

TRADEMATE – FIX

Messaging Guidelines

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Change Log

Date	Version	Description	Author
October 23rd, 2023	1.0	- Initial version	IMKY
November 07th, 2023	1.1	- Change in Logon (35=A) message. Replacement tag 96 RawData with tag 544 Password.	IMKY

1 DESCRIPTION

This document is intended to assist those who wish to develop applications that connect to TradeMate FIX services through the FIX protocol.

1.1 System functions and characteristics

FIX is based on the 4.4 version of the Financial Information Exchange ("FIX") Protocol. FIX is a technical specification for electronic communication of trade-related messages. It is an open standard managed by members of FIX Protocol Limited (<https://www.fixtrading.org/>).

This document outlines the B3 FIX implementation and is provided for third parties which need trading connectivity through FIX. It is assumed that the reader of this document has basic knowledge of the FIX protocol.

1.2 Contract information

For FIX contract information, please contact the B3 Business Service Development team through the email address contratacao@b3.com.br or by phone +55 11 2565-5080.

For technical questions, please contact our Trading Support team through the email address tradingsupport@b3.com.br or by phone +55 11 2565-5000, option 2.

2 NETWORK CONNECTIVITY

The following sections describe all connectivity options for TradeMate FIX.

2.1 Physical/Link Layer Options

Market participants can choose from the following connectivity offers.

2.1.1 RTM

Through the agreement between B3 and RTM, the interconnection between the technological infrastructures maintained and managed, respectively, by B3 and

RTM was made possible, in order to allow access to the services made available in their technological infrastructures, by RTM participants and B3 participants.

2.1.2 RCB

The B3 communication network (RCB) is a high-performance, high-tech communication network that enables distributors to have direct access to trading and post-trading systems, market data, and B3 Bank systems. Access can be established through different forms, with varying availability, performance and latency, which aim to establish optimized levels of support, management, and maintenance.

2.2 Standard Messages

Standard Message Header

Tag	Tag Name	Req'd	Datatype	Comment
8	BeginString	Y	String	"FIX.4.4".
9	BodyLength	Y	Length	(Always unencrypted, must be second field in message)
35	MsgType	Y	String	(Always unencrypted, must be third field in message) Valid values: 8 - Execution Report
49	SenderCompID	Y	String	Please contact B3 for appropriate CompID assignment.
56	TargetCompID	Y	String	Please contact B3 for appropriate CompID assignment.
34	MsgSeqNum	Y	Seqnum	Integer message sequence number.
52	SendingTime	Y	UTCTimestamp	Expressed in UTC (Universal Time Coordinated)

Standard Message Trailer

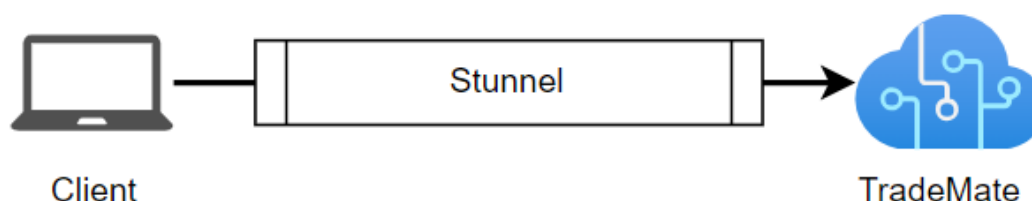
Tag	Tag Name	Req'd	Datatype	Comment
10	Checksum	Y	String	Always unencrypted, always last field in message

2.3 Authentication

2.3.1 Establishing connection

To establish communication between participant's applications and TradeMate - FIX, it is necessary to create a secure channel connection. This connection can be established in two ways:

1. Using a universal TLS / SSL tunneling service - This is necessary to do SSL Handshake or;
2. Insert in the client application settings file, the property `SocketUseSSL=Y`, if you use QuickFIX/J.



