Fenics FX

ITCH MARKET DATA PROTOCOL

SPECIFICATION DOCUMENT

Fenics FX

1. About This Document

1. Introduction

This document describes the protocol for message communications to facilitate receiving market data updates and security definitions from Fenics FX.

The Fenics FX ITCH market data service allows clients to subscribe to market data and receive tick-by-tick quote updates. Additionally this spec outlines the protocol for clients to request Instrument info from the system.

2. Intended Audience

This document is directed at users of Fenics FX. This is primarily suited to developers who will adapt this feed for use in connecting internal FX trading systems to Fenics FX.

2. Connectivity

1. Physical Connectivity

Fenics FX offers the following connectivity options to access the platform in NY4/LD4/TY3

- Cross Connect
- Direct Circuit
- Internet VPN

2. Logical Connectivity

ITCH connections to Fenics FX will be achieved through a single TCP/IP connection. To connect, the client's system will require the following connection details:

- IP address and port
- Username
- Password

3. Session Availability

The ITCH market data service is off-line from 17:00:00 EST/EDT until 17:05:00 EST/EDT, daily Monday through Thursday. During this time the inbound and outbound sequence numbers on all sessions are reset. Clients can reconnect after 17:15:00 EST/EDT. Typically, when initially logging into a server the client will set the Requested Sequence Number field to 1 and leave the Requested Session field blank in the Login.

4. Intra-day Connections

Connecting to Fenics FX will be achieved through two FIX sessions over TCP connections, one for market data and one for trading. To connect, the client's system will require the following connection details:

- Fenics FX IP address and port
- FIX SenderCompID
- FIX TargetCompID

3. TCP Protocol

ITCH market data service uses SoupBinTCP protocol on top of TCP for session control. We use Version 3.0 of the SoupBinTCP protocol - outlined here:

http://business.nasdaq.com/Docs/soupbintcp_tcm5044-18015.pdf)

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4. ITCH Types

1. Basic Data Types

Type	Size (Bytes)	Description
Byte	1	Signed integer number
Short	2	Signed integer number
Integer	4	Signed integer number
Long	8	Signed integer number
Text	*	Free form ascii

2. Business Types

Type	Size (Bytes)	Description
Price	Integer	Scaled Integer value. Price is multiplied by 1e6
Quantity	Long	Scaled long value. Quantity is multiplied by 1e2
Timestamp	Long	Microseconds since epoch
Date	Text	YYYYMMDD
Symbol	Text	EUR/USD

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5. Supported Messages

1. Session Level Messages

Message	Type	Server Sends	Client Sends
Login	L	N	Y
Login Accepted	A	Y	N
Login Reject	J	Y	N
Sequenced Data	S	Y	N
Server Heartbeat	H	Y	N
End Session	Z	Y	N
Un-sequenced Data Packet	U	N	Y
Client Heartbeat	R	N	Y
Client Logout	O	N	Y

2. Business Level Messages

Message	Type	Server Sends	Client Sends
Subscription Request	S	N	Y
Subscription Response	R	Y	N
Instrument Info	N	N	Y
Instrument Response	F	Y	N
Book Update	B	Y	N

Message	Type	Server Sends	Client Sends
Price Add	P	Y	N
Price Cancel	C	Y	N

6. Message Flow

1. Outline of Message Flow

TBD Diagram

2. Sequence Number Handling

SoupBinTCP packets use implicit sequence numbers. Both parties have to increment their relevant sequence numbers. TCP protocol handles packet loss/recovery and sequence number gap should never occur on the client side. If there is a gap detected, the session should be closed and reconnected.

Fenics FX currently does not offer retransmission of ITCH updates. On reconnect clients should set next expected sequence number to 1.

7. Message Definitions

Each message starts with a SoupBinTCP header of the following format.

- A two byte little-endian length that indicates the length of rest of the packet. This is the length of the payload plus the length of the packet type – which is 1.
- A byte which indicates the type of the message in this packet

1. Session Messages

Login Request

SoupBinTCP Header, MsgType = "L"

Field Name	Offset	Length	Type	Description
Username	0	8	Text	Fenics FX username
Password	8	10	Text	Fenics FX provided Password

Login Accepted

SoupBinTCP Header, MsgType = "A"

Field Name	Offset	Length	Type	Description
SeqNum	0	8	Long	Seq Num = 1

Login Rejected

SoupBinTCP Header, MsgType = "J"

Field Name	Offset	Length	Type	Description
Reject Reason	0	20	Text	Reason for login reject

Sequenced Data

SoupBinTCP Header, MsgType = “S”				
Field Name	**Offset**	**Length**	**Type**	**Description**
Payload	0	Variable	Business Message	Business messages sent by server

Server Heartbeat

SoupBinTCP Header, MsgType = “H”				
Field Name	**Offset**	**Length**	**Type**	**Description**

End Session

SoupBinTCP Header, MsgType = “Z”				
Field Name	**Offset**	**Length**	**Type**	**Description**

Client Heartbeat

SoupBinTCP Header, MsgType = “R”				
Field Name	**Offset**	**Length**	**Type**	**Description**

Client Logout

SoupBinTCP Header, MsgType = "O"				
Field Name	**Offset**	**Length**	**Type**	**Description**

2. Business Messages

All business level messages are transmitted as Sequenced Data Packets. The payload in each of the sequenced data packets includes an ITCH level header consisting of the following.

ITCH Header

Field Name	Offset	Length	Type	Description
Timestamp	0	8	Timestamp	Time update was sent
NumMsgs	8	1	Byte	Number of business messages following header

Subscription Request

SoupBinTCP Header, MsgType = “S”				
ITCH Header				
Field Name	**Offset**	**Length**	**Type**	**Description**
Type	0	1	Byte	Type = ”S”
Symbol	1	10	Text	Symbol to subscribe to
SubscriptionID	11	4	Integer	Request ID
Action	15	1	Byte	‘1’= Subscribe, ‘2’ = Unsubscribe
Type	16	1	Byte	1 = Aggregated, 2 = non-aggregated
Depth	17	1	Byte	0 = full depth, 1-N = levels

Subscription Response

SoupBinTCP Header, MsgType = "S"				
ITCH Header				
Field Name	**Offset**	**Length**	**Type**	**Description**
Type	0	1	Byte	Type = 'R'
Symbol	1	10	Text	Symbol to subscribe to
SubscriptionID	11	4	Integer	Request ID
Status	15	1	Byte	'1'= Accepted, '2' = Rejected
Error	16	1	Byte	Error Code

Instrument Info Request (TBD)

Instrument Info Response (TBD)

Price Add

SoupBinTCP Header, MsgType = “S”				
ITCH Header				
Field Name	**Offset**	**Length**	**Type**	**Description**
Type	0	1	Byte	Type = ”P”
Symbol	1	10	Text	Symbol Update Refers to
UpdateID	11	4	Integer	Request ID
Price	15	4	Price	Update ID, unique per session, per symbol
Qty	19	8	Quantity	Rate of update (x100)
MinQty	27	8	Quantity	Minimum Quantity that can be dealt against this quote (x1e6)
Side	35	1	Char	Buy or Sell – ‘B’

Price Cancel

SoupBinTCP Header, MsgType = “S”				
ITCH Header				
Field Name	**Offset**	**Length**	**Type**	**Description**
Type	0	1	Byte	Type = ”C”
Symbol	1	10	Text	Symbol this update refers to
UpdateID	11	4	Integer	Previous UpdateID this cancel refers to
Price	15	1	Byte	‘1’= Accepted, ‘2’ = Rejected