IRESS FIX Engine - Technical Specifications

6 March 2009

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Last revised:	6 March 2009	**Minimum software version:**	All

The FIX Protocol

The FIX (Financial Information eXchange) protocol is a purpose-built language for communicating financial information electronically between two parties in a secure environment. FIX is not a software application and does not have a graphical user interface. Specifically, FIX communicates real-time securities transactions between brokers, buy and sell-side institutions and the market. FIX defines the format of messages sent and received, and is a medium through which two unrelated applications can communicate.

The FIX Protocol is built and maintained by FIX Protocol Ltd; an independent committee of industry participants from across the globe. For the latest FIX specifications or more information on FIX Protocol Ltd and the FIX Protocol itself, see http://www.fixprotocol.org.

IRESS FIX Engine

IRESS Market Technology (IRESS) has developed a FIX interface for its IRESS order routing system (IOS), to enable IOS users to communicate order information with internal back office systems and global order routing systems. The IRESS FIX Engine supports all FIX protocol versions up to and including 4.2. IRESS does not currently support FIXML or FIX protocol version 4.3 and above.

FIX and the IRESS Order System (IOS)

IOS overview

The IOS is an order management system which combines with the IOS order routing network to allow brokers and institutions to communicate order information between each other and the market. Key functions of the IOS include:

- creating and managing orders for retail and institutional traders
- communicating booking details between brokers, institutions and broker back-offices
- sending indications of interest to institutions
- managing electronic trade confirmations (ETCs).

The IOS communicates directly with a range of trading exchanges. IOS users can fully manage all their orders in the IOS regardless of how the orders are placed on the market. Order executions can be entered into the IOS or exported from the IOS; and order modifications and deletions can be controlled. Alternatively, some clients choose to only use the IOS for monitoring orders that are placed on the market using other methods.

For more information about the IOS, see http://www.iress.com.au/trading/trade_ios_pd.asp.

Connectivity between IOS and FIX

An IRESS FIX engine (server) facilitates sending and receiving order information from IOS, using the FIX protocol. The IRESS FIX engine is based on the principles of the FIX Protocol.

There are two ways to connect to IOS through FIX:

- a point-to-point connection with an IRESS FIX engine at a broker site
- a central IRESS FIX engine at an IRESS site.

Connection through a central FIX engine provides connectivity to the full IOS network. This allows clients to route IOS orders to multiple brokers or institutions in one FIX session, and removes the need for direct connectivity with individual participants.

The IRESS FIX engine runs in one of three modes:

- Client Order mode

  Orders are sent to the IOS then managed by the receiving broker.
- Market Order mode

  Orders are sent directly to market after being verified by the IOS order validation system. Orders that breach an IOS trading limit are either sent to a designated person at the broker's site for authorisation, or are rejected outright.
- Client and Market Order mode

Messages Supported

The IRESS FIX Engine supports FIX messaging for order and execution reports, indications of interest (IOI) and allocations. Specific messaging components of FIX supported by the IRESS FIX Engine are described below.

Administrative messages

- Heartbeat
- Logon
- Test Request
- Resend Request
- Reject (session-level)
- Sequence Reset (Gap Fill)
- Logout.

Application messages

- Indication of Interest
- Market Data Request
- Market Data – Snapshot/Full Refresh
- Market Data - Incremental Refresh
- Market Data Request Reject
- Trading Session Status Request
- Trading Session Status
- New Order – Single
- Execution Report
- Don't Know Trade (DK)
- Order Cancel/Replace Request (Order Modification Request)
- Order Cancel Request
- Order Cancel Reject
- Order Status Request
- Allocation
- Allocation ACK
- Business Message Reject
- Confirmation
- Confirmation ACK.

Message Definitions

This section describes the FIX messages and associated fields supported by the IRESS FIX Engine. The comments shown are specific to the IRESS FIX Engine's use of the fields within each message.

For comments generic to the IRESS FIX Engine's use of a field for all messages, see the Numerical Field List later in this document.

For generic FIX field descriptions, please refer to the specifications available on the FIX website at http://www.fixprotocol.org.

Message headers and trailers

Standard header

Tag	Field Name	Req'd	IRESS Comments
8	BeginString	Y	
9	BodyLength	Y	
35	MsgType	Y	
34	MsgSeqNum	Y	
43	PossDupFlag	N	
49	SenderCompID	Y	
50	SenderSubID	N	
52	SendingTime	Y	
56	TargetCompID	Y	
57	TargetSubID	N	
115	OnBehalfOfCompID	N	
116	OnBehalfOfSubID	N	
122	OrigSendingTime	N	
128	DeliverToCompID	N	
129	DeliverToSubID	N	
142	SenderLocationID	N	
143	TargetLocationID	N	
144	OnBehalfOfLocationID	N	
145	DeliverToLocationID	N	

Standard trailer

Tag	Field Name	Req'd	IRESS Comments
10	CheckSum	Y	

Administrative messages

Heartbeat

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
112	TestReqID	N	
	Standard Trailer	Y	

Logon

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
98	EncryptMethod	Y	Always sends out the value 0.
108	HeartBtInt	Y	Suggested interval is 30 seconds.
95	RawDataLength	N	
96	RawData	N	A configurable value sent out with a login which is used to authenticate that information is being sent to or received from a valid entity. The value is usually determined by the entity sending information to the IRESS FIX engine.
141	ResetSeqNumFlag	N	
	Standard Trailer	Y	

Test Request

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
112	TestReqID	Y	
	Standard Trailer	Y	

Resend Request

Message rejects if:

a. the EndSeqNo is less than the BeginSeqNo

b. the BeginSeqNo is greater than the last sent SeqNo

If the EndSeqNo is 0, or greater than the last sent SeqNo, then all messages after BeginSeqNo are resent.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
7	BeginSeqNo	Y	
16	EndSeqNo	Y	
	Standard Trailer	Y	

Reject

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
45	RefSeqNum	Y	
372	RefMsgType	N	
373	SessionRejectReason	N	Values supported: 1 – Required tag missing 4 – Tag specified without a value 5 – Value is incorrect (out of range) for this tag 9 – CompID problem 11 – Invalid MsgType.
58	Text	N	
	Standard Trailer	Y	

