TRADER - FIX.SUITE

Messaging Guidelines

Version: 2.5

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Change Log

Date	Version	Description	Author
June 29 th, 2020	1.0	- Initial version	RC, AYSF
November 24 th, 2020	2.0	- Updated about Market Segment in Session 2.1 - Added NewOrderSingle message (35=D) in diagrams session 5.1 - Updated about authentication in session 3.2.8	AYSF
March 22 th, 2021	2.1	- Added new information about Transmitting and Receiving Messages in session 3.3	AYSF, RDC
April 09th, 2021	2.2	- Added new type of Order Management, 5.1.3 Bond Call	RDC
May 20th, 2021	2.3	- Removed tag Text(58) in session 3.2.2 (Logon and Trader Login).	AYSF
May 04th, 2022	2.4	- Added SecurityListRequest message (35=x) in diagrams session 5.1 - Added BookIndication message (35539=1) in Order Entry session 5.3 - Updated Voice session from 5.1 to 5.2	AYSF, RSPR, LHA
May 26th, 2022	2.5	- Added Prime Broker diagram in session 5.3.1	RSPR, LHA, AYSF

1 DESCRIPTION

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

1.1 System functions and characteristics

FIX.SUITE 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.SUITE. It is assumed that the reader of this document has basic knowledge of the FIX protocol.

1.2 Contact information

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Institution's registration	cadastro@b3.com.br	+55 11 2565-5070
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Systems certification	tradingcertification@b3.com.br	+55 11 2565-5029
Projects and suggestions	produtosfront@b3.com.br	+55 11 2565-5996
Operationalization of the **TRADER** Platform	negociacao@b3.com.br	+55 11 2565-5022
FIX.SUITE functionality and **TRADER** Platform connectivity	suporteanegociacao@b3.com.br	+55 11 2565-5021

2 MARKET SEGMENT

2.1 Trading Platform Schedule

The following table describes the trading schedules for the platform in each market segment:

Corporate	Schedule
FIX.SUITE Voice	Closed daily between 22:00 and 3:00 (Brasília / GMT-3). On weekends between Fri 22:00 and Sun 12:00

In general, for TRADER FIX.SUITE, customers may connect every day or keep connected through the week. B3 highly recommends that customers remain disconnected during the weekends, unless when participating in scheduled mock tests.

3 NETWORK CONNECTIVITY

The following sections describe all connectivity options for FIX.SUITE.

3.1 Physical/Link Layer Options

Market participants can choose from the following connectivity offers.

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

3.1.2 Internet

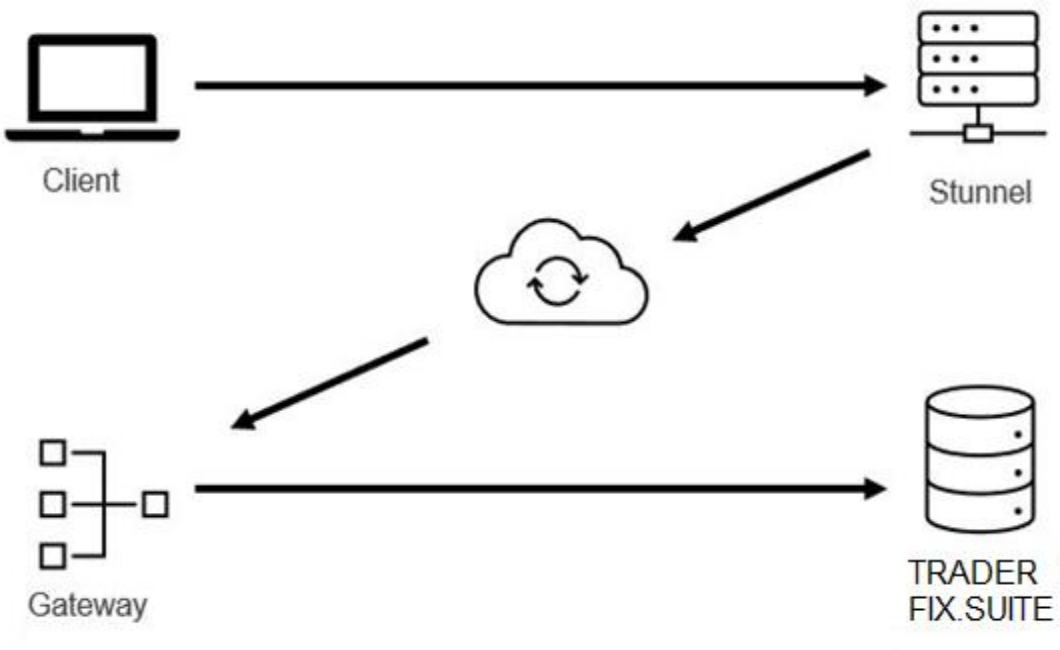
Through a direct access connection to the Internet, previously authorized, participants can obtain access to technological infrastructures and their respective services made available and exposed on the Internet by B3.

