Price
		8	100

Buy Qty	Buy Price	Sell Qty	Sell Price
		0	100

Buy Qty	Buy Price	Sell Qty	Sell Price
		9	100

Buy Qty	Buy Price	Sell Qty	Sell Price
		16	100

Considering bundle in your processing, the top offer aggregate quantity will be changed from 18 to 16.

Buy Qty	Buy Price	Sell Qty	Sell Price
		16	100

IMPORTANT: If your application depends on order quantity in the book to trigger other processing, you should handle all messages from a bundle in one transaction. Otherwise, it could be affected by the intermediate changes to quantity as shown in the above example.

You can ignore the Bundle Marker messages if it is NOT applicable for your application.

Note: a bundle could span across multiple multicast blocks.

In some markets, non-full implied transactions with trades at multiple price levels may be split into separate bundles for each price level. All bundles for a transaction have the same TradeTransactionID value, and the IsTransactionEnd field indicates the last bundle for the transaction so clients are able to group messages by transaction as needed. TradeTransactionID is currently only set on transactions with trades, and those without trades have a TradeTransactionID value of 0 and IsTransactionEnd value of ‘Y’. The start and end markers for the same bundle will have matching TradeTransactionID. The TradeTransactionID will be -1 on Full Implied channels, as these do not support sub-bundling.

Please see this link for additional information on price level bundling.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'T'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
StartOrEnd	3	1	Alpha	'S' – Start of a message bundle 'E' – End of a message bundle
TradeTransactionID	4	8	Numeric	The value used to associate bundles of the same transaction. This value will be 0 when the transaction has no trade. The value will be -1 if the channel does not support sub-bundling.
IsTransactionEnd	12	1	Alpha	This field will always be set to ' ' for Start of a message bundle. 'Y' - When this is the last or only bundle for a transaction. 'N' - When this is not the last or only bundle for a transaction.

4.2.6. Fixing Transition Message

This message supports ICE Benchmark Administration's (IBA) electronic Gold and Silver Auction and it is disseminated when there is a transition of the fixing market. For more information about the IBA administration of the LBMA Gold and Silver Price, click here.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '3'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Status	7	1	Alpha	C - Closed P - Preopen L - Lockdown
AuctionEndTime	8	8	Numeric	Date time the Auction will end. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
Threshold Imbalance Qty	16	4	Numeric	
DateTime	20	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

4.2.7. Fixing Lockdown Message

This message supports ICE Benchmark Administration's (IBA) electronic Gold and Silver Auction and it is disseminated at the end of each auction round, and again once the auction end, and the final price is published. For more information about the IBA administration of the LBMA Gold and Silver Price, click here.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '4'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Auction Date	7	10	Alpha	Date format: MM-DD-YYYY
Time	17	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
Description	25	20	Alpha	The auction runs twice daily at 10:30am and 3:00pm London time. The values disseminated via this field are: 'GOLD_1030' 'GOLD_1500' 'SILVER_1200'
Round	45	2	Numeric	
Agg Bid Qty	47	4	Numeric	Aggregate bid quantity
Agg Offer Qty	51	4	Numeric	Aggregate offer quantity
USD Price	55	8	Numeric	Auctioneers price for the round in USD. Please apply OrderPriceDenominator. Use 2 decimal places for USD Price for Gold and 3 decimal places for Silver.
IsBalanced	63	1	Alpha	'Y'/'N'
IsFinal	64	1	Alpha	'Y'/'N'
GBP Price	65	8	Numeric	Obsolete. The price will be published via the Fixing Indicative Price Message.
EUR Price	73	8	Numeric	Obsolete. The price will be published via the Fixing Indicative Price Message.

4.2.8. Fixing Indicative Price Message

This message supports ICE Benchmark Administration's (IBA) electronic Gold and Silver Auction and is disseminated at the end of the final auction when the final price is published.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = '0'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Currency	7	3	Alpha	3 character Currency Code.
Price	10	8	Numeric	Auctioneers price for the round in specified currency per ounce
PriceInGram	18	8	Numeric	Auctioneers price in gram for the round in specified currency
NumDecimalsPrice	26	1	Numeric	Number of decimals to use for Prices
NumDecimalsPriceInGram	27	1	Numeric	Number of decimals to use for PriceInGram

4.3. Messages for Price Level Only

The messages under this section are for price level channels only. You can ignore them if you don't subscribe to those channels.