Sequence Reset

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
123	GapFillFlag	N	
36	NewSeqNo	Y	
	Standard Trailer	Y	

Logout

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
58	Text	N	
	Standard Trailer	Y	

Application messages

Indication of Interest

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
23	IOIid	Y	
28	IOITransType	Y	
26	IOIRefID	N	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
167	SecurityType	N	
200	MaturityMonthYear	N	
207	SecurityExchange	N	
54	Side	Y	Values supported: 1 – Buy 2 – Sell
27	IOIShares	Y	Outgoing IOIs are sent either as a numerical value or L (Large). The following IOS character volumes convert to L: Size, Call, Special and Ongoing.
44	Price	N	When the price is a character value in IOS, nothing is sent.
15	Currency	N	
130	IOINaturalFlag	N	N - if principal is ticked in the IOS.
199	NoIOIQualifiers	N	1- if indication is at market price, otherwise 0.
104	IOIQualifier	N	Values supported: Q – At the Market T – Through the Day
58	Text	N	For incoming IOIs, this tag populates the Desc field in IOS Indications by default. A setting is available to populate the Category field instead if this is preferred. For outgoing IOIs, this tag sends the Category and Description fields from IOS Indications in the format: Category||Description

Indication of Interest continued

Tag	Field Name	Req'd	IRESS Comments
215	NoRoutingIDs	N	
› 216	RoutingType	N	All values are supported for incoming IOIs. Values supported for outgoing IOIs: 1 – Target Firm (used to send the included single organisations.) 3 – Block Firm (used to send the source organisation and the excluded single organisations.)
› 217	RoutingID	N	There is a configuration setting on the IRESS FIX Engine that specifies an organisation prefix. Organisations in IOS must start with this prefix to be sent in this tag.
	Standard Trailer	Y	

Market Data Request

For information about using Market Data messages to receive pricing updates, see Appendix A: IRESS FIX Pricing & Quote.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
262	MDReqID	Y	
263	SubscriptionRequestType	Y	Values supported: 0– Snapshot 1 – Snapshot + Updates (Subscribe) 2 – Disable previous Snapshot + Update Request (Unsubscribe)
264	MarketDepth	Y	Values supported: 0 – Full Book 1 – Top of Book
265	MDUpdateType	N	Values supported: 0 – Full Refresh **Note:** This value is only supported for quote requests i.e. when tag 264 (MarketDepth) = 1 (Top of Book).
266	AggregatedBook	N	
267	NoMDEntryTypes	Y	This tag is compulsory but currently ignored by the IRESS FIX Engine.
146	NoRelatedSym	Y	Support one repeating group per message.
› 55	Symbol	Y	
› 48	SecurityID	N	
› 22	IDSource	N	
› 207	SecurityExchange	N	
	Standard Trailer	Y	

Market Data – Snapshot/Full Refresh

For information about using Market Data messages to receive pricing updates, see Appendix A: IRESS FIX Pricing & Quote.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
262	MDReqID	N	This tag is not compulsory but is sent by the IRESS FIX engine in all messages with the value assigned to the tag in the initial Market Data Request (subscribe) message.
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
167	SecurityType	N	
207	SecurityExchange	N	
106	Issuer	N	
387	TotalVolumeTraded	N	
268	NoMDEntries	Y	
› 269	MDEntryType	Y	Values supported: 0 – Bid 1 – Offer 2 – Trade 4 – Opening Price 5 – Closing Price 7 – Trading Session High Price 8 – Trading Session Low Price
› 270	MDEntryPx	Y	
› 15	Currency	N	
› 271	MDEntrySize	N	
› 274	TickDirection	N	Values supported: 0 – Plus Tick 2 – Minus Tick
› 275	MDMkt	N	
› 286	OpenCloseSettleFlag	N	
› 110	MinQty	N	
› 346	NumberOfOrders	N	
› 290	MDEntryPositionNo	N	
	Standard Trailer	Y	

Market Data - Incremental Refresh

For information about using Market Data messages to receive pricing updates, see Appendix A: IRESS FIX Pricing & Quote.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
262	MDReqID	N	This tag is not compulsory but is sent by the IRESS FIX engine in all messages with the value assigned to the tag in the initial Market Data Request (subscribe) message.
268	NoMDEntries	Y	
› 279	MDUpdateAction	Y	
› 285	DeleteReason	N	
› 269	MDEntryType	N	Values supported: 0 – Bid 1 – Offer 2 – Trade 4 – Opening Price 5 – Closing Price 7 – Trading Session High Price 8 – Trading Session Low Price
› 278	MDEntryID	N	
› 55	Symbol	N	
› 48	SecurityID	N	
› 22	IDSource	N	
› 167	SecurityType	N	
› 207	SecurityExchange	N	
› 106	Issuer	N	
› 270	MDEntryPx	N	
› 15	Currency	N	
› 271	MDEntrySize	N	
› 290	MDEntryPositionNo	N	
› 58	Text	N	
	Standard Trailer	Y	

Market Data Request Reject

For information about using Market Data messages to receive pricing updates, see Appendix A: IRESS FIX Pricing & Quote.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
262	MDReqID	Y	
281	MDReqRejReason	N	
58	Text	N	
	Standard Trailer	Y	

Trading Session Status Request

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
335	TradSesReqID	Y	
336	TradingSessionID	N	Used to request Trading Session Status data for the required exchange. Example values include ASX, NZ, SFE, AXW and AOM.
263	SubscriptionRequestType	Y	Values supported: 0– Snapshot 1 – Snapshot + Updates (Subscribe) 2 – Disable previous Snapshot + Update Request (Unsubscribe)
	Standard Trailer	Y	

Trading Session Status

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
335	TradSesReqID	N	
336	TradingSessionID	Y	Value identifying the exchange.
325	UnsolicitedIndicator	N	
340	TradSesStatus	Y	Values supported: 0 – Request Reject 2 – Open 3 – Closed 4 – Pre-Open 5 – Pre-Close
58	Text	N	
	Standard Trailer	Y	