3.2 Authentication

3.2.1 Establishing connection

To establish communication between participant's applications and TRADER - FIX.SUITE, 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 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 3.2.2 of this document.

3.2.2 Logon and Trader Login

The user will first log (35=A) on and be authenticated in the session. After sending the message, it will be validated via Trader Login (35=UCG) allowing the sending of messages. It is acceptable more than one Trade Login in the same 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

Tag	Tag Name	Req´d	Datatype	Comment
98	EncryptMethod	Y	Int (1)	Must be “0”
108	HeartBtInt	Y	Int	Recommended: “30”
95	RawDataLength	N	Length	Required when this message contains authentication data. For more details on authentication data in Logon messages, please contact B3.
96	RawData	N	Data	Required when this message contains authentication data. For more details on authentication data in Logon messages, please contact B3.
141	ResetSeqNumFlag	N	Boolean (1)	Indicates that both sides of the FIX session should reset sequence numbers.
464	TestMessageIndicator	N	Boolean (1)	Sent only by B3
553	Username	N	String	Userid or username.
10	CheckSum	N	String	Always unencrypted, always last field in message

Trader Login

Tag	Tag Name	Req´d	Datatype	Comment
553	Username	Y	String	Trader username
95	RawDataLength	Y	Integer	Password length, this field must come before Tag 96
96	RawData	Y	String	Password

See Chapter 5 - Application Message Scenarios for an example login scenario.

3.2.3 Password

3.2.3.1 Password Renewal

Passwords are initially provided by B3 Trading Support Department (SSN) and then handed to clients to include in their applications. Users may change the password whenever it’s necessary by sent an e-mail to controledenegociacao@b3.com.br.

3.2.3.2 Password Policy

To enforce security, some policies are in place and must be considered when changing passwords. The Password Policy include the following aspects:

3.2.3.3 Password Age

By default, passwords are configured to not expire.

3.2.3.4 Session Lockout

In case a wrong password is provided, the authentication will fail, and the connection will be shut down. A Logout message will be sent to indicate the failure in authentication. During the next 3 minutes the FIX session will be locked, and no connection will be accepted within this time. The system allows up to 5 wrong attempts to establish a connection, after what the FIX session is locked, and users will need to contact B3 Trading Support Department (SSN) to restore the session.

3.2.3.5 Minimum Length

All passwords need to be at least 8 characters long. Requests for new passwords that don't conform to this requirement will be rejected.

3.2.3.6 Password History

The system records the last 10 passwords assigned to the FIX session. The new password must have not been used before.

3.2.3.7 Password Strength

To guarantee that passwords meet some strength requirements, the formation rule determines that all passwords must be composed of characters listed in three out of four categories:

- At least one lowercase character (from a through z)
- At least one uppercase character (from A through Z)
- At least one digit (from 0 through 9)

- At least one special character (non-alphanumeric)

Requests for new passwords that don't conform to this requirement will be rejected.

3.3 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 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 = *"<message> not processed, over throttle limit, max msg per 1000 millisecond(s) is 50*". Client systems can cross-reference the business message reject message with the originating message that was throttled by verifying the content of tag 45 (RefSeqNum). This tag will contain the FIX session level sequence number (tag 34) of the message that was rejected. 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.

3.4 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.

4 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 a connection with direct access to the Internet, or using connection between the technological infrastructures maintained and managed, respectively, by B3 and RTM.