Appendix F includes some price level related scenarios and demonstrates how client should handle different messages to update the book accordingly.

4.3.1. Market Snapshot Price Level Message

This message is for price level in snapshot only. For a given market, these messages follow right after Market Snapshot Message.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'm'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Side	7	1	Alpha	1 = Bid, 2 = Offer
PriceLevelPosition	8	1	Numeric	Position of the price level
Price	9	8	Numeric	OrderPriceDenominator for the market should be applied to get the real price.
Quantity	17	4	Numeric	Total quantity at the price level
OrderCount	21	2	Numeric	Number of all orders at the price level
ImpliedQuantity	23	4	Numeric	Quantity that were implied
ImpliedOrderCount	27	2	Numeric	Number of implied orders at the price level

4.3.2. Add Price Level Message

Upon receipt of this message, client should add/insert a price level at the specified position in the book for the given market, and push down the price levels that were previously at or below that position. After that, if the total number of levels exceeds what is supported (e.g. Top 5), client should remove the bottom level. The system doesn't send out Delete Price Level message in that scenario.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 't'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Side	7	1	Alpha	1 = Bid, 2 = Offer
PriceLevelPosition	8	1	Numeric	Position of the price level
Price	9	8	Numeric	OrderPriceDenominator for the market should be applied to get the real price.
Quantity	17	4	Numeric	Total quantity at the price level
OrderCount	21	2	Numeric	Number of all orders at the price level
ImpliedQuantity	23	4	Numeric	Quantity that were implied
ImpliedOrderCount	27	2	Numeric	Number of implied orders at the price level
Timestamp	29	8	Numeric	Timestamp of last update used to derive the price level message. The format is nanoseconds since

Field Name	Offset	Length	Type	Notes
				Jan 1st, 1970, 00:00:00 GMT. The nanosecond part is currently 000 and might be supported later.

4.3.3. Change Price Level Message

Upon receipt of this message, client should update the price level at the specified position in its book for the given market.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 's'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Side	7	1	Alpha	1 = Bid, 2 = Offer
PriceLevelPosition	8	1	Numeric	Position of the price level
Price	9	8	Numeric	OrderPriceDenominator for the market should be applied to get the real price.
Quantity	17	4	Numeric	Total quantity at the price level
OrderCount	21	2	Numeric	Number of all orders at the price level
ImpliedQuantity	23	4	Numeric	Quantity that were implied
ImpliedOrderCount	27	2	Numeric	Number of implied orders at the price level
Timestamp	29	8	Numeric	Timestamp of last update used to derive the price level message. The format is nanoseconds since Jan 1st, 1970, 00:00:00 GMT. The nanosecond part is currently 000 and might be supported later.

4.3.4. Delete Price Level Message

Upon receipt of this message, client should remove the price level at the specified position in its book for the given market. And it should pull up all the levels that were below that position.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'r'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
Side	7	1	Alpha	1 = Bid, 2 = Offer
PriceLevelPosition	8	1	Numeric	Position of the price level
Timestamp	9	8	Numeric	Timestamp of last update used to derive the price level message. The format is nanoseconds since Jan 1st, 1970, 00:00:00 GMT. The nanosecond part is currently 000 and might be supported later.

4.3.5. Trade Message

Trade message was defined in "Common Messages" section. Unlike for Full Order Depth, trade message should not be used for price level book related processing.

4.3.6. New Options Strategy Definition Message

New Options Strategy Definition messages will be sent out when new UDS markets for options are created. These messages can be ignored if clients are not interested in the UDS markets.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'U'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	Unique identifier of the market
UnderlyingMarketID	7	4	Numeric	Unique identifier of the underlying market
ContractSymbol	11	35	Alpha	
TradingStatus	46	1	Alpha	See appendix A on trading status codes
OrderPriceDenominator	47	1	Alpha	Denominator for the order price fields in this market.
IncrementPrice	48	4	Numeric	Minimum increment premium price for this market. OrderPriceDenominator should be applied to this field.
IncrementQty	52	4	Numeric	Minimum increment quantity for this market
MinQty	56	4	Numeric	Minimum quantity for this market
NumberOfLegDefinition	60	1	Numeric	Number of strategy leg definitions. The leg info are in repeating group followed
-> LegBodyLength	61	1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. **New field could be added to the leg definition repeating group and client should be able to handle that**.
-> LegMarketID		4	Numeric	Market Id of the option leg market
-> LegUnderlyingMarketID		4	Numeric	Futures market id of the underlying futures market
-> LegRatioObsolete		2	Numeric	Number of option contracts per increment quantity.
-> LegSide		1	Alpha	'1' – Buy '2' – Sell
-> LegStrategyCode		2	Numeric	
-> LegRatioQtyNumerator		4	Numeric	
-> LegRatioQtyDenominator		4	Numeric	
-> LegRatioPriceNumerator		4	Numeric	
-> LegRatioPriceDenominator		4	Numeric	
NumberOfHedgeDefinition		1	Numeric	Number of strategy hedge definitions. The hedge info are in repeating group followed
-> HedgeBodyLength		1	Numeric	Message length, including this field, for a hedge. Client should get this value and read the repeating group based on this.

Field Name	Offset	Length	Type	Notes
				New field could be added to the hedge definition repeating group and client should be able to handle that.
-> HedgeMarketID		4	Numeric	Future's market id of the hedge
-> HedgeSecurityType		1	Alpha	'F' – Future
-> HedgeSide		1	Alpha	'1' – Buy '2' – Sell
-> HedgePrice		8	Numeric	
-> HedgePriceDenominator		1	Alpha	
-> HedgeDeltaObsolete		2	Numeric	Deprecated. Use HedgeDelta instead
-> HedgeStrategyCode		2	Numeric	
-> HedgeDelta		4	Numeric	
SecuritySubType		2	Numeric	Contains the Strategy Code for defined market where applicable. See Appendix E for list of codes.
IsBlockOnly		1	Alpha	Indicates if Market is only tradable via ICE Block Trade. This also means the screen trading is not allowed for the market. 'Y' or 'N'
StrategySymbol		18	Alpha	See Naming Convention on Appendix D
GTAllowed		1	Alpha	Indicates if GTC is allowed in the market. 'Y' or 'N'
MiFIDRegulatedMarket		1	Alpha	Indicates MIFID-II market. 'Y' or 'N'
DealPriceDenominator		1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator.
SettlePriceDenominator		1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator.
UnitQtyDenominator		1	Alpha	Denominator for UnitQuantity. This field will be '0' for most of the markets.
TestMarketIndicator		1	Alpha	Indicates Test Market. 'Y' or 'N'
ContractSymbolExtra		35	Alpha	Extra contract symbol. Some contract symbols might contain more than 35 characters. Clients should append this field to ContractSymbol (Offset 11) to get the complete contract symbol.
LegDealSuppressed		1	Alpha	Indicates whether leg deals are suppressed. 'Y' or 'N'
IsTradable		1	Alpha	Indicate if the contract is tradable. 'Y' or 'N'.
OldNumOfCycles		2	Numeric	Number of cycle(days, hours, MWh, etc.) for a contract. Use NumOfCycles instead.
OptionsExpirationYear		2	Numeric	4 digit year. Last date that the option market can be traded and

Field Name	Offset	Length	Type	Notes
				should be removed from the system.
OptionsExpirationMonth		2	Numeric	Month range 1-12. Last date that the option market can be traded and should be removed from the system.
OptionsExpirationDay		2	Numeric	Day of the month. Last date that the option market can be traded and should be removed from the system.
MarketTypeID		2	Numeric	See Appendix C for the list of market types and IDs.
OverrideBlockMin		1	Alpha	
NumberOfExtraLegDefinitions		2	Numeric	Number of strategy leg definitions excluding the first 127 legs. The leg info is in the following repeating group. For example, if this market has 128 legs, the first 127 will be represented above in NumberOfLegDefinition and the Leg definitions, and the remaining 1 Leg will be defined here.
-> LegBodyLength		1	Numeric	Message length, including this field, for a leg. Client should get this value and read the repeating group based on this. New field could be added to the leg definition repeating group and client should be able to handle that.
-> LegMarketID		4	Numeric	Market Id of the option leg market
-> LegUnderlyingMarketID		4	Numeric	Futures market id of the underlying futures market
-> Reserved		2	Numeric	
-> LegSide		1	Alpha	'1' – Buy '2' – Sell
-> LegStrategyCode		2	Numeric	The strategy code for the leg. If set, this field can be used to obtain the next level of granularity of the strategy. If it is not set, the LegMarketID is the most granular level for the market. See Appendix E for list of codes.
-> LegRatioQtyNumerator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. Using Gas Oil crack as an example. This will be set to 4 for the Gas oil leg and 3 for the Brent leg.

Field Name	Offset	Length	Type	Notes
-> LegRatioQtyDenominator		4	Numeric	The quantity ratio represents the proportion of each of the leg of spreads. The Leg ratio denominator will be set to 1 for most products not but will be used in future product launches.
-> LegRatioPriceNumerator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 1 as the LegRatioPriceNumerator.
-> LegRatioPriceDenominator		4	Numeric	The price ratio is the fractional weighted price component per leg in the strategy. Using a Q4 2017 set as composite strategy as an example, each leg Oct 2017, Nov 2017 and Dec 2017 will have 3 as the LegRatioPriceDenominator.
NumOfCycles		4	Numeric	Number of cycles (days, hours, MWh, etc) for a contract. Replaces OldNumOfCycles.

4.3.7. New Options Market Definition Message

New Options Market Definition messages will be sent out when new options markets are created. Once created, these new options markets should be treated no differently than those that are pre-defined.

In case of missing this message(s) in live updates, all (new) options market definitions are available via the Options Product Definition Requests.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'l'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	Unique identifier of the option market
UnderlyingMarketID	7	4	Numeric	Underlying Futures/OTC market id. This market id links to the product definition of the futures market.
ContractSymbol	11	70	Alpha	See Naming Convention on Appendix D
TradingStatus	81	1	Alpha	See appendix A on trading status codes
OrderPriceDenominator	82	1	Alpha	Denominator for the order price fields in this market.
IncrementQty	83	4	Numeric	Minimum increment quantity for this market

Field Name	Offset	Length	Type	Notes
LotSize	87	4	Numeric	The lot size is minimum size of contracts in lots. It is multiplier to determine the total lots.
MarketDesc	91	120	Alpha	Description of the market
OptionType	211	1	Alpha	“C” – Call “P” – Put
StrikePrice	212	8	Numeric	Strike Price of the option. Used in conjunction with the NumDecimalsStrikePrice. This is often different from the premium price decimals.
DealPriceDenominator	220	1	Alpha	Denominator for the deal price fields in the market. For most markets, this is the same as OrderPriceDenominator.
MinQty	221	4	Numeric	Minimum quantity for this market
Currency	225	20	Alpha	The currency that the market is traded on.
NumDecimalsStrikePrice	245	1	Alpha	Denominator for the strike price field.
MinOptionsPrice	246	8	Numeric	Minimum premium price for the option.
MaxOptionsPrice	254	8	Numeric	Maximum premium price for the option.
IncrementPremiumPrice	262	4	Numeric	Price increment for the option market.
OptionsExpirationYear	266	2	Numeric	4 digit year
OptionsExpirationMonth	268	2	Numeric	Month range 1-12
OptionsExpirationDay	270	2	Numeric	Day of the month.
OptionsStyle	272	1	Alpha	‘A’ – American ‘E’ – European ‘0’ – None ‘3’ – Asian ‘4’ – One Time
OptionsExpirationType	273	1	Alpha	‘M’ – Monthly ‘D’ – Daily
HedgeMarketID	274	4	Numeric	The underlying futures market ID for a serial option. The serial option market may or may not be a valid futures month and option will expire/exercise into a position held in this underlying market. For equity option this will be the underlying cash/stock market ID. It will be set to -1 when not applicable.
SettlePriceDenominator	278	1	Alpha	Denominator for the settlement price fields in the market. For most markets, this is the same as DealPriceDenominator
UnitQtyDenominator	279	1	Alpha	Denominator for UnitQuantity. This field will be ‘0’ for most of the markets.
TickValue	280	8	Numeric	OrderPriceDenominator should be applied to get the real value.
FlexAllowed	288	1	Alpha	Indicates if flexible strikes can be created for the option market. ‘Y’ or ‘N’
SettlementType	289	1	Alpha	Settlement Type ‘0’ - financial ‘1’ - physical
IsBlockOnly	290	1	Alpha	Indicates if Market is only tradable via ICE Block Trade. This also means the screen trading is not allowed for the market. ‘Y’ or ‘N’
GTAllowed	291	1	Alpha	Indicates if GTC is allowed in the market. ‘Y’ or ‘N’

Field Name	Offset	Length	Type	Notes
CrossOrderSupported	292	1	Alpha	Indicates if Cross Order is supported in the market. 'Y' or 'N'
GuaranteedCrossSupported	293	1	Alpha	Indicates if Guarantee Cross is supported in the market. 'Y' or 'N'
UnitOfMeasure	294	30	Alpha	
MiFIDRegulatedMarket	324	1	Alpha	Indicates MIFID-II market. 'Y' or 'N'
ScreenLastTradeYear	325	2	Numeric	Screen last trade year, 4 digits
ScreenLastTradeMonth	327	2	Numeric	Screen last trade month, range 1-12
ScreenLastTradeDay	329	2	Numeric	Screen last trade day of the month
IsTradable	331	1	Alpha	Indicate if the contract is tradable. 'Y' or 'N'.
OldNumOfCycles	332	2	Numeric	Number of cycle(days, hours, MWh, etc.) for a contract. Use NumOfCycles instead.
MarketTypeID	334	2	Numeric	See Appendix C for the list of market types and IDs.
NumOfCycles	336	4	Numeric	Number of cycle(days, hours, MWh, etc.) for a contract. Replaces OldNumOfCycles.

4.3.8. RFQ Message

Request for Quote Message.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'k'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
MessageTimestamp	7	8	Numeric	Date time of the RFQ; milliseconds since Jan 1st, 1970, 00:00:00 GMT
RFQSystemID	15	8	Numeric	System ID of the RFQ
MarketTypeID	23	2	Numeric	
UnderlyingMarketID	25	4	Numeric	
Quantity	29	4	Numeric	
Side	33	1	Alpha	' ' – N/A '1' – Bid '2' – Offer

4.3.9. Option Open Interest Message

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'v'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
OpenInterest	7	4	Numeric	
DateTime	11	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT

OpenInterestDate	19	10	Alpha	The date this Open Interest is effective for, in the format of YYYY-MM-DD

4.3.10. Option Settlement Price Message

Option settlement prices could be official or unofficial. For a given market, the exchange usually sends out unofficial price before the official one.

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'w'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
MarketID	3	4	Numeric	
SettlementPriceWithDealPrice Precision	7	8	Numeric	DealPriceDenominator for the market should be applied to get this price. This field is kept here for backward compatibility. Client should use the new SettlementPrice field (added in 1.1.14) for better precision. DealPriceDenominator and SettlePriceDenominator might be different for some markets.
DateTime	15	8	Numeric	Date time the message was sent. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
IsOfficial	23	1	Alpha	Flag to indicate this is official settlement price or not. 'Y' or 'N'.
ValuationDateTime	24	8	Numeric	Date time the settlement price is for. Milliseconds since Jan 1st, 1970, 00:00:00 GMT. Only date (in GMT) is applicable, though time value is populated for legacy reason.
Volatility	32	8	Numeric	Apply 2 as the denominator to get the real value. For example, volatility of 3.00 will be sent as 300.
SettlementPrice	40	8	Numeric	SettlePriceDenominator for the market should be applied to get the actual settlement price.
Delta	48	8	Numeric	Apply 2 as the denominator to get the real value. For example, delta of 3.00 will be sent as 300.

4.3.11. Old Style Options Trade and Market Stats Message

Old style options markets are ***not*** pre-defined and do ***not*** have their own market IDs. Deals and market statistics for old style options will be sent out via this message type. These messages can be ignored if clients are not interested in old style options. Currently it is only used for OTC options (except Henry Hub).

Field Name	Offset	Length	Type	Notes
MessageType	0	1	Alpha	Value = 'W'
MessageBodyLength	1	2	Numeric	Message body length, excluding 1st and this field
UnderlyingMarketID	3	4	Numeric	The underlying market ID of this options market
TradeID	7	8	Numeric	
Price	15	8	Numeric	NumDecimalsOptionsPrice from the underlying market should be applied to get the real price.

Quantity	23	4	Numeric	
OffMarketTradeType	27	1	Alpha	Only for off market trade. The value is ' ' when it is a regular trade. See Appendix B for the codes and descriptions.
TransactDateTime	28	8	Numeric	Deal date time. Milliseconds since Jan 1st, 1970, 00:00:00 GMT
OptionType	36	1	Alpha	'1' – Call '2' – Put
StrikePrice	37	8	Numeric	NumDecimalsStrikePrice from the underlying market should be applied to get the real strike price
EventCode	45	1	Alpha	'0' – Normal trade '1' – Cancelled trade '2' – Adjusted trade
TotalVolume	46	4	Numeric	N/A if set to -1
BlockVolume	50	4	Numeric	N/A if set to -1
EFSVolume	54	4	Numeric	N/A if set to -1
EFPVolume	58	4	Numeric	N/A if set to -1
High	62	8	Numeric	NumDecimalsOptionsPrice from the underlying market should be applied to get the real price. N/A if set to -1
Low	70	8	Numeric	NumDecimalsOptionsPrice from the underlying market should be applied to get the real price. N/A if set to -1
VWAP	78	8	Numeric	NumDecimalsOptionsPrice from the underlying market should be applied to get the real price. N/A if set to -1

4.4. Options Support

For options, top of book as well as Top 10 Price levels are supported. And thus price level messages should be used.

4.5. Programming Guidelines

The followings are the list of things that we recommend for message processing, many of which were already mentioned in earlier sections.

Client should request product definitions only once a day and cache the data, so that it can be quicker to recover in the middle of a trading day.

Client should handle unknown message type. Client should work without change if new field is added to a message.

Client should implement some kind of queuing mechanism for storing messages so that it can read incoming messages quicker. Consumption of the messages can be done in a separate thread.

Error response could be expected for a TCP request. On the server side, error in handling of one request doesn't affect the processing of another request. It is up to the client to decide how it wants to handle an error response. But at minimum, the error response should be logged.

There are two denominators for price fields, one for orders and the other for deals. They are the same for majority of the markets. However, they could be different for certain crack and spread markets. "DealPriceDenominator" and "SettlePriceDenominator" should be used for deal price, market high, low, vwap, opening price and settlement price.

4.6. Appendices

4.6.1. Appendix A: Trading Status Codes

Code	Description
O	Open
C	Close
E	Expired
1	Pre-Open
2	Pre-Close

4.6.2. Appendix B: Trade Types with Market Stat Update Rules

Trade Type Description	Trade Type	Update Volume	Update Block Vol	Update EFS Vol	Update EFP Vol	Update Last Price	Update High/Low/Open/WAP
Block	K		YES				
EFS	S			YES			
EFP	E				YES		
EFP/EFS	O				YES		
EOO	Q			YES			
EFM	I			YES			
Guaranteed Cross	5	YES				YES	YES
Basis	4				YES		
Asset Allocation	AA			YES			
Bilateral Block	V		YES				

4.6.3. Appendix C: Supported Market Types

Market types that ICE currently supports can be found at the URL below. They can be used in Product Definition and Market Data Requests.

https://www.theice.com/publicdocs/technology/Supported_Market_Types_on_ICE_API.pdf

4.6.4. Appendix D: ICE Instrument Naming Convention

ICE Instrument Naming Convention document can be found at the following URL.

https://www.theice.com/publicdocs/technology/Instrument_Naming_Convention.pdf

4.6.5. Appendix E: ICE Strategy Code Reference Manual

ICE Strategy Code Reference Manual can be found at the following URL.

https://www.theice.com/publicdocs/technology/ICE_Strategy_Code_Reference_Manual.pdf

4.6.6. Appendix F: Price Level Scenarios

The followings include a few typical price level related scenarios and demonstrate how client should handle the messages and update its local book correctly.

1. Initial Book for Market 234678

Book on the Bid side

PriceLevelPosition	Bid
1	5 @ 78.15
2	10 @ 78.10
3	10 @ 78.00
4	15 @ 77.95
5	5 @ 77.90

2. Price Level Added for Market 234678

A new bid of 20 is floated into the system with price 78.05. The system sends out the following Add Price Level Message.

MessageType	't'
MessageBodyLength	29
Market ID	234678
Side	'1'
PriceLevelPosition	**3**
Price	**7805**
Quantity	**20**
OrderCount	1
ImpliedQuantity	0
ImpliedOrderCount	0

** 2 is the value of OrderPriceDenomintor for market 234678.

Upon receipt of this message, client should insert the price level at position 3 of the book on the bid side, and move previous level 3 and 4 down 1 position. Previous entry at position 5 should be deleted.

Book on the Bid side after Update

PriceLevelPosition	Bid
1	5 @ 78.15
2	10 @ 78.10
3	**20 @ 78.05**
4	10 @ 78.00
5	15 @ 77.95

3. Price Level Changed for Market 234678

Another bid of 10 is floated into the system with price 78.05. Since the price level was there, the system sends out the following Change Price Level Message.

MessageType	's'
MessageBodyLength	29
Market ID	234678
Side	'1'
PriceLevelPosition	**3**
Price	**7805**
Quantity	**30**
OrderCount	2
ImpliedQuantity	0
ImpliedOrderCount	0

Upon receipt of this message, client should update the price level at position 3 of the book on the bid side.

Book on the Bid side after Update

PriceLevelPosition	Bid
1	5 @ 78.15
2	10 @ 78.10

3	**30 @ 78.05**
4	10 @ 78.00
5	15 @ 77.95

4. Price Level Deleted for Market 234678

Orders at 78.00 are withdrawn and the server sends out the following Delete Price Level message.

MessageType	'r'
MessageBodyLength	9
Market ID	234678
Side	'1'
PriceLevelPosition	4

Upon receipt of this message, client deletes price level entry at position 4, and move entry at position 5 up 1 level.

Book on the Bid side after Delete

PriceLevelPosition	Bid
1	5 @ 78.15
2	10 @ 78.10
3	20 @ 78.05
4	**15 @ 77.95**

If there are more price levels below position 4 after the delete on the server side, the system would send out the following Add Price Level message for position 5.

MessageType	't'
MessageBodyLength	29
Market ID	234678
Side	'1'
PriceLevelPosition	**5**
Price	**7790**

Quantity	**5**
OrderCount	1
ImpliedQuantity	0
ImpliedOrderCount	0

Upon receipt of this message, client should add price level at position 5.

Book on the Bid side after Update

PriceLevelPosition	Bid
1	5 @ 78.15
2	10 @ 78.10
3	20 @ 78.05
4	15 @ 77.95
5	**5 @ 77.90**

4.6.7. Appendix G: Special Field Message Field Ids

The following fields are only applicable for some markets. Please also see these links for additional information on CDS.

- https://www.theice.com/publicdocs/Eris_Product_Offering.pdf

Field Id	Field Name	Field Type	Field Length	Applicable Market	Applicable Messages	Description
1	AltPrice	Numeric	8	CDS	D, E, G, N,m,s,t	This field is equivalent to Eris Futures Price. AltPriceDenominator for the market should be applied to get the real alt price.
2	AltHighPrice	Numeric	8	CDS	C, J,u	This field is equivalent to High Eris Futures Price. AltPriceDenominator for the market should be applied to get the real alt price.
3	AltLowPrice	Numeric	8	CDS	C, J,u	This field is equivalent to Low Eris Futures Price. AltPriceDenominator for the market should be applied to get the real alt price.
4	AltVWAP	Numeric	8	CDS	C, J,u	This field is equivalent to Volume-weighted Average Eris Futures Price. AltPriceDenominator for the market should be applied to get the real alt price.
5	AltLastTradePrice	Numeric	8	CDS	C,u	This field is equivalent to Last Trade Eris Futures Price. AltPriceDenominator for the market market should be applied to get the real alt price.
6	AON	Alpha	1	AON market	D, E	This field indicates if an order is All-Or-None order. This is only sent on AON enabled market.
	Unknown			CDS	C,D,E,G,J,N,u	Client is required to handle any new field that could be added in the future. To ensure that client is able to handle unknown field, we randomly broadcast an unknown test field in all test environments.

When Special Field Message is received, recipient must wait for next message in sequence to parse complete message. In below example, message ‘b’ must be combined with message ‘G’ to indicate AltPrice of 10000 is applicable for Trade 1234567 with Price 12500

MessageType	‘b’
MessageBodyLength	12
Number of Fields	1
FieldId	1
Value Length	8
Value	10000
MessageType	‘G’
MessageBodyLength	45

MarketID	1234
TradeID	1234567
IsSystemPricedLeg	‘N’
Price	12500
Quantity	1
….	

4.6.8. Appendix H: Full Implied Multicast Channels

The Full Implied multicast channels support implied prices for all months within the implied range, though with extra bandwidth usage and latency. The regular (non-Full Implied) multicast channels for many products only send out implied for the front months.

Please refer to the document below for more information.

https://www.theice.com/publicdocs/technology/Additional_Implieds_FAQ.pdf

For optimized bandwidth usage and reduced latency outliers at peak times, the exchange is batching and filtering messages on the Full Implied multicast channels. As a way to handle growth in message rates, this behavior will be beneficial for customers who listen to the Full Implied channels.

In the Full Implied channels, clients should expect to see:

Increase in average latency of approximately 50 milliseconds for the Full Implied channels only
Reduction in latency outliers during daily peak times
Reduction in message rates and packet rates during daily peak times

It should also be noted that:
ALL orders that get canceled or deleted on the platform within 50 milliseconds will be filtered out of the feed and will not be sent out.
ALL deals will always be sent to the client
ALL delete messages with no prior active orders will be filtered out of the feed and will not be sent out.

4.6.9. Appendix I. Fragmented Message Scenarios

The following includes scenarios where a large multicast message has been fragmented and demonstrates how the client can handle it.

1. New Futures Strategy Definition (message type '9') with a large number of legs

This message is 3000 bytes long.

Message Type	Message Body Length	Contents
9	2997	Message Body

In this example, the message will be broken into fragments with a max size of 1300 bytes.

Seq #	Message Type	Message Body Length	Total Length	Fragment Offset	Fragment Length	Fragment Bytes
N	Z	1306	3000	0	1300	New strategy bytes 0-1299
N+1	Z	1306	3000	1300	1300	New strategy bytes 1300-2599
N+2	Z	406	3000	2600	400	New strategy bytes 2600-2999

1. Message sequence N arrives. The client decides to allocate a 3000 byte buffer for the message using the Total Length field and populate it with the 1300 Fragment Bytes starting from offset 0. This message can be identified as the first fragment because it has offset 0. Since this message is not final, expect another Fragment Wrapper next.
2. Message sequence N+1 arrives. The client copies the 1300 Fragment Bytes starting at offset 1300. Since this message is not final, expect another Fragment Wrapper next.
3. Message sequence N+2 arrives. The client copies the 400 Fragment Bytes starting at offset 2600. This message can be identified as the final fragment since the offset + length = total length (2600 + 400 = 3000), and the next message could be any applicable type.
4. With all the message bytes available, the client can reassemble the message as if it had just arrived.

Alternative to allocating a buffer when the first message arrives, a client could queue the Fragment Wrapper Messages ('Z') until they have all arrived and reassemble them at that time.

As in other cases, clients can use the sequence numbers to ensure messages are in the correct order and there have been no sequence gaps. Missing messages can be requested using the Historical Replay ('7') message.

2. Client is not interested in messages of the type that has been fragmented

Given the previous example, clients that are not interested in the fragmented message type (‘9’ in this example) might decide to discard all the fragments.

Seq #	Message Type	Message Body Length	Total Length	Fragment Offset	Fragment Length	Fragment Bytes
N	Z	1306	3000	0	1300	New strategy bytes 0-1299
N+1	Z	1306	3000	1300	1300	New strategy bytes 1300-2599
N+2	Z	406	3000	2600	400	New strategy bytes 2600-2999

1. Message (sequence N) arrives. The client reads the first byte of Fragment Bytes and sees that it is type ‘9’ in which it is not interested. The message was not final, so expect the next message will be another Fragment Wrapper.
2. Message sequence N+1 arrives. The client determines this message is not the final Fragment Wrapper, so it ignores this one and awaits the next.
3. Message sequence N+2 arrives. The client determines this message is the final Fragment Wrapper and discards it. It may now expect to receive messages of any type applicable to the channel.