New Order – Single

Note: It is possible to configure individual FIX connections on the IRESS FIX Engine to use any field as the IOS account.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
11	ClOrdID	Y	Request rejects if this is not unique. Uniqueness may depend on how much data is stored on the IRESS FIX engine. The default is approximately1week; however, for clients who re-use order numbers daily, the information clears out daily. An IRESS FIX engine setting can allow this value to be placed in the IOS ExternalID field.
109	ClientID	N	
1	Account	N	
21	HandlInst	Y	If both Client Order and Market Order are set in the FIX Engine, this tag determines if an order is a client or market order. Values supported for market orders: 1 – Automated execution order, private, no broker intervention. 2 – Automated execution order, public, broker intervention ok. Value supported for client orders: 3 – Manual order, best execution.
18	ExecInst	N	
111	MaxFloor	N	
100	ExDestination	N	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
167	SecurityType	N	
200	MaturityMonthYear	N	
205	Maturity Day	N	
201	PutOrCall	N	
202	StrikePrice	N	
207	SecurityExchange	N	For market orders, the security exchanges available depends on the exchanges supported by the IOS server. If the value is not translated by the IRESS FIX Engine, or recognised by the IOS, the order rejects.

New Order – Single continued

Tag	Field Name	Req'd	IRESS Comments
54	Side	Y	Values supported: 1 – Buy 2 – Sell 5 – Sell Short
60	TransactTime	Y	
38	OrderQty	Y	
40	OrdType	Y	
44	Price	N	
59	TimeInForce	N	
432	ExpireDate	N	
126	ExpireTime	N	
58	Text	N	The value of this field is placed in the Instructions field.
	Standard Trailer	Y	

Execution Report

Note: It is not possible to amend an individual trade execution report. To modify a trade requires cancelling the trade and creating a new trade.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
37	OrderID	Y	
198	SecondaryOrderID	N	IOS fields used for this tag are: Trade No. – trades OrdNoLow – all other situations if available.
11	ClOrdID	N	
41	OrigClOrdID	N	
109	ClientID	N	
17	ExecID	Y	The date the message is sent, plus an incrementing counter. On status execution reports this tag has a value of '0'.
20	ExecTransType	Y	Values supported: 0 – New 1 – Cancel 3 – Status
19	ExecRefID	N	
150	ExecType	Y	Values supported: 0 – New 1 – Partial fill 2 – Fill 3 – Done for Day. Note, closing a client order in IOS automatically triggers a value 3 – Done for Day message. 4 – Cancelled 5 – Replace 6 – Pending Cancel (e.g. result of Order Cancel Request) 8 – Rejected A – Pending New C – Expired D – Restated (ExecutionRpt sent unsolicited by sellside, with ExecRestatementReason set) E – Pending Replace (e.g. result of Order Cancel/Replace Request). The following are only available in FIX v4.3 and above: F – Trade (Partial fill or fill) H – Trade Cancel I – Order Status.

Execution Report continued

Tag	Field Name	Req'd	IRESS Comments
39	OrdStatus	Y	Closing a client order in IOS automatically triggers a message for value 3 – Done for Day.
378	ExecRestatementReason	N	Value supported: 1 – GT renewal / restatement (no corporate action)
1	Account	N	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
167	SecurityType	N	
200	MaturityMonthYear	N	
205	Maturity Day	N	
201	PutOrCall	N	
202	StrikePrice	N	
207	SecurityExchange	N	
54	Side	Y	Values supported: 1 – Buy 2 – Sell 5 – Sell Short
38	OrderQty	N	
40	OrdType	N	
44	Price	N	
15	Currency	N	
59	TimeInForce	N	
432	ExpireDate	N	
126	ExpireTime	N	
18	ExecInst	N	
32	LastShares	N	
31	LastPx	N	
151	LeavesQty	Y	
14	CumQty	Y	
6	AvgPx	Y	
424	DayOrderQty	N	
425	DayCumQty	N	
426	DayAvgPx	N	
60	TransactTime	N	
21	HandlInst	N	

Execution Report continued

111	MaxFloor	N	
58	Text	N	
	Standard Trailer	Y	

Don't Know Trade (DK)

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
37	OrderID	Y	
17	ExecID	Y	
127	DKReason	Y	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
54	Side	Y	Values supported: 1 – Buy 2 – Sell 5 – Sell Short
38	OrderQty	N	
	Standard Trailer	Y	

Order Cancel/Replace Request

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
37	OrderID	N	
109	ClientID	N	
41	OrigClOrdID	Y	If field 37 is not included, orders will be identified by this ID.
11	ClOrdID	Y	Request rejects if this is not unique. Uniqueness may depend on how much data is stored on the IRESS FIX engine. The default is approximately1week; however, for clients who re-use order numbers daily, the information clears out daily. An IRESS FIX engine setting can allow this value to be placed in the IOS ExternalID field.
1	Account	N	
21	HandlInst	Y	
18	ExecInst	N	
111	MaxFloor	N	
100	ExDestination	N	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
167	SecurityType	N	
200	MaturityMonthYear	N	
205	Maturity Day	N	
201	PutOrCall	N	
202	StrikePrice	N	
207	SecurityExchange	N	For market orders, the security exchanges available depend on the exchanges supported by the IOS server. If the value is not translated by the IRESS FIX Engine, or recognised by the IOS, the order rejects.
54	Side	Y	Values supported: 1 – Buy 2 – Sell 5 – Sell Short
60	TransactTime	Y	

Order Cancel/Replace Request continued

Tag	Field Name	Req'd	IRESS Comments
38	OrderQty	Y	
40	OrdType	Y	
44	Price	N	
59	TimeInForce	N	
432	ExpireDate	N	
58	Text	N	The value of this field appears in the Instructions field in the IOS Order Pad.
	Standard Trailer	Y	

Order Cancel Request

Note: Only market order mode supports order cancellation. However, in client order mode, amending the order quantity down to the amount already filled has the same result as cancelling the order.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
41	OrigClOrdID	Y	If field 37 is not included, orders are identified by this ID.
37	OrderID	N	
11	ClOrdID	Y	Request rejects if this is not unique. Uniqueness may depend on how much data is stored on the IRESS FIX engine. The default is approximately 1week; however, for clients who re-use order numbers daily, the information clears out daily.
1	Account	N	
109	ClientID	N	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
167	SecurityType	N	
200	MaturityMonthYear	N	
207	SecurityExchange	N	For market orders, the security exchanges available depend on the exchanges supported by the IOS server. If the value is not translated by the IRESS FIX Engine, or recognised by the IOS, the order rejects.
54	Side	Y	Values supported: 1 – Buy 2 – Sell 5 – Sell Short
60	TransactTime	Y	
38	OrderQty	N	
58	Text	N	
	Standard Trailer	Y	

Order Cancel Reject

> Note: Order rejection is only supported in market order mode. The IOS has no ability to reject new or modified client orders other than when they contain invalid data; for example, an incorrect security code.