5 APPLICATION MESSAGE SCENARIOS

The following sections provide examples of the most common application message scenarios. In all scenarios, if a message is malformed or fails specific business level conditions, it will be rejected with either a Session Reject (invalid tag for message, invalid body length, etc.) or Business Message Reject message (e.g., conditionally required field missing).

5.1 Logon and Trader Login

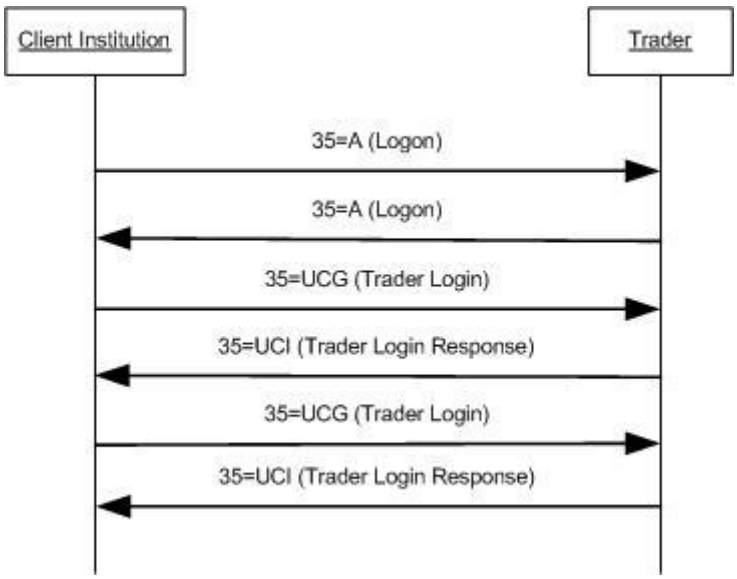


Figure 1 - Login

5.2 Market Data

5.2.1 Security List

Request:

The security list can be requested in two ways:

- Setting a value for tag (48) SecurityID, which will return this specific instrument.
- Setting a value for tag (9802) CXTradingSector, which will return the security list of this setted trading sector.

For both ways, it is mandatory to set the tag (559) SecurityListRequestType with value 4 = All Instruments (Securities).

Available trading sectors for tag (9802) CXTradingSector:

Value	Description
BZD	Brazilian Bonds
CBO	Crédito de descarbonização
CSD	Casadas
DDI	% de DI
DIS	DI + Spread
DPU	Debêntures PU
IDI	Indexado Inflação
PFA	Prefixado
PIC	Públicos Inflação Curtos
PIL	Públicos Inflação Longos
PPC	Públicos LTN
PPL	Públicos NTNF
PUP	Públicos Pós
TTI	Títulos Inativos

Response:

Tag (320) SecurityReqID will be sent in every response (35=y) with the customized value as an identifier informed in the request (35=x).

Below, an example requesting tag (9802) CXTradingSector with value = BZD, which returns private securities. Private securities are identified by tag (9891) CXCetipID:

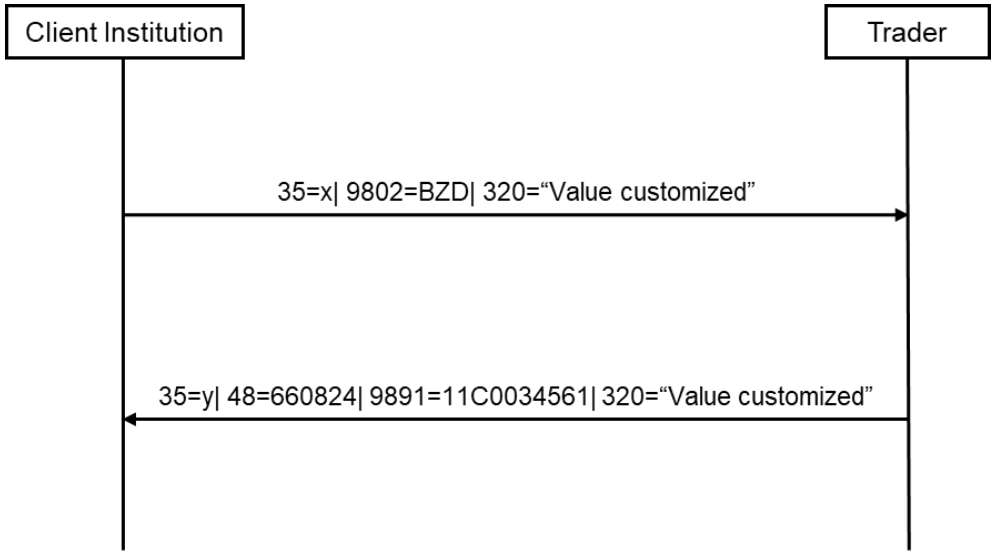


Figure 2 - Security with (9891) CXCetipID

Below, an example requesting tag (9802) CXTradingSector with value = PIC, which returns federal government bonds. Federal government bonds are identified by tag (9892) CXSelicID:

