BORSA İSTANBUL

BISTECH EQUITY MARKET

FIX CERTIFICATION PROGRAM

SIMULATOR APPLICATION USERS MANUAL

August 2015, Version 2.1

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DOCUMENT HISTORY

Date	Version	Description
May 2015	1.0	-
June 2015	1.1	First release - Synchronization with Original Document in Turkish
June 2015	2.0	Advanced Level Scenario Updates
August 2015	2.1	ClOrdID, QuoteID, TradeReportID control are removed Control of several fields are updated

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1. INTRODUCTION

1.1 PURPOSE OF DOCUMENT

This document aims to give information about simulator application which is prepared for our members and software companies who intend to submit orders via FIX protocol in BISTECH Trading System Equity Market. By simulator application, companies can test their BISTECH Equity Market FIX software and get ready for the certification program.

1.2 TARGET SEGMENT

This document is prepared for our members and software companies who develop software to submit orders via BISTECH FIX API and want to complete the certification program in order to be able to use their software.

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2. GENERAL PROCESS

BISTECH Equity Market FIX Certification Program simulator application is developed for members and software companies to test the certification steps, which are specified in certification program guide, before they make an appointment for the certification program. BISTECH FIX Certification Program simulator application will help to complete the certification program successfully.

The aim of the simulator is to provide the companies to check if they send the expected messages in the certification program steps or not. In simulator, a member or software company may send a message for each step specified in the certification program. The sent messages and the expected (reference) messages are compared and a result table is shown on the screen. Companies can see the differences in their software according to the table and make the necessary changes before they make an appointment for the certification program. The member or software company is ready for the certification program, when all steps are passed successfully.

2.1 Installing and Running

BISTECH Equity Market FIX simulator is a web application and has user interface that can be accessed from a web browser. The simulator application is depended on Java Runtime Environment (JRE) and no additional setup is required. You have to install JRE to run the simulator.

The simulator can run on both Linux and Windows operating systems for both “Order Entry” and “Reference Data” steps in certification scenarios.

The simulator application supports 2 partition structures in certification program. You can run the simulator for different partitions by start-up parameters. These parameters: “part1”, “part2” and “rds” for order entry first partition, order entry second partition and reference data partition respectively. You should also set dates to update expire and transaction date of reference log messages for long orders that are in certification scenarios. For orders which expire at the same day (T+0), date should be the date when the application is started and for orders which expire 2 days later(T+2), date should be the next 2 trading days. Excluding control of the ClOrdID, QuoteID and TradeReportID is determined by a start-up parameter. By setting this parameter as “Y”, ClOrdID, QuoteID and TradeReportID are not included in controlled fields of a selected message in Simulator application. So that users will be able to perform test with Simulator Application without having to

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send the ClOrdID, QuoteId and TradeReportID fields as given in the Certification Document. After you start the simulator, you can select the certification scenario in the related partition from its web browser interface. The simulator uses predefined FIX and http ports for different partitions. Therefore, you can run the simulator for different partitions at the same time. Table-1 shows connection information.

Table 1 BISTECH FIX Simulator Connection Information

	FIX IP Address	FIX Port	URL
Order Entry (part1)	127.0.0.1	16061	http://localhost:8061/
Order Entry (part2)	127.0.0.1	16062	http://localhost:8062/
Reference Data (rds)	127.0.0.1	16063	http://localhost:8063/

The steps below should be followed to run the application:

- Windows: Double click on run.bat file runs the application.
- Linux: run.sh script file is run on shell for the application.
- You can set parameters from startup console menu of the application. An example of setting parameters is given below:

```
******************************
Partition list:
1. part1
2. part2
3. rds
Select partition: 1
Set T0 and T+2 date (Y/N): Y
T0 (YYYYMMDD):20150511
T2 (YYYYMMDD):20150513
Relax –ClOrdID, QuoteID, TradeReportID- message id (Y/N): Y
******************************
```

- When the application runs, the logs about loading the scenario steps are shown on console.
- You can access user interface on a browser by using links given in connection information table.
- You should select the certification scenario.
- You can connect to the FIX server by using connection information (Table 1) for the corresponding partition.

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- Companies can use any Username, SenderCompID, and SenderSubID. Reference logs are created for BIXXX user but these fields (Username, SenderCompID, and SenderSubID) will be ignored during the log comparison.
- Logon mechanism is detailed on 2.3.2 Logon Structure section.

The sent and received messages can be traced on the browser screen.

P.S: It is possible to start the simulator from console without menu. For this, you can run application using following command: **"java -jar BISTECHFIX-SIMULATOR.jar $PARTITION $T0 $T2"**under "bin" directory of the simulator,**.**

Example: You can start with "java -jar BISTECHFIX-SIMULATOR.jar part2 20150415 20150417" command to run order entry second partition. The ExpireDate fields in the messages are updated as 20150415 for (T+0) orders and as 20150417 for (T+2) orders.

2.2 Technical Requirements

Java (JRE) version 1.7.0_55 and above is required for simulator to run. The application does not require any additional setup.