Stunnel is necessary to guarantee data traffic on a secure network, so the connection can be established using TLS 1.2. If the client in any way does not have TLS enabled on its network, the connection cannot be established.

The flow of messages exchanged to guarantee the login are in item 2.2.2 of this document.

2.3.2 Logon

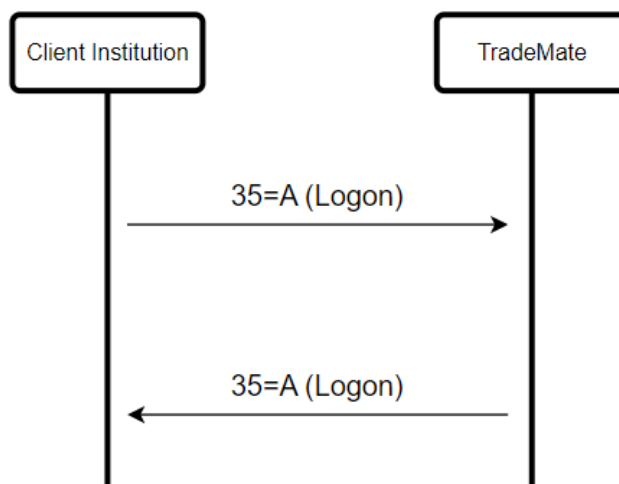
The user will first log (35=A) on and be authenticated in the session.

FIX sessions may require the user to provide authentication data on the Logon message. The following tables depicts the fields used to convey such information:

Logon (35=A)

Tag	Tag Name	Req'd	Datatype	Comment
[Standard Message Header]				
98	EncryptMethod	Y	Int	Must be "0"
108	HeartBtInt	Y	Int	Recommended: "30"
141	ResetSeqNumFlag	N	Boolean	Indicates that both sides of the FIX session should reset sequence numbers.
553	Username	N	String	CAU username
554	Password	N	String	CAU Password
35002	CancelOnDisconnectType	N	Int	Indicates whether orders should remain active on disconnection. Values valid: 0 – Doesn't cancel on disconnection 1 – Cancel on disconnection
35003	CancelOnDisconnectTimeoutWindow	N	Int	Timeout in seconds to trigger cancellation after disconnection
[Standard Message Trailer]				

Login scenario example



2.3.3 Logout

The Logout message initiates or confirms the termination of a FIX session. Disconnection without the exchange of logout messages should be interpreted

as an abnormal condition, for instance, network level disconnection. There are other scenarios where the client's FIX session can be disconnected.

Logout (35=5)

Tag	Tag Name	Req'd	Datatype	Comment
[Standard Message Header]				
58	Text	Y	String	Explanation for Logout reason (if any).
[Standard Message Trailer]				

2.4 Throttle

The throttling mechanism controls the flow of messages at the FIX session level and was implemented to regulate the number of messages sent to B3 in order to optimize performance.

The throttling is specified in messages per second and the maximum number of messages per second is 50.

If a message exceeds the maximum rate set, it will be rejected. In this case, a "Business Message Reject" error message will be sent with Business Reject Reason = "Throttle limit has been reached". If non-reject is set, the throttle mechanism will withhold the messages exceeded until the end of the second, in this case, a higher latency would be observed in the response.

Assuming a scenario in which the limit is set to 50 messages per second. The first period begins when the gateway receives the first message and if more than 50 messages are sent before the next second, they are throttled.

2.5 Start of Day Procedures

The FIX session sequence number is reset to one at the beginning of each calendar day. Note that if client systems try to log on with a sequence number different than one at the start of day, the logon request will be rejected. However,

during the day, client systems must not reset the sequence number, or all messages from the start of day will be retransmitted.

3 ADMINISTRATIVE MESSAGES

3.1 Heartbeat (35=0)

This message is sent over the instrument definition, snapshot recovery and incremental streams to notify customers that the multicast channel join was successful and that B3 will send the data when available.

There is no body for this message, only the standard header with tag 35=0.

3.2 TestRequest (35=1)

Tag	Tag Name	Req'd	Datatype	Comment
[Standard Message Header]				
112	TestReqID	Y	String	Identifier required for testing. Field included in the test request message to be returned without resulting flag
[Standard Message Trailer]				

3.3 ResendRequest (35=2)

Tag	Tag Name	Req'd	Datatype	Comment
[Standard Message Header]				
17	BeginSeqNo	Y	SeqNum	Message sequence number of first message in range to be resent
16	EndSeqNo	Y	SeqNum	Message sequence number of last message in range to be resent. If request is for a single message BeginSeqNo = EndSeqNo If request is for all messages subsequent to a particular message, EndSeqNo = 0 (representing infinity).
[Standard Message Trailer]				

3.4 Reject (35=3)

Tag	Tag Name	Req'd	Datatype	Comment
[Standard Message Header]				

Tag	Tag Name	Req'd	Datatype	Comment
45	RefSeqNum	Y	SeqNum	Message sequence number of first message in range to be resent
58	Text	N	String	Where possible, message to explain reason for rejection
371	RefTagID	N	Int	The tag number of the FIX field being referenced.
372	RefMsgType	N	String	The MsgType of the FIX message being referenced.
373	SessionRejectReason	Y	Int	Code to identify reason for a session-level reject message. Valid values: 0 = Invalid tag number 1 = Required tag missing 2 = Tag not defined for this message type 3 = Undefined Tag 4 = Tag specified without a value 5 = Value is incorrect (out of range) for this tag 6 = Incorrect data format for value 7 = Decryption problem 8 = Signature problem 9 = CompID problem 10 = Sending time accuracy problem 11 = Invalid MsgType 12 = XML Validation error 13 = Tag appears more than once 14 = Tag specified out of required order 15 = Repeating group fields out of order 16 = Incorrect NumInGroup count for repeating group 17 = Non "Data" value includes field delimiter (<SOH> character) 99 = Other
[Standard Message Trailer]				

3.5 SequenceReset (35=4)

Tag	Tag Name	Req'd	Datatype	Comment
[Standard Message Header]				
43	PossDupFlag	N	Boolean	Indicates possible retransmission of message with this sequence number Valid values: Y = Possible duplicate

Tag	Tag Name	Req'd	Datatype	Comment
				N = Original transmission
122	OrigSendingTime	N	UTC Timestamp	Original time of message transmission (always expressed in UTC) when transmitting orders as the result of a resend request.
123	GapFillFlag	N	Boolean	Indicates that the sequence reset message is replacing administrative or application messages which will not be resent. Valid values: Y = Gap fill message, MsgSeqNum field valid N = Sequence ignore MsgSeqNum
36	NewSeqNo	Y	SeqNum	New sequence number
[Standard Message Trailer]				

4 FIX SESSION TYPE

- **Order Entry:** FIX session is dedicated to the submission, management, and execution of trading orders. It allows market participants to send buy or sell orders to the market, track their status, and receive execution reports.
- **Market Data:** FIX session focuses on the dissemination of real-time market information. It provides traders with access to critical data such as price quotes, trade volumes, bid-ask spreads, and other market-related metrics.
- **Drop Copy:** FIX session is designed for trade confirmation and risk management purposes.

4.1 Ports

TYPE	PORT RANGE	PORT IN USE
Order Entry	32001 to 32010	32001
Market Data	31001 to 31010	31001
Drop Copy	30001 to 30010	30001

5 CERTIFICATION

B3 has a certification environment used by the participants and by Independent Software Vendors (ISVs) for testing and certification purposes of their software before accessing the productive environment of the Exchange.

The validation and the tests on acquired or under development solutions can be carried out during working days from 08:30 to 18:30 (local time), with no follow up needed from the certification team.

The certification environment can be access through RTM or RCB connection.