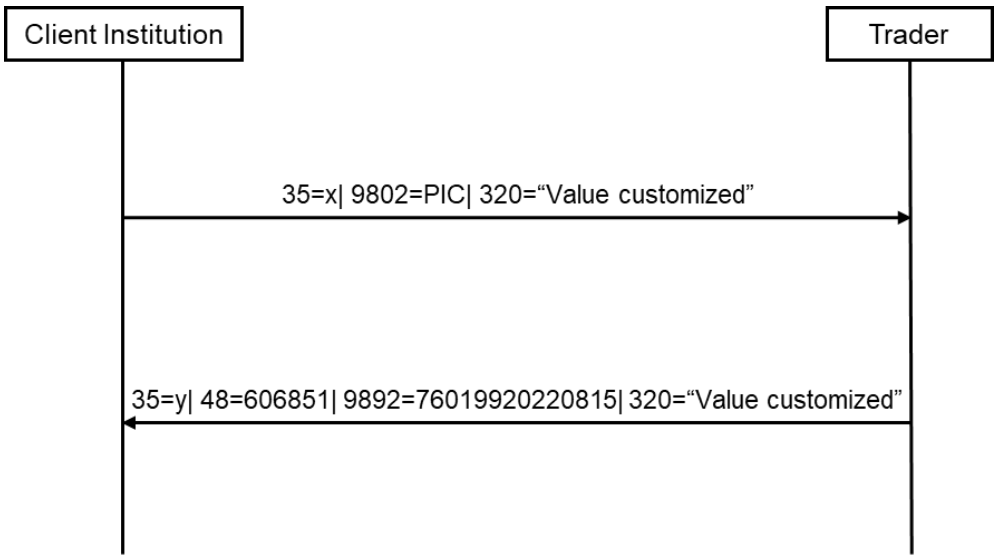


Figure 3 - Security with (9892) CXSelicID

Incremental response:

As long as the connection is maintained without interruptions, if any previously requested instrument has any changes, an update message will be received. Under these circumstances, Tag (320) SecurityReqID is sent in every response (35=y) with the string “Updated”.

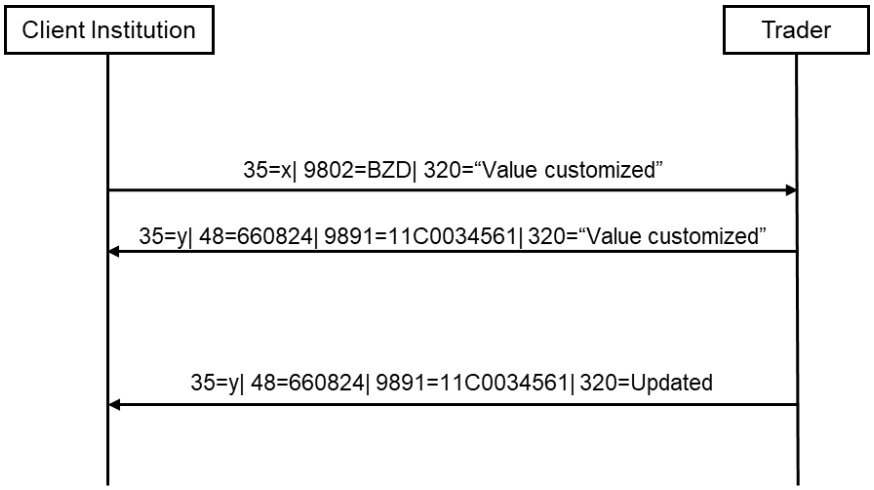


Figure 4 – Incremental scenario

5.3 Voice

5.3.1 Simple Voice

In this example, a simple voice is sent by the client institution. This voice is accepted by the counterparty.