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
37	OrderID	Y	
11	ClOrdID	Y	Request rejects if this is not unique. Uniqueness may depend on how much data is stored on the IRESS FIX engine. The default is approximately 1week; however, for clients who re-use order numbers daily, the information clears out daily. An IRESS FIX engine setting can allow this value to be placed in the IOS ExternalID field.
41	OrigClOrdID	Y	
39	OrdStatus	Y	
109	ClientID	N	
1	Account	N	
60	TransactTime	N	
434	CxlRejResponseTo	Y	
102	CxlRejReason	N	
58	Text	N	
	Standard Trailer	Y	

Order Status Request

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
37	OrderID	N	
11	ClOrdID	Y	
	Standard Trailer	Y	

Allocation

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
70	AllocID	Y	
71	AllocTransType	Y	Values supported: 0 – New 1 – Replace 2 – Cancel
72	RefAllocID	N	
73	NoOrders	Y*	
› 11	ClOrdID	Y*	
› 37	OrderID	N	An IRESS FIX Engine setting enables the IOS Client OrderID to be sent in this tag.
54	Side	Y	Values supported: 1 – Buy 2 – Sell 5 – Sell Short
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
167	SecurityType	N	
200	MaturityMonthYear	N	
207	SecurityExchange	N	
53	Shares	Y	
6	AvgPx	Y	
15	Currency	N	
75	TradeDate	Y	
60	TransactTime	N	For outgoing allocations, this tag now shows the As At Date of the booking in IOS. If there is no date for the booking, the current date and time is sent in GMT. The format for this field is: yyyymmdd-hh:mm:ss.
63	SettlementTyp	N	Values supported: 0 – Regular 1 – Cash 2 – Next Day 3 – T+2 4 – T+3 5 – T+4 6 – Future 8 – Sellers Option 9 – T+5

Allocation continued

Tag	Field Name	Req'd	IRESS Comments
64	FutSettDate	N	
58	Text	N	
78	NoAllocs	Y*	
› 79	AllocAccount	Y*	
› 80	AllocShares	Y	
› 161	AllocText	N	
› 76	ExecBroker	N	No processing for the incoming value. See notes under Allocation ACK.
› 109	ClientID	N	No processing for the incoming value. See notes under Allocation ACK.
› 12	Commission	N	
› 13	CommType	N	Values supported: 2 – Percentage 3 – Absolute
› 153	AllocAvgPx	N	
› 154	AllocNetMoney	N	IOS field: Net Total
› 119	SettlCurrAmount	N	IOS field: FX Net Total
› 120	SettlCurrency	N	IOS field: Settlement Currency
› 155	SettlCurrFxRate	N	IOS field: FX Rate
› 156	SettlCurrFxRateCalc	N	
› 136	NoMiscFees	N	
› › 137	MiscFeeAmt	N	
› › 138	MiscFeeCurr	N	
› › 139	MiscFeeType	N	Values supported: **Value** **Description** **IOS** 2 Tax GST(when using FIX 4.0 or 4.1) 3 Local Commission Commission Fee 5 Stamp Stamp Duty 7 Other Misc Charges 9 Consumption Tax GST (when using FIX 4.2)
	Standard Trailer	Y	

Note: Req'd = "Y*" indicates that the field is not required for AllocTransTyp=Cancel

› Indicates a repeating tag

Allocation ACK

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
109	ClientID	N	IRESS FIX engine sends out the same value that was received with the allocation.
76	ExecBroker	N	IRESS FIX engine sends out the same value that was received with the Allocation.
70	AllocID	Y	
75	TradeDate	Y	
60	TransactTime	N	
87	AllocStatus	Y	Values supported: 0 – Accepted (successfully processed) 1 – Rejected 3 – Received (received, not yet processed)
58	Text	N	
	Standard Trailer	Y	

Business Message Reject

Tag	Field Name	Req'd	IRESS Comments
	Standard Header	Y	
45	RefSeqNum	N	
372	RefMsgType	Y	
379	BusinessRejectRefID	N	Value of IOIid (tag 23) of the Indication of Interest message being referenced.
380	BusinessRejectReason	Y	Values supported: 1 – Unknown ID 4 – Application not available
58	Text	N	
354	EncodedTextLen	N	
355	EncodedText	N	
	Standard Trailer	Y	

Confirmation

Tag	Field Name	Req'd	Comments
	Standard Header	Y	
664	ConfirmID	Y	
772	ConfirmRefID	N	Mandatory if ConfirmTransType is Replace or Cancel
666	ConfirmTransType	Y	Values supported: 0 - New 1 - Replace 2 - Cancel
773	ConfirmType	Y	Values supported: 2 - Confirmation
650	LegalConfirm	N	
665	ConfirmStatus	Y	
453	NoPartyIDs	Y	
› 448	PartyID	Y	Party identifier code – the ABN of the Trading Broker or the Clearing Participant
› 447	PartyIDSource	Y	
› 452	PartyRole	Y	Values supported: 1 - Trading Broker 4 - Clearing Participant
› 802	NoPartySubIDs	Y	
› 523	PartySubID	Y	
› 803	PartySubIDType	Y	Values supported: 1 - Firm Name 16 - BIC 17 - PID
73	NoOrders	Y	
11	ClOrdID	Y	
70	AllocID	Y	
60	TransactTime	N	
75	TradeDate	Y	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
711	NoUnderlyings	Y	
555	NoLegs (allocations)	Y	
80	AllocQty	Y	
54	Side	Y	
75	TradeDate	Y	
862	NoCapacties	Y	