The browsers specified below can be used for web interface;

- Google Chrome: 42.0.2311.152 and above (recommended)
- Internet Explorer: 10.0.9200.16521 and above
- Mozilla Firefox: 37.0 and above

2.3 Process

2.3.1 Test Steps (Session Requests / Application Requests)

All steps in BISTECH FIX API Order Entry Certification Program document appear in three sections; "Session Requests" which consists of the steps in Section 1: Connectivity Tests; "Opening Session" and "Continuous Auction" sections which consist of the steps in Section 2: Order Entry and Functionality. BISTECH FIX API Reference Data Certification Program document appear in single section named as "RDS Request". All steps in BISTECH FIX API Certification Program document is listed with the same order in the application. Corresponding steps of certification in the simulator is given at **Error! Reference source not found.**Companies can test all the steps sequentially or in any rder. It is recommended to follow the sequence of the scenario steps which are related with the following step in the simulator application.

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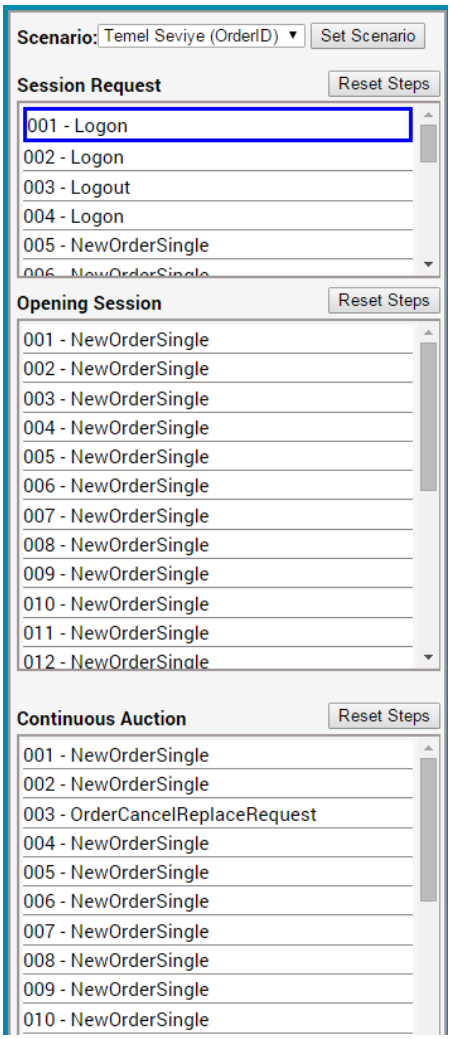
After you start the simulator application, you should select a scenario from “Scenario” drop down list on web interface and press “Set Scenario” button to load selected scenario steps.

Figure 1: Certification Test Scenario Steps



The application does not work as trading engine. It contains the reference logs of certification tests to help companies to test if they send the correct certification messages. The messages sent by the companies are compared to the expected messages. If the sent message is correct, the expected response messages are sent to the company by simulator. If the content of the sent message does not match the reference message, Reject (35=3) message is sent in response even if the message is meaningful in trading system. Briefly, when a company tests a step, the message will be rejected as long as the sent message does not contain the expected data.

While the messages are compared to the reference logs, the application ignores the fields that can change according to the user, message or time (SenderCompID, MsgSeqNum, SendingTime etc.). The

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ignored fields are specified internally in the application. Companies should pass all steps successfully to be able to complete the certification program successfully.

IMPORTANT: Some fields that may change during certification are ignored by simulator when comparing the messages. But the reference logs used in comparison are static and they are not changed according to the messages sent by the user. That may cause simulator to send different values than the member has sent. For example, in order entry certification program order modification step, reference logs are generated by modifying the field only mentioned in the related step, and sending unchanged fields with original values. In that case, even if a member modifies a different field than the field modified in reference log, this field change cannot be seen in simulator responses. Members will not experience such a case during certification process, the responses to member messages will contain complete and correct data.

2.3.2 Logon Structure

When a Logon message is sent, if one of the Logon steps in “Session Request” section is selected, the sent message is compared to the selected step. As it is required to log on before sending a message, you can connect to the system by setting password to “MMM” on any step different from Logon step in simulator. After connection is established you can send selected steps’ messages.

2.3.3 Test Results (Request History)

The messages in “Session Requests”, “Opening Session” and “Continuous Auction” sections are the messages expected from the companies during the certification program respectively. All steps in the sections should contain the same contents specified in BISTECH FIX API Member Software Certification Program. When companies select a step and send the corresponding message in certification program, simulator shows the result in “Request History” section after comparing the sent message and the reference log. If the sent message contains correct data, the selected step turns to green and the next step is selected automatically. If the sent message is not correct, the selected step turns to red. “Request History” section contains the details of the sent message (SERVER RECEIVED), the comparison results (COMPARE RESULT) and the response messages sent by the simulator (SERVER RESPONSE).

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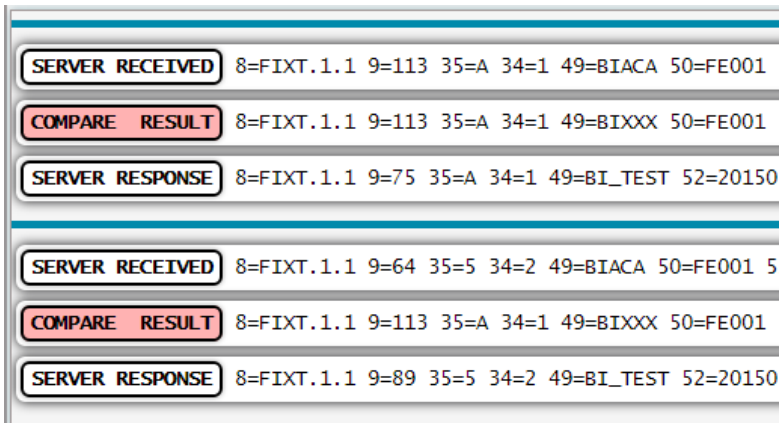
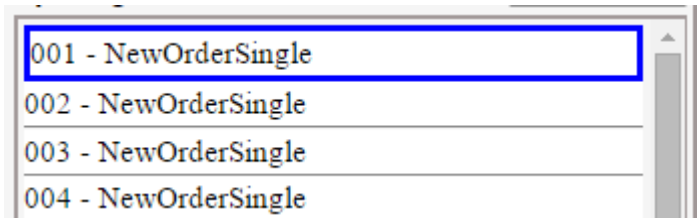
Figure 2: Message Flow and Comparison