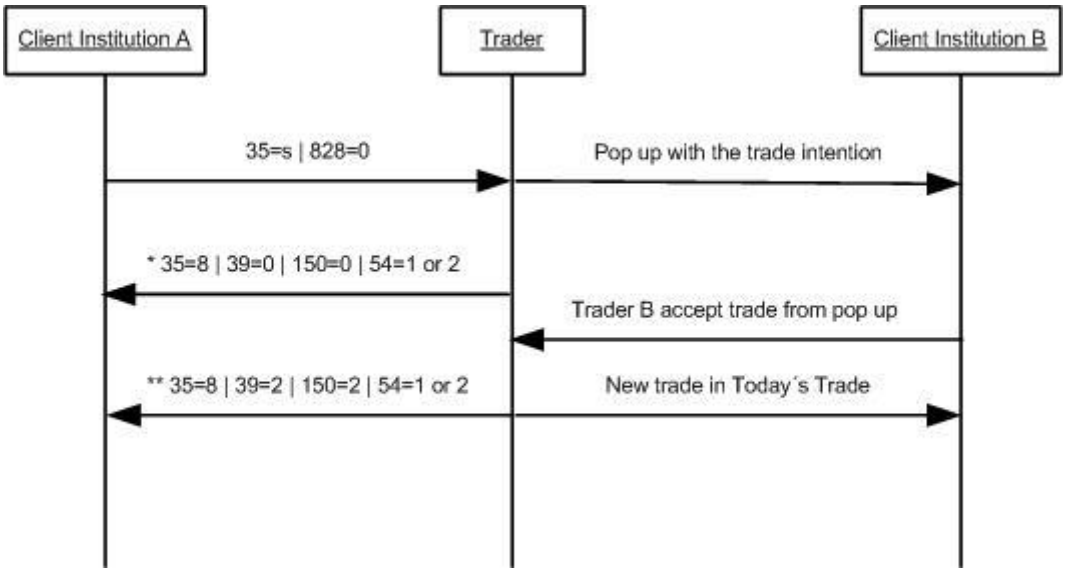


Figure 5 – Simple Voice

5.3.2 Funds Transfer

In this example, a funds transfer is sent by the client institution. This voice is automatically accepted by the intermediator.

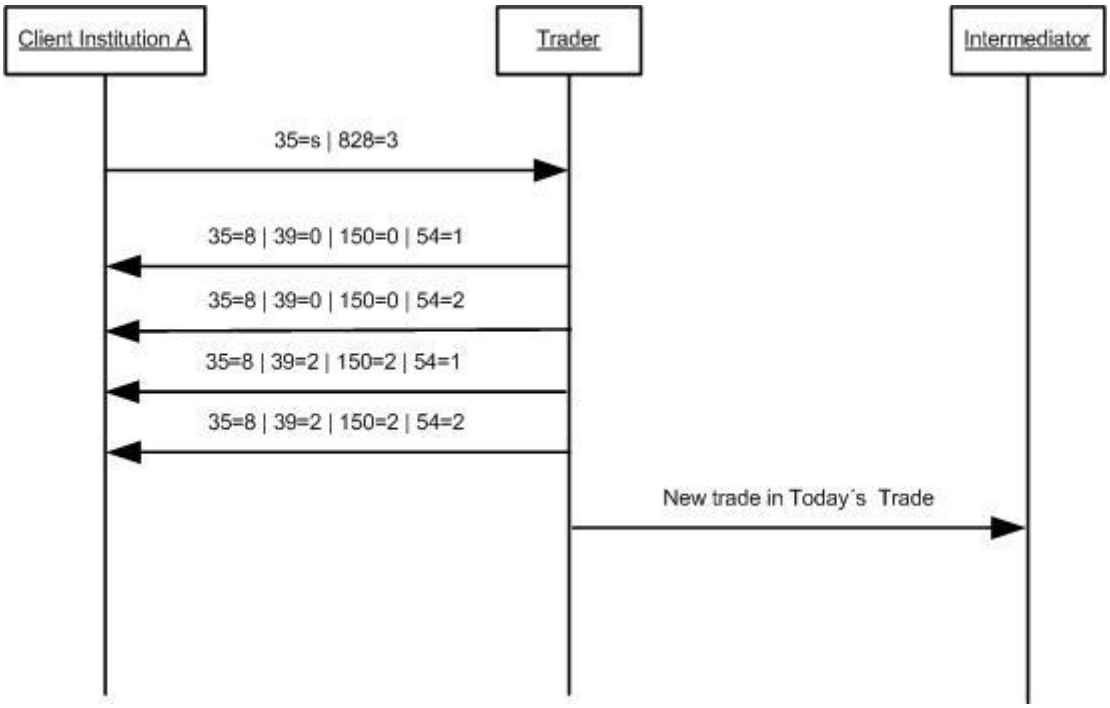


Figure 6 – Funds Transfer

5.3.3 Prime Broker

In this example, a prime broker is sent by the intermediator. This voice is accepted by the Client A and Client B.

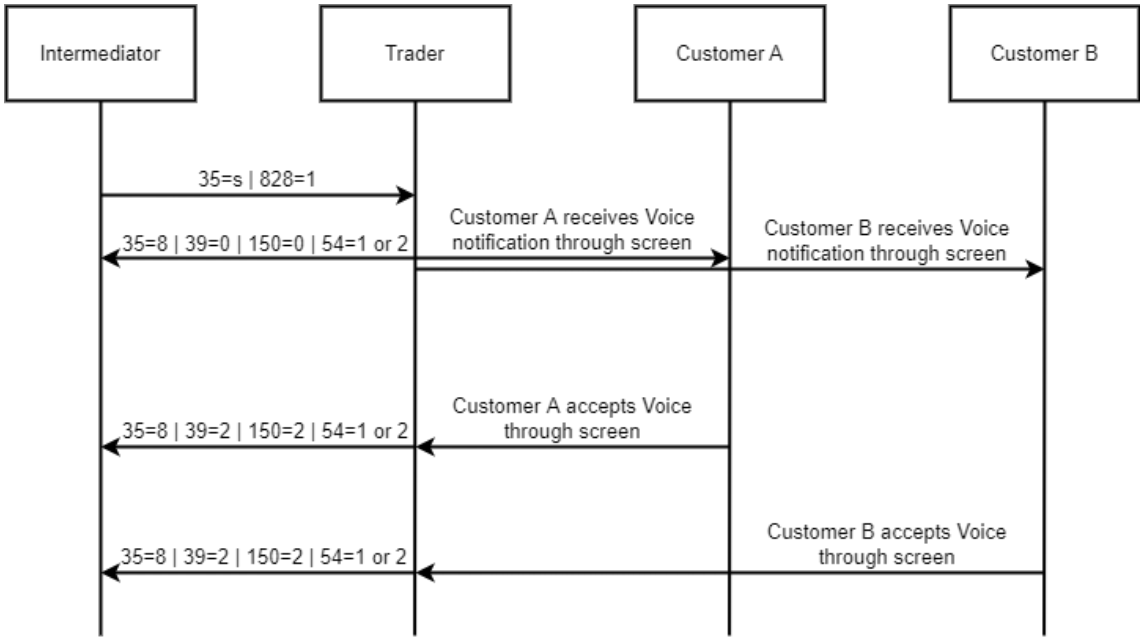


Figure 7 - Prime Broker

5.4 Order Entry

5.4.1 Order Routing

In this example, an order is sent by the client institution A to the Order Book. Client A receives an Execution Report with the status of the order entered.

If the Client Institution B send an order that fills partially or completely Client A order, an Execution Report with the trade information will be sent to both sides.

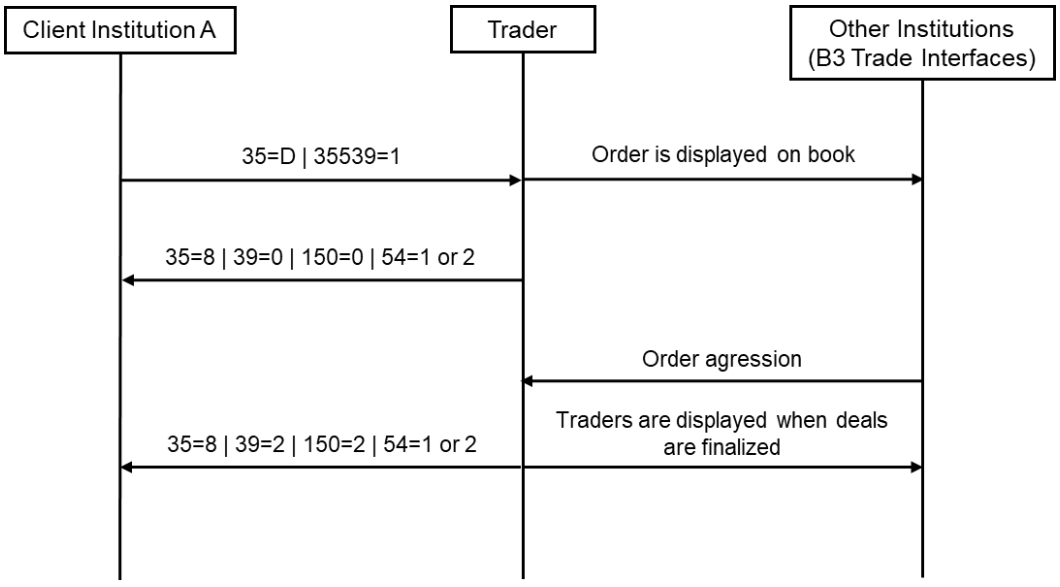


Figure 8 - Order Routing

5.4.2 Bond Call

In this example, an order is sent by the client institution A to the Bond Call. Client A receives an Execution Report with the result of the order entered.

If the Client Institution B send an order that fills partially or completely Client A order, at the end of the auction Client A receives an Execution Report with the trade information.

If there are no trades at the end of the auction, Client A receives an Execution Report with cancelled order information.

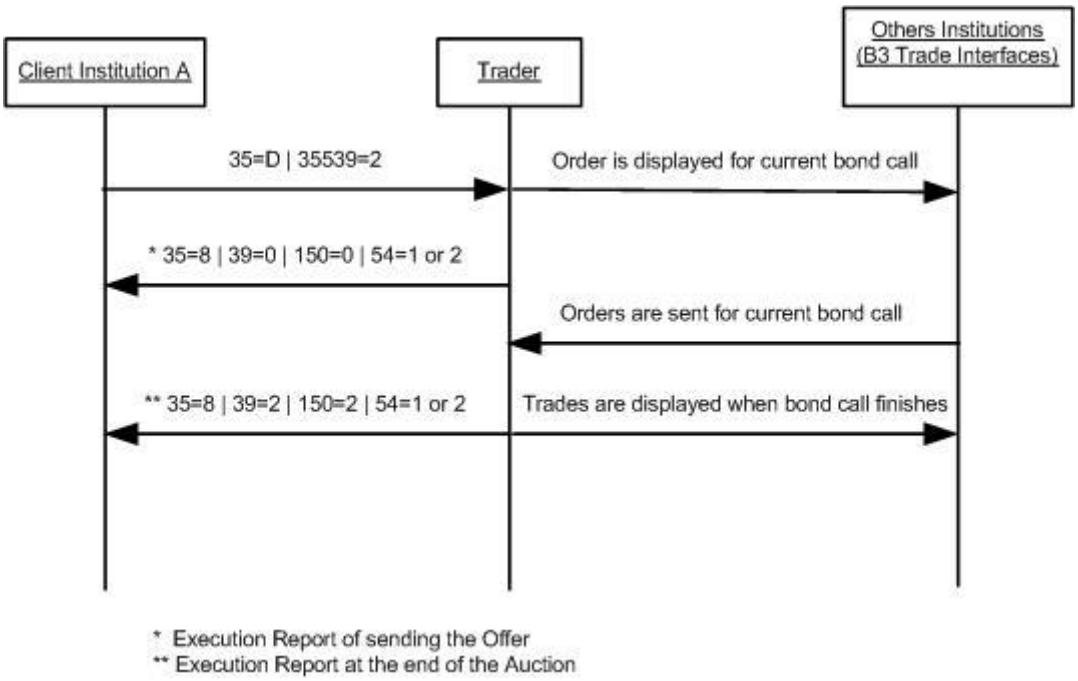


Figure 9 - Bond Call