Confirmation continued

<table>
<tr><th>Tag</th><th>Field Name</th><th>Req'd</th><th>Comments</th></tr>
<tr><td>528</td><td>OrderCapacity</td><td>Y</td><td></td></tr>
<tr><td>863</td><td>OrderCapacityQty</td><td>Req'd</td><td>Comments</td></tr>
<tr><td>79</td><td>AllocAccount</td><td>Y</td><td></td></tr>
<tr><td>6</td><td>AvgPx</td><td>Y</td><td></td></tr>
<tr><td>58</td><td>Text</td><td>N</td><td>Mandatory if ConfirmTransType is Replace or Cancel</td></tr>
<tr><td>423</td><td>PriceType</td><td>Y</td><td>Values supported:
0 - New
1 - Replace
2 - Cancel</td></tr>
<tr><td>381</td><td>GrossTradeAmount</td><td>Y</td><td>Values supported:
2 - Confirmation</td></tr>
<tr><td>118</td><td>NetMoney</td><td>N</td><td></td></tr>
<tr><td>119</td><td>SettlCurrAmt</td><td>Y</td><td></td></tr>
<tr><td>120</td><td>SettlCurrency</td><td>Y</td><td></td></tr>
<tr><td>155</td><td>SettlFxRate</td><td>Y</td><td>Party identifier code – the ABN of the Trading Broker or the
Clearing Participant</td></tr>
<tr><td>156</td><td>SettlFxRateCalc</td><td>Y</td><td></td></tr>
<tr><td>64</td><td>SettlDate</td><td>Y</td><td>Values supported:
1 - Trading Broker
4 - Clearing Participant</td></tr>
<tr><td>12</td><td>Commission</td><td>Y</td><td></td></tr>
<tr><td>13</td><td>CommType</td><td>Y</td><td></td></tr>
<tr><td>› 136</td><td>NoMiscFees</td><td>Y</td><td>Values supported:
1 - Firm Name
16 - BIC
17 - PID</td></tr>
<tr><td>› 137</td><td>MiscFeeAmt</td><td>Y</td><td></td></tr>
<tr><td>› 138</td><td>MiscFeeCurr</td><td>Y</td><td></td></tr>
<tr><td>› 139</td><td>MiscFeeType</td><td>Y</td><td>Values supported:
<table>
<tr><td>Value</td><td>Description</td><td>IOS</td></tr>
<tr><td>3</td><td>Local Commission</td><td>Commission Fee</td></tr>
<tr><td>5</td><td>Stamp</td><td>Stamp Duty</td></tr>
<tr><td>7</td><td>Other</td><td>Misc Charges</td></tr>
<tr><td>9</td><td>Consumption Tax</td><td>GST</td></tr>
</table></td></tr>
<tr><td></td><td>Standard trailer</td><td></td><td></td></tr>
</table>

Note: › Indicates a repeating tag

Confirmation ACK

Tag	Field Name	Req'd	Comments
	Standard Header	Y	
664	ConfirmID	Y	Confirmation ID
75	TradeDate	Y	Contract note trade date
60	TransactTime	Y	Date/Time Allocation Instruction Ack generated
940	AffirmStatus	Y	Values supported: 1 – Received 2 – Confirm rejected 3 - Affirmed
774	ConfirmRejReason	N	Valid supported: 1 - Mismatched account 2 - Missing settlement instructions 99 - Other
	Standard trailer		

Numerical Field List

This section lists all FIX fields supported by the IRESS FIX Engine, sorted numerically by field tag, and shows the following information for each field:

- FIX messages that each field is available to in the IRESS FIX Engine
- comments specific to the IRESS FIX Engine's use of the field in all messages.

> **Note:** For message specific field information, see the Messages Definitions section of this document.

For generic FIX field descriptions, please refer to the specifications available on the FIX http://www.fixprotocol.org.

Tag	Field Name	Req'd	Messages	IRESS Comments
1	Account	N N N N N	New Order – Single Order Cancel Request Order Cancel/Replace Request Execution Report Order Cancel Reject	The value for this tag should be the IOS account code. If the account doesn't match and there is no default account, the order is rejected. FIX account names can be mapped to specific IOS accounts. To arrange this, contact IRESS. **Note:** It is possible to configure individual FIX connections on the IRESS FIX Engine to use any field as the IOS account.
6	AvgPx	Y Y	Execution Report Allocation	
7	BeginSeqNo	Y	Resend Request	
8	BeginString	Y	All messages	Standard header field.
9	BodyLength	Y	All messages	Standard header field.
10	CheckSum	Y	All messages	Standard trailer field.
11	ClOrdID	Y N Y Y Y Y Y*	New Order - Single Execution Report Order Cancel/Replace Request Order Cancel Request Order Cancel Reject Order Status Request Allocation	
12	Commission	N	Allocation	
13	CommType	N	Allocation	
14	CumQty	Y	Execution Report	

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
15	Currency	N N N N N	Indication of Interest Execution Report Allocation Market Data – Snapshot/Full Request Market Data - Incremental Refresh	For ASX, SFE and AOM the currency is AUD. For NZ the currency is NZD.
16	EndSeqNo	Y	Resend Request	
17	ExecID	Y Y	Execution Report Don't Know Trade (DK)	
18	ExecInst	N N N	New Order – Single Execution Report Order Cancel/Replace Request	Values supported: R – At Best. **Note:** Tag 18 = R must be sent with tag 40 =P to indicate the order is At Best.
19	ExecRefID	N	Execution Report	
20	ExecTransType	Y	Execution Report	
21	HandlInst	Y N Y	New Order – Single Execution Report Order Cancel/Replace Request	
22	IDSource	N N N N N N N N N N	Indication of Interest New Order – Single Execution Report Don't Know Trade (DK) Order Cancel/Replace Request Order Cancel Request Allocation Market Data Request Market Data – Snapshot/Full Request Market Data - Incremental Refresh	Values supported: 4 – ISIN 2 – SEDOL 5 – RIC code 8 – Exchange Symbol. When using ISINs, it is recommended that the exchange be sent in tag 100 (ExDestination) or tag 207 (SecurityExchange), as the ISIN could be duplicated between exchanges.
23	IOIid	Y	Indication of Interest	
26	IOIRefID	N	Indication of Interest	
27	IOIShares	Y	Indication of Interest	
28	IOITransType	Y	Indication of Interest	

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
31	LastPx	N	Execution Report	
32	LastShares	N	Execution Report	
34	MsgSeqNum	Y	All messages	Standard header field.
35	MsgType	Y	All messages	Standard header field.
36	NewSeqNo	Y	Sequence Reset	
37	OrderID	Y Y N N Y N N	Execution Report Don't Know Trade (DK) Order Cancel/Replace Request Order Cancel Request Order Cancel Reject Order Status Request Allocation	The IRESS FIX engine generates a unique order identification number for each order. An IRESS FIX Engine setting enables the IOS Client OrderID to be sent in tag 37 for allocation orders.
38	OrderQty	Y N N Y N	New Order – Single Execution Report Don't Know Trade Order Cancel/Replace Request Order Cancel Request	
39	OrdStatus	Y Y	Execution Report Order Cancel Reject	Values supported: 0 – New 1 – Partial fill 2 – Fill 3 – Done for Day (client orders only) 4 – Cancelled 5 – Replace 6 – Pending Cancel (e.g. result of Order Cancel Request) 8 – Rejected A – Pending New C – Expired E – Pending Replace (e.g. result of Order Cancel/Replace Request).

Numerical field list continued

<table>
<tr><th>Tag</th><th>Field Name</th><th>Req'd</th><th>Messages</th><th>IRESS Comments</th></tr>
<tr><td>40</td><td>OrdType</td><td>Y
N
Y</td><td>New Order – Single
Execution Report
Order Cancel/Replace Request</td><td>All OrdType values are supported for client orders.
The following table lists the values supported for market orders.
<table>
<tr><th>Exchange value</th><th>Supported value</th><th>IOS</th></tr>
<tr><td>ASX</td><td>P – Pegged</td><td>At Best*</td></tr>
<tr><td>ASX, AXW & NZ</td><td>1 – Market</td><td>At Market</td></tr>
<tr><td></td><td>2 – Limit</td><td>At Specified</td></tr>
<tr><td>SFE & NZF</td><td>2 – Limit</td><td>Limit Order</td></tr>
<tr><td></td><td>7 – Limit or better</td><td>Market Limit Order</td></tr>
<tr><td>All others</td><td>2 – Limit</td><td>At Specified</td></tr>
</table>
*Note: Tag 40 =P must be sent with tag 18 = R to indicate the order is At Best.</td></tr>
<tr><td>41</td><td>OrigClOrdID</td><td>N
Y
Y
Y</td><td>Execution Report
Order Cancel/Replace Request
Order Cancel Request
Order Cancel Reject</td><td></td></tr>
<tr><td>43</td><td>PossDupFlag</td><td>N</td><td>All messages</td><td>Standard header field.</td></tr>
<tr><td>44</td><td>Price</td><td>N
N
N
N</td><td>Indication of Interest
New Order – Single
Execution Report
Order Cancel/Replace Request</td><td></td></tr>
<tr><td>45</td><td>RefSeqNum</td><td>Y
N</td><td>Reject
Business Message Reject</td><td></td></tr>
</table>

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
48	SecurityID	N N N N N N N N N	Indication of Interest New Order – Single Execution Report Don't Know Trade (DK) Order Cancel/Replace Request Order Cancel Request Allocation Market Data Request Market Data – Snapshot/Full Request Market Data - Incremental Refresh	
49	SenderCompID	Y	All messages	Standard header field.
50	SenderSubID	N	All messages	Standard header field.
52	Sendingtime	Y	All messages	Standard header field.
53	Shares	Y	Allocation	
54	Side	Y Y Y Y Y Y Y	New Order – Single Don't Know Trade (DK) Indication of Interest Execution Report Order Cancel/Replace Request Order Cancel Request Allocation	
55	Symbol	Y Y Y Y Y Y Y Y Y N	Indication of Interest New Order – Single Execution Report Don't Know Trade (DK) Order Cancel/Replace Request Order Cancel Request Allocation Market Data Request Market Data – Snapshot/Full Request Market Data - Incremental Refresh	Exchange provided symbol.
56	TargetCompID	Y	All messages	Standard header field.

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
57	TargetSubID	N	All messages	Standard header field.
58	Text	N N N N N N N N N N N N N N	Reject Logout Indication of Interest Execution Report New Order Single Order Cancel/Replace Request Order Cancel Request Order Cancel Reject Allocation Allocation ACK Market Data Request Reject Market Data - Incremental Refresh Trading Session Status Business Message Reject	
59	TimeInForce	N N N	New Order – Single Execution Report Order Cancel/Replace Request	Values supported for client orders: 0 – Day 1 – Good Till Cancel (GTC) 3 – Immediate or Cancel (OC) 4 – Fill or Kill (FOK) 6 – Good Till Date Values supported for market orders: ASX, AXW and NZ: 0 – Day 1 – Good Till Cancel (GTC) 3 – Immediate or Cancel (OC) 4 – Fill or Kill (FOK) 6 – Good Till Date SFE and NZF: 1 – Good Till Cancel (GTC) 4 – Fill or Kill (FOK) Note: The value of tag 59 overrides the value in tag 40 for SFE orders. Therefore, if a Limit Order or Market Limit Order is required, exclude tag 59, and specify tag 40=2 or 40=7 instead. All other exchanges 0 – Day

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
60	TransactTime	Y N Y Y N N N	New Order Single Execution Report Order Cancel/Replace Request Order Cancel Request Order Cancel Reject Allocation Allocation ACK	
63	SettlmntType	N	Allocation	
64	FutSettDate	N	Allocation	
70	AllocID	Y Y	Allocation Allocation ACK	
71	AllocTransType	Y	Allocation	
72	RefAllocID	N	Allocation	
73	NoOrders	Y*	Allocation	
75	TradeDate	Y Y	Allocation Allocation ACK	
76	ExecBroker	N N	Allocation Allocation ACK	
78	NoAllocs	Y*	Allocation	
79	AllocAccount	Y*	Allocation	
80	AllocShares	Y	Allocation	
87	AllocStatus	Y	Allocation ACK	
95	RawDataLength	N	Logon	
96	RawData	N	Logon	
98	EncryptMethod	Y	Logon	
100	ExDestination	N N	New Order – Single Order Cancel/Replace Request	See field 207 (SecurityExchange).
102	CxlRejReason	N	Order Cancel Reject	
104	IOIQualifier	N	Indication of Interest	Values supported: Q – A the Market (previously called Current Quote) T – Through the Day

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
106	Issue	N N	Market Data – Snapshot/Full Refresh Market Data - Incremental Refresh	
108	HeartBtInt	Y	Logon	
109	ClientID	N N N N N N N	New Order – Single Execution Report Order Cancel/Replace Request Order Cancel Request Order Cancel Reject Allocation Allocation ACK	See notes in Allocation message section. See notes in Allocation ACK message section.
110	MinQty	N	Market Data – Snapshot/Full Request	
111	MaxFloor	N	New Order – Single Order Cancel/Replace Request Execution Report	Presence of this field for a market order indicates an Undisclosed or Iceberg order depending on the exchange. The value of this field is the visible volume of the market order.
112	TestReqID	N Y	Heartbeat Test Request	
115	OnBehalfOfCompID	N	All messages	Standard header field.
116	OnBehalfOfSubID	N	All messages	Standard header field.
118	NetMoney	Y	Confirmation	
119	SettlCurrAmount	N	Allocation	
120	SettlCurrency	N	Allocation	
122	OrigSendingTime	N	All messages	Standard header field.
123	GapFillFlag	N	Sequence Reset	
126	ExpireTime	N	New Order – Single Execution Report	
127	DKReason	Y	Don't Know Trade (DK)	
128	DeliverToCompID	N	All messages	Standard header field.
129	DeliverToSubID	N	All messages	Standard header field.
130	IOINaturalFlag	N	Indication of Interest	
136	NoMiscFees	N	Allocation	

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
137	MiscFeeAmt	N	Allocation	
138	MiscFeeCurr	N	Allocation	
139	MiscFeeType	N	Allocation	
141	ResetSeqNumFlag	N	Logon	
142	SenderLocationID	N	All messages	Standard header field.
143	TargetLocationID	N	All messages	Standard header field.
144	OnBehalfOfLocationID	N	All messages	Standard header field.
145	DeliverToLocationID	N	All messages	Standard header field.
146	NoRelatedsym	Y	Market Data Request	
150	ExecType	Y	Execution Report	
151	LeavesQty	Y	Execution Report	
153	AllocAvgPx	N	Allocation	
154	AllocNetMoney	N	Allocation	
155	SettlCurrFxRate	N	Allocation	
156	SettlCurrFxRateCalc	N	Allocation	
161	AllocText	N	Allocation	
167	SecurityType	N N N N N N N N	Indication of Interest New Order – Single Execution Report Order Cancel/Replace Request Order Cancel Request Allocation Market Data – Snapshot/Full Request Market Data - Incremental Refresh	Values supported: CS – Common stock FUT – Futures WAR – Warrants OPT – Options Optional setting: If 'FUT', then field 200 is converted into a security code suffix.
198	SecondaryOrderID	N	Execution Report	
199	NoIOIQualifiers	N	Indication of Interest	
200	MaturityMonthYear	N N N N N N	Indication of Interest New Order – Single Execution Report Order Cancel/Replace Request Order Cancel Request Allocation	
201	PutOrCall	N N N	New Order – Single Order Cancel/Replace Request Execution Report	

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
202	StrikePrice	N N N	New Order – Single Order Cancel/Replace Request Execution Report	
205	Maturity Day	N N N	New Order – Single Order Cancel/Replace Request Execution Report	
207	SecurityExchange	N N N N N N N N N	Indication of Interest New Order – Single Execution Report Order Cancel/Replace Request Order Cancel Request Allocation Market Data Request Market Data – Snapshot/Full Request Market Data - Incremental Refresh	FIX security exchanges can be mapped to IRESS exchanges. To arrange this, contact IRESS. If there is no value in this field, tag 100 (ExDestination) is used instead.
215	NoRoutingIDs	N	Indication of Interest	
216	RoutingType	N	Indication of Interest	
217	RoutingID	N	Indication of Interest	
262	MDReqID	Y N N Y	Market Data Request Market Data – Snapshot/Full Request Market Data - Incremental Refresh Market Data Request Reject	
263	SubscriptionRequestType	Y Y	Market Data Request Trading Session Status Request	
264	MarketDepth	Y	Market Data Request	
265	MDUpdateType	N	Market Data Request	
266	AggregatedBook	N	Market Data Request	
267	NoMDEntryTypes	Y	Market Data Request	
268	NoMDEntries	Y Y	Market Data – Snapshot/Full Request Market Data - Incremental Refresh	

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
269	MDEntryType	Y N	Market Data – Snapshot/Full Request Market Data - Incremental Refresh	
270	MDEntryPx	Y N	Market Data – Snapshot/Full Request Market Data - Incremental Refresh	
271	MDEntrySize	N N	Market Data – Snapshot/Full Request Market Data - Incremental Refresh	
274	TickDirection	N	Market Data – Snapshot/Full Request	
275	MDMkt	N	Market Data – Snapshot/Full Request	
278	MDEntryID	N	Market Data - Incremental Refresh	
279	MDUpdateAction	Y	Market Data - Incremental Refresh	
281	MDReqRejReason	N	Market Data Request Reject	
285	DeleteReason	N	Market Data - Incremental Refresh	
286	OpenCloseSettleFlag	N	Market Data – Snapshot/Full Request	
290	MDEntryPositionNo	N N	Market Data – Snapshot/Full Request Market Data - Incremental Refresh	
325	UnsolicitedIndicator	N	Trading Session Status	
335	TradSesReqID	Y N	Trading Session Status Request Trading Session Status	
336	TradingSessionID	N Y	Trading Session Status Request Trading Session Status	

Numerical field list continued

Tag	Field Name	Req'd	Messages	IRESS Comments
340	TradSesStatus	Y	Trading Session Status	
346	NumberOfOrders	N	Market Data – Snapshot/Full Request	
354	EncodedTextLen	N	Business Message Reject	
355	EncodedText	N	Business Message Reject	
372	RefMsgType	N Y	Reject Business Message Reject	
373	SessionRejectReason	N	Reject	
378	ExecRestatementReason	N	Execution Report	
379	BusinessRejectRefID	N	Business Message Reject	Value of IOIid (tag 23) of the Indication of Interest message being referenced
380	BusinessRejectReason	Y	Business Message Reject	Values supported: 6 – UnknownID 4 – Application not available
381	GrossTradeAmount	Y	Confirmation	
387	TotalVolumeTraded	N	Market Data – Snapshot/Full Refresh	
423	PriceType	N	Confirmation	
424	DayOrderQty	N	Execution Report	
425	DayCumQty	N	Execution Report	
426	DayAvgPx	N	Execution Report	
432	ExpireDate	N N	New Order - Single Order Cancel/Replace Request Execution Report	
434	CxlRejResponseTo	Y	Order Cancel Reject	
447	PartyIDSource	Y	Confirmation	
448	PartyID	Y	Confirmation	Party identifier code – the ABN of the Trading Broker or the Clearing Participant
452	PartyRole	Y	Confirmation	Values supported: 1 - Trading Broker 4 - Clearing Participant
453	NoPartyIDs	Y	Confirmation	
523	PartySubID	Y	Confirmation	

Numerical field list continued

528	OrderCapacity	Y	Confirmation	
555	NoLegs (allocations)	Y	Confirmation	
650	LegalConfirm	N	Confirmation	
664	ConfirmID	Y	Confirmation Confirmation ACK	Confirmation ID
665	ConfirmStatus	Y	Confirmation	
666	ConfirmTransType	Y	Confirmation	Values supported: 0 - New 1 - Replace 2 - Cancel
711	NoUnderlyings	Y	Confirmation	
772	ConfirmRefID	N	Confirmation	Mandatory if ConfirmTransType is Replace or Cancel
773	ConfirmType	Y		Values supported: 2 - Confirmation
774	ConfirmRejReason	N	Confirmation Confirmation ACK	Values supported: 1 - Mismatched account 2 - Missing settlement instructions 99 - Other
802	NoPartySubIDs	Y	Confirmation	
803	PartySubIDType		Confirmation	Values supported: 1 - Firm Name 16 - BIC 17 - PID
862	NoCapacities	Y	Confirmation	
863	OrderCapacityQty	Y	Confirmation	
940	AffirmStatus	Y	Confirmation Confirmation ACK	Values supported: 1 – Received 2 – Confirm rejected 3 - Affirmed

Appendix A: IRESS FIX Pricing & Quote

Requirements

FIX Protocol Version 4.2

FIX Messages:

- Market Data Request
- Market Data - Snapshot/Full Refresh
- Market Data - Incremental Refresh
- Market Data Request Reject.

Price information

The following information is reported when Quote (Top of Book) data has been requested:

- bid price
- bid volume
- bid number - number of bidders/orders at current bid price
- ask price
- ask volume
- ask number - number of sellers/orders at current sell price
- tick direction
- total volume traded
- open price
- close price
- high price
- low price
- last price

The following information is reported when Depth (Full Book) data has been requested:

- bid price at each level of depth
- bid volume at each level of depth
- ask price at each level of depth
- ask volume at each level of depth
- total volume traded
- open price
- close price
- high price
- low price
- last price

The price extraction process

The following steps describe the process of subscribing to price updates through to cancelling price updates.

1. A Market Data Request message is sent to the IRESS FIX engine.

   Tag 264 (MarketDepth) determines the type of price data you want to receive. It can have a value of 0 (Full Book) corresponding to Depth data, or a value of 1 (Top of Book) corresponding to Quote data.

   Tag 263 (SubscriptionRequestType) determines how much data you want to receive. It can have a value of 0 (Snapshot) corresponding to a single snapshot of current data, or a value of 1 (Subscribe) corresponding to a snapshot of current data plus updates throughout the day.

   Requesting a single snapshot of market data (tag 263 = 0) is only available for Quote data (tag 264 = 1).

2. One of two things occurs:

   - If an error causes the message to reject, the IRESS FIX engine sends back a Market Data Request Reject message and the process terminates.
   - If the message is error-free, the IRESS FIX engine sends back a pair of Market Data - Snapshot/Full Refresh messages with the requested price data; Quote (Top of Book) or Depth (Full Book).

     The FIX specification for Market Data messages states “Messages containing bids and/or offers cannot contain trades, index value, opening closing, settlement, high, low and/or VWAP prices.” For this reason, the IRESS FIX engine sends a pair of market data messages. The first message contains bid and ask information. The second message, which is sent immediately after the first, contains the open, close, high, low and last prices.

3. One of two things occurs:

   - If you requested a single snapshot of market data (tag 263 = 0) in step 1, the process is now complete.
   - If you subscribed to market data (tag 263 = 1) in step 1, the IRESS FIX engine sends multiple Market Data messages with price updates as they occur throughout the day.

     These updates may consist of one or two messages. The second message is only sent if a trade occurs.

     If you requested Quote (Top of Book) data, the updates are sent as Market Data - Snapshot/Full Refresh messages. If you requested Depth (Full Book) data, the updates are sent as Market Data - Incremental Refresh messages.

     In the Market Data - Incremental Refresh messages, the depth position and side of the market data entry is specified by the value of tag 278. Even numbers represent buy orders and odd numbers represent sell orders. 0 corresponds to the first bid order, 2 to the second bid order, etc. Similarly,1 corresponds to the first sell order, 3 to the second sell order etc.

4. A Market Data Request message with tag 263 (SubscriptionRequestType) set to 2 (Unsubscribe) is sent to the IRESS FIX engine.

5. If a message is rejected because of an error, a Market Data Request Reject message is received.

> Note: All Market Data messages contain tag 262 (MDReqID) with the value specified for this tag in the original Market Data Request message that was sent to the IRESS FIX engine.

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