Same step can be tested more than once. Each trial is shown on Request History section sequentially. When a step is passed, current step turns to green and the next step is selected automatically. Therefore, each step in the certification program can be prepared correctly and sent automatically during the certification. When a step fails, the same step is repeated unless the user chooses another step. In Request List section, the selected step is shown with a blue frame. The example below shows that the first step in BISTECH FIX API Certification Program which is in “Order Entry and Functions” section is selected to be tested.

Figure 3: The Selected Step in Scenario List



2.3.4 Sent / Received Messages (Server Received / Server Response)

In Request History section, the details of sent/received messages and comparison results can be seen by clicking the corresponding line.

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Figure 4: Details of Sent / Received Messages

Tag	TagName	Value	ValueName
8	BeginString	FIXT.1.1	
9	BodyLength	147	
34	MsgSeqNum	7	
35	MsgType	D	NewOrderSingle
49	SenderCompID	BIACA	
50	SenderSubID	FE001	
52	SendingTime	20150518-08:04:23.849	
56	TargetCompID	BI_TEST	
1	Account	123	
11	ClOrdID	10	
38	OrderQty	200	
40	OrdType	2	Limit
44	Price	6.2	
54	Side	1	Buy
55	Symbol	ADANA.E	
59	TimeInForce	0	Day

2.3.5 Comparison Results (Compare Result)

In Request History section, the details of COMPARE RESULT line contain the comparison of the sent message and the expected message field by field. If the comparison successes, the COMPARE RESULT line turns to green, otherwise it turns to red.

Figure 5: Failed Comparison

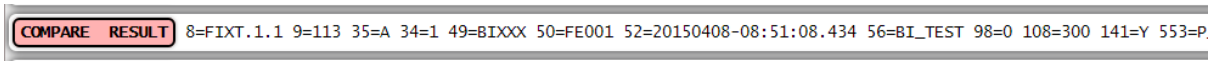
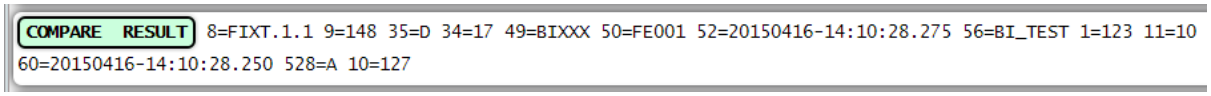


Figure 6: Passed Comparison



Since the responses of the simulator are sent according to the reference log file, the responses for a step will be the same as long as the sent message is valid. If a sent message is valid, the responses in the log file are sent back. If it is invalid, a Reject (35=3) message with description "UnExpectedMessage" is sent.

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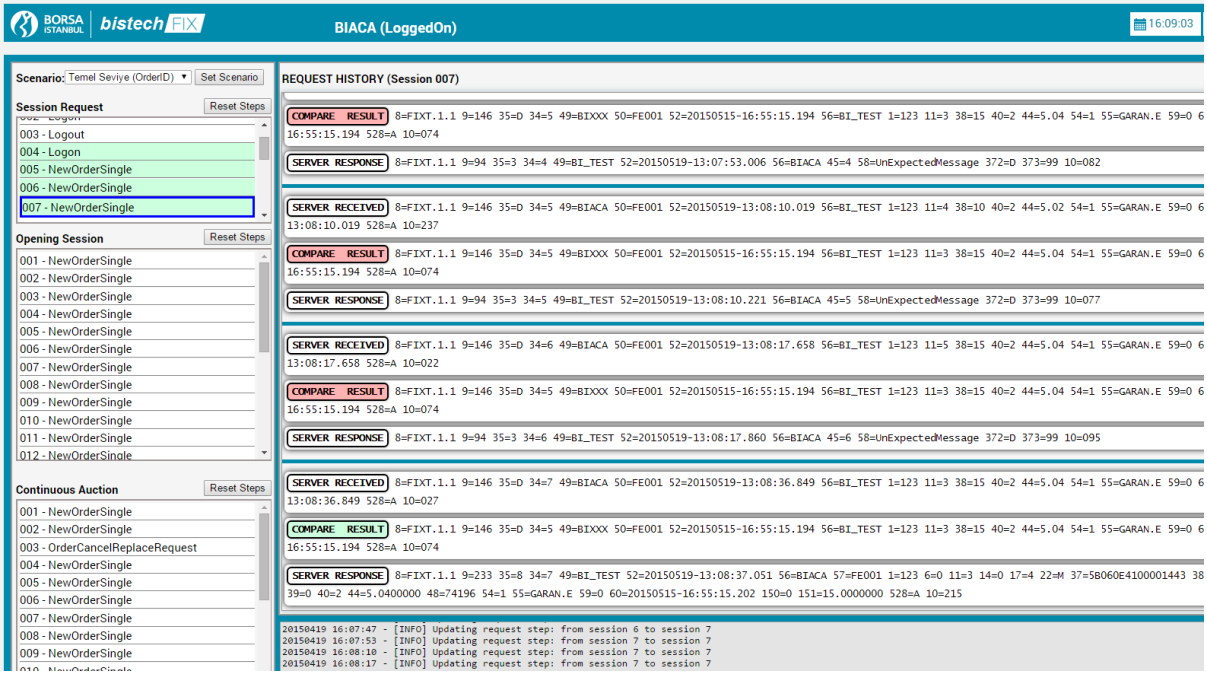
Figure 7: Reject Message for an Invalid Comparison Result

```
8=FIXT.1.1 9=94 35=3 34=7 49=BI_TEST 52=20150518-08:07:42.168 56=BIACA 45=8 58=UnExpectedMessage 372=F 37
```

If a user does not send the messages in given order, since the responses are sent according to the certification scenario, user may receive order information which is not transmitted. For example, if an order matches a previous order according to the scenario and a user skips the first order and sends the second order, the trade information of both orders will be sent according to the reference log. Therefore, if a client uses simulator with a connection to its order management system, it is recommended to follow the sequence of the scenario steps.

Figure 8: Simulator Interface



In the figure above, it is denoted that certification is started from the fourth step of “Session Request” section and as 4., 5., 6. and 7. steps of this section are completed successfully, they turn to green. When 7. step is selected as in the figure, four trials for this step is shown in the Request History section. The first three comparisons (COMPARE RESULT) are red due to invalid messages and the last one is green due to the valid message. Green steps in “Session Request”, “Opening Session” and “Continuous Auction” mean that the last sent messages for these steps are valid.

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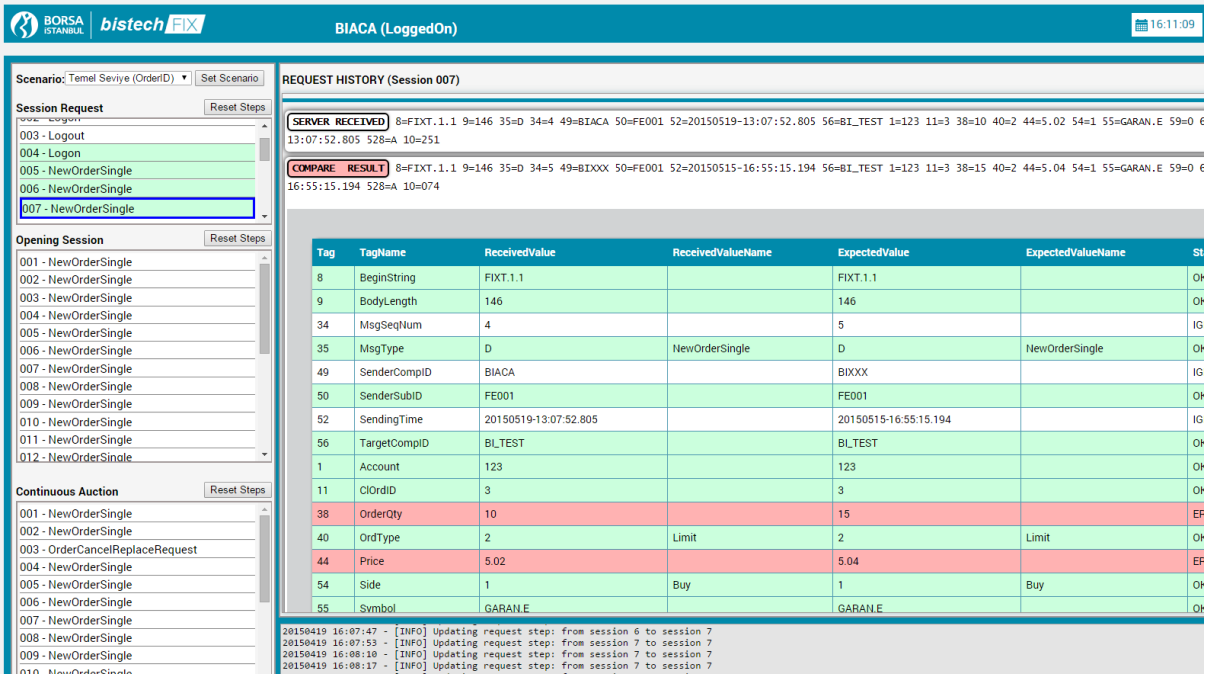
Figure 9: Comparison Detail



By clicking “COMPARE RESULT” button in Request History section, the detailed comparison result of sent message and reference log is displayed.

The comparison results are explained below:

- Green field: Sent and expected fields are matched. (Status = OK)
- Red field: Sent and expected fields are not matched. (Status = ERR)
- Yellow field: Unexpected field is sent or a field recommended (not mandatory) is not sent. (Status = WRN)
- _MISSING_: This field is expected but it is not sent by the user.
- _NOT EXPECTED_: This field is not expected but it is sent by the user.

While comparing messages, the fields which cannot have the same values with reference logs are taken into IGN state in order not to take into comparison. These rows will remain uncolored.

When receiving more fields than expected fields, if these fields are not in IGN list, the comparison result will be “Warning (WRN)” and colored by yellow. WRN state is not a bottleneck to pass the related step but it is advised to check the correctness. The correctness of excessive fields which are

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in IGN list also has to be checked. If these fields are sent wrong in production environment, this can cause an error during certification.

Figure 10: _MISSING_ ve _NOT EXPECTED_ Fields

Tag	TagName	ReceivedValue	ReceivedValueName	ExpectedValue	ExpectedValueName	Status
8	BeginString	FIXT.1.1		FIXT.1.1		OK
9	BodyLength	137		147		IGN
34	MsgSeqNum	10		32		IGN
35	MsgType	D	NewOrderSingle	F	OrderCancelRequest	ERR
49	SenderCompID	BIACA		BIXXX		IGN
50	SenderSubID	FE001		FE001		OK
52	SendingTime	20150519-13:14:39.548		20150416-14:13:13.843		IGN
56	TargetCompID	BI_TEST		BI_TEST		OK
11	ClOrdID	2		160		ERR
38	OrderQty	5		90		ERR
40	OrdType	2	Limit	__NOT_EXPECTED__		IGN
44	Price	5		__NOT_EXPECTED__		IGN
54	Side	1	Buy	1	Buy	OK
55	Symbol	GARAN.E		ADANA.E		ERR
59	TimeInForce	0	Day	__NOT_EXPECTED__		IGN
60	TransactTime	20150519-13:14:39.548		20150416-14:13:13.842		IGN
528	OrderCapacity	A	Agency	__NOT_EXPECTED__		IGN
10	CheckSum	116		140		IGN

The difference in the ignored fields does not affect the comparison result. Therefore, a user is able to send the ignored fields which are not mandatory. But these unexpected fields should not affect the scenario. For example, in an OrderCancelReplaceRequest message, quantity field can be sent for a scenario although the quantity does not change. The sent quantity should be the same with the original quantity. If the quantity is changed, certification will fail since the scenario will change during the certification, while simulator passes the step since it ignores the unexpected fields. Therefore, it is recommended to check the red (ERR) and yellow (WRN) fields in COMPARE RESULT section even if the message passes the comparison successfully. All fields should be valid for FIX protocol to be able to pass the certification, even if they are ignored or not.

2.3.6 Reseting Test Steps (Reset Steps)

There is a “Reset Steps” button over “Session Request”, “Opening Session” and “Continuous Auction” sections. Clicking this button clears all trials in all steps for the corresponding section.

2.3.7 Clearing Test Results (Clear History)

To clear the trials of a selected step, “Clear History” button over “Request History” section can be clicked. “Clear History” button clears only the trials belong to the selected step.

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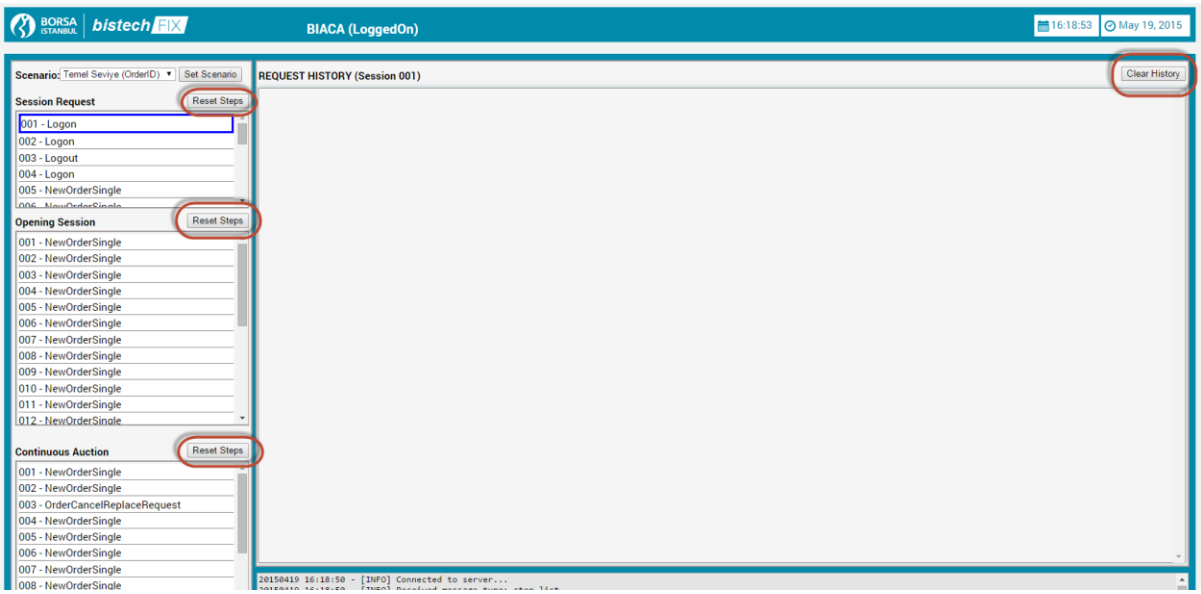
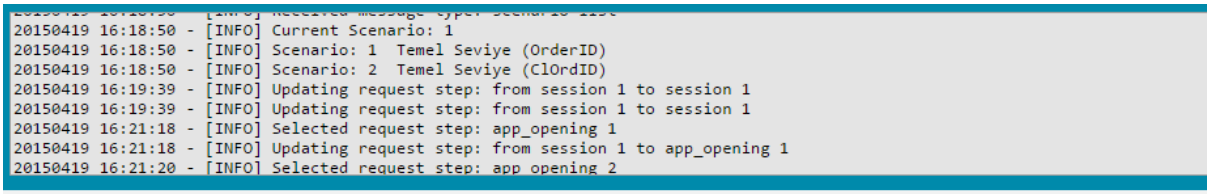
Figure 11: Clearing the Tested Steps



2.3.8 Footer Tab

The footer tab shows the step flow followed during the tests.

Figure 12: Followed Test Steps



3. RESULT

BISTECH FIX Simulator is developed for the companies to prepare for certification process. Therefore, when all steps are green in simulator application, which mean all steps are passed, you can make an appointment for certification program by calling Borsa İstanbul A.Ş. IT Support Department.

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4. CORRESPONDING STEPS OF CERTIFICATION PROGRAM IN SIMULATOR

Each step in simulator application corresponds to a step in scenario program. This section of documents explains which step in simulator corresponding to which step of certification program.

Matching Engine or Fix server side operations are represented as “SYSTEM” events in the simulator application. If the simulator passed to a SYSTEM step, it does not automatically run SYSTEM events. SYSTEM button must be clicked manually to run these kinds of steps.

In certification program users send more than one messages in some steps. On the other hand each message corresponds to a separate step in the simulator application. Message fields in a simulator step should be sent according to the scenario in certification documents’ step.

4.1 Order Entry Base and Advanced Level Session Messages

Order Entry Base and Advanced Level certification programs have same session level messages. Companies must complete the session level to receive certification for base or advanced level program.

“Session Request” messages of the simulator application and their corresponding messages in the certification documents are given in Table 2.

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Table 2: Session Request

Simulator Step		Certification Step	
Session Request	01 - Logon	1. Step – Password change Logon	Session Request
	02 - Logon	1. Step - Password change Logon	
	03 - Logout	2. Step - Logout	
	04 - Logon	3. Step - Sequence Reset Logon	
	05 - NewOrderSingle	4. Step – Sending Resend Request	
	06 - NewOrderSingle	4. Step - Sending Resend Request	
	07 - NewOrderSingle	4. Step - Sending Resend Request	
	08 - Logout	4. Step - Sending Resend Request	
	09 – SYSTEM*	4. Step - Sending Resend Request system step	
	10 - Logon	4. Step - Sending Resend Request	
	11 - ResendRequest	4. Step - Sending Resend Request	
	12 - Logout	5. Step - Logout	
	13 – SYSTEM**	6. Step - Resend Request Reply - System Step	
	14 - Logon	6. Step - Resend Request Reply	
	15 - SequenceReset	6. Step - Resend Request Reply	
	16 - NewOrderSingle	6. Step - Resend Request Reply	
	17 - NewOrderSingle	6. Step - Resend Request Reply	
	18 - NewOrderSingle	6. Step - Resend Request Reply	
	19 -SequenceReset	6. Step - Resend Request Reply	
	20 - Logout	Logout	

* 09 – System step: The simulator application prepares internal states to make the company send Resend Request message after the following Logon message of the company. You must manually click the SYSTEM button, since this step does not run automatically.

** 13 – System step: The simulator application prepares internal states to send Resend Request to the company after the following Logon message.

4.2 Base Level Order Entry Messages

Order Entry Base Level certification program has “Opening Session” messages for first partition and “Continuous Auction” messages for first and second partitions. Companies first pass the session level before receiving certification for base or advanced level program.

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These messages of the simulator application and their corresponding messages in the certification documents are given in Table 3., Table 4. and Table 5. respectively. Session level messages are given in 4.1.

Table 3: Opening Session Partition 1

Simulator Step		Certification Step	
Opening Session	01 - NewOrderSingle	1. Step - ClOrdID=10	Opening Session
	02 - NewOrderSingle	1. Step - ClOrdID=20	
	03 - NewOrderSingle	1. Step - ClOrdID=30	
	04 - NewOrderSingle	1. Step - ClOrdID=40	
	05 - NewOrderSingle	1. Step - ClOrdID=50	
	06 - NewOrderSingle	1. Step - ClOrdID=60	
	07 - NewOrderSingle	1. Step - ClOrdID=70	
	08 - NewOrderSingle	1. Step - ClOrdID=80	
	09 - NewOrderSingle	1. Step - ClOrdID=90	
	10 - NewOrderSingle	1. Step - ClOrdID=100	
	11 - NewOrderSingle	1. Step - ClOrdID=110	
	12 - NewOrderSingle	1. Step - ClOrdID=120	
	13 - NewOrderSingle	1. Step - ClOrdID=130	
	14 - NewOrderSingle	1. Step - ClOrdID=140	
	15 - NewOrderSingle	1. Step - ClOrdID=150	
	16 - OrderCancelRequest	2. Step - ClOrdID=160	
	17 - OrderCancelRequest	2. Step - ClOrdID=170	
	18 - OrderCancelReplaceRequest	3. Step - ClOrdID=180	
	19 - OrderCancelReplaceRequest	3. Step - ClOrdID=190	
	20 - OrderCancelReplaceRequest	4. Step - ClOrdID=200	
	21 - OrderCancelReplaceRequest	4. Step - ClOrdID=210	
	22 - OrderCancelReplaceRequest	5. Step - ClOrdID=220	
	23 - OrderCancelReplaceRequest	5. Step - ClOrdID=230	
	24 – SYSTEM***	6. Step – Opening matching	

*** 24-System step: The simulator application simulates closing of opening session. When clicking this step, it is assumed that all opening session messages are sent successfully and all the messages in Opening Uncrossing Session will be sent automatically to the company.

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Table 4: Continuous Auction Partition 1

	Simulator Step	Certification Step	
Continous Auction	01 - NewOrderSingle	10. Step - ClOrdID=280	Continous Auction Session
	02 - NewOrderSingle	10. Step - ClOrdID=290	
	03 - OrderCancelReplaceRequest	11. Step - ClOrdID=300	
	04 - NewOrderSingle	12. Step - ClOrdID=310	
	05 - NewOrderSingle	12. Step - ClOrdID=320	
	06 - NewOrderSingle	12. Step - ClOrdID=330	
	07 - NewOrderSingle	12. Step - ClOrdID=340	
	08 - NewOrderSingle	12. Step - ClOrdID=350	
	09 - NewOrderSingle	12. Step - ClOrdID=360	
	10 - NewOrderSingle	12. Step - ClOrdID=370	
	11 - NewOrderSingle	12. Step - ClOrdID=380	
	12 - NewOrderSingle	12. Step - ClOrdID=390	
	13 - NewOrderSingle	12. Step - ClOrdID=400	
	14 - NewOrderSingle	12. Step - ClOrdID=410	
	15 - NewOrderSingle	12. Step - ClOrdID=420	
	16 - NewOrderSingle	12. Step - ClOrdID=430	
	17 - NewOrderSingle	12. Step - ClOrdID=440	
	18 - NewOrderSingle	12. Step - ClOrdID=450	
	19 - NewOrderSingle	12. Step - ClOrdID=460	
	20 - NewOrderSingle	12. Step - ClOrdID=470	
	21 - NewOrderSingle	12. Step - ClOrdID=480	
	22 - NewOrderSingle	12. Step - ClOrdID=490	
	23 - NewOrderSingle	13. Step - ClOrdID=500	
	24 - NewOrderSingle	13. Step - ClOrdID=510	
	25 – SYSTEM****	End of day operations	
	26 – SYSTEM*****	Next day operations	

**** 25 – System step: The simulator application simulates finishing the process of Continuous Session and operating end of day process.. This step assumes all “opening” and “continuous” session messages are sent successfully and messages that have to be sent in end of day session are sent, like cancelation of expired orders.

***** 26 – System step: The simulator application simulates next day operations. This step assumes all “opening” and “continuous” session messages are sent successfully and the messages that have to be sent in the following day will be sent like long orders.

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Table 5: Continuous Auction Partition 2

Simulator Step		Certification Step	
Continous Auction	NewOrderSingle	7. Step - ClOrdID=240	Continous Auction Session
	NewOrderSingle	7. Step - ClOrdID=250	
	OrderCancelReplaceRequest	8. Step - ClOrdID=260	
	OrderCancelReplaceRequest	9. Step - ClOrdID=270	

You can see second partition messages in Table 4. After you start the simulator application with "part2" parameter you can send these messages.

4.3 Advanced Level Order Entry Messages

In addition to the Order Entry Base Level certification program, Advanced Level scenario has various order types and Trade Report messages in "Opening Session" messages for first partition and "Continuous Auction" messages for first and second partitions. Companies first pass the session level before receiving certification for base or advanced level program.

These messages of the simulator application and their corresponding messages in the certification documents are given in Table 6., Table 7. and Table 8. respectively. Session level messages are given in 4.1.

Table 6: Opening Session Partition 1 (Advanced Level)

Simülatör Stepı		Sertifikasyon Programı	
Opening Session	01 - NewOrderSingle	1. Step - ClOrdID=10	Opening Session
	02 - NewOrderSingle	1. Step - ClOrdID=20	
	03 - NewOrderSingle	1. Step - ClOrdID=30	
	04 - NewOrderSingle	1. Step - ClOrdID=40	
	05 - NewOrderSingle	1. Step - ClOrdID=50	
	06 - NewOrderSingle	1. Step - ClOrdID=60	
	07 - NewOrderSingle	1. Step - ClOrdID=70	
	08 - NewOrderSingle	1. Step - ClOrdID=80	
	09 - NewOrderSingle	1. Step - ClOrdID=90	
	10 - NewOrderSingle	1. Step - ClOrdID=100	
	11 - NewOrderSingle	1. Step - ClOrdID=110	
	12 - NewOrderSingle	1. Step - ClOrdID=120	
	13 - NewOrderSingle	1. Step - ClOrdID=130	
	14 - NewOrderSingle	1. Step - ClOrdID=140	
	15 - NewOrderSingle	1. Step - ClOrdID=150	

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	16 - OrderCancelRequest	2. Step - ClOrdID=160	
	17 - OrderCancelRequest	2. Step - ClOrdID=170	
	18 - OrderCancelReplaceRequest	3. Step - ClOrdID=180	
	19 - OrderCancelReplaceRequest	3. Step - ClOrdID=190	
	20 - OrderCancelReplaceRequest	4. Step - ClOrdID=200	
	21 - OrderCancelReplaceRequest	4. Step - ClOrdID=210	
	22 - OrderCancelReplaceRequest	5. Step - ClOrdID=220	
	23 - OrderCancelReplaceRequest	5. Step - ClOrdID=230	
	24 - NewOrderSingle	6. Step - ClOrdID=240	
	25 - NewOrderSingle	6. Step - ClOrdID=250	
	26 - NewOrderSingle	6. Step - ClOrdID=260	
	27 - NewOrderSingle	6. Step - ClOrdID=270	
	28 - NewOrderSingle	6. Step - ClOrdID=280	
	29 - NewOrderSingle	6. Step - ClOrdID=290	
	30 - NewOrderSingle	6. Step - ClOrdID=300	
	31 - OrderCancelRequest	7. Step - ClOrdID=310	
	32 - OrderCancelReplaceRequest	8.Step - ClOrdID=320	
	33 - NewOrderSingle	9. Step - ClOrdID=330	
	34 - NewOrderSingle	9. Step - ClOrdID=340	
	35 - NewOrderSingle	9. Step - ClOrdID=350	
	36 - NewOrderSingle	9. Step - ClOrdID=360	
	37 - NewOrderSingle	9. Step - ClOrdID=370	
	38 - NewOrderSingle	10. Step - ClOrdID=380	
	39 - NewOrderSingle	10. Step - ClOrdID=390	
	40 - NewOrderSingle	10. Step - ClOrdID=400	
	41 - NewOrderSingle	10. Step - ClOrdID=410	
	42 - SYSTEM	11 - 14. Step - Opening matching	

*** 42-System step: The simulator application simulates closing of opening session. When clicking this step, it is assumed that all opening session messages are sent successfully and all the messages in Opening Uncrossing Session will be sent automatically to the company.

Table 7: Continous Auction Partition 1 (Advanced Level)

Simülatör Stepı		Sertifikasyon Programı	
Continous Trading	01 - NewOrderSingle	18. Step - ClOrdID=460	**Continous Trading**
	02 - NewOrderSingle	18. Step - ClOrdID=470	
	03 - OrderCancelReplaceRequest	19. Step - ClOrdID=480	
	04 - NewOrderSingle	20. Step - ClOrdID=490	
	05 - NewOrderSingle	20. Step - ClOrdID=500	
	06 - NewOrderSingle	20. Step - ClOrdID=510	
	07 - NewOrderSingle	21. Step - ClOrdID=520	

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08 - NewOrderSingle	21. Step - ClOrdID=530
09 - NewOrderSingle	21. Step - ClOrdID=540
10 - NewOrderSingle	22. Step - ClOrdID=550
11 - NewOrderSingle	22. Step - ClOrdID=560
12 - NewOrderSingle	22. Step - ClOrdID=570
13 - NewOrderSingle	23. Step - ClOrdID=580
14 - NewOrderSingle	23. Step - ClOrdID=590
15 - NewOrderSingle	23. Step - ClOrdID=600
16 - NewOrderSingle	24. Step - ClOrdID=610
17 - NewOrderSingle	24. Step - ClOrdID=620
18 - NewOrderSingle	24. Step - ClOrdID=630
19 - NewOrderSingle	24. Step - ClOrdID=640
20 - NewOrderSingle	24. Step - ClOrdID=650
21 - NewOrderSingle	24. Step - ClOrdID=660
22 - NewOrderSingle	25. Step - ClOrdID=670
23 - NewOrderSingle	25. Step - ClOrdID=680
24 - NewOrderSingle	25. Step - ClOrdID=690
25 - NewOrderSingle	26. Step - ClOrdID=700
26 - NewOrderSingle	26. Step - ClOrdID=710
27 - NewOrderSingle	26. Step - ClOrdID=720
28 - NewOrderSingle	26. Step - ClOrdID=730
29 - NewOrderSingle	27. Step - ClOrdID=740
30 - NewOrderSingle	27. Step - ClOrdID=750
31 - NewOrderSingle	28.Step - ClOrdID=760
32 - NewOrderSingle	28.Step - ClOrdID=770
33 - NewOrderSingle	28.Step - ClOrdID=780
34 - NewOrderSingle	28.Step - ClOrdID=790
35 - NewOrderSingle	28.Step - ClOrdID=800
36 - NewOrderSingle	28.Step - ClOrdID=810
37 - NewOrderSingle	28.Step - ClOrdID=820
38 - NewOrderSingle	28.Step - ClOrdID=830
39 - NewOrderSingle	28.Step - ClOrdID=840
40 - NewOrderSingle	28.Step - ClOrdID=850
41 - NewOrderSingle	28.Step - ClOrdID=860
42 - NewOrderSingle	28.Step - ClOrdID=870
43 - NewOrderSingle	28.Step - ClOrdID=880
44 - NewOrderSingle	28.Step - ClOrdID=890
45 - NewOrderSingle	28.Step - ClOrdID=900
46 - NewOrderSingle	28.Step - ClOrdID=910
47 - NewOrderSingle	28.Step - ClOrdID=920
48 - NewOrderSingle	28.Step - ClOrdID=930
49 - NewOrderSingle	28.Step - ClOrdID=940

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	50 - NewOrderSingle	29.Step - ClOrdID=950
	51 - NewOrderSingle	29.Step - ClOrdID=960
	52 - NewOrderSingle	29.Step - ClOrdID=970
	53 - NewOrderSingle	29.Step - ClOrdID=980
	54 - NewOrderSingle	30.Step - ClOrdID=990
	55 - NewOrderSingle	30.Step - ClOrdID=1000
	56 - NewOrderSingle	34.Step - ClOrdID=1030
	57 - TradeCaptureReport	35. Step - TradeReportID=1040
	58 - TradeCaptureReport	36. Step - TradeReportID=1050
	59 - SYSTEM	37.Step - System TradeReport
	60 - TradeCaptureReport	37.Step - TradeReportID=1060
	61 - SYSTEM	38. Step - System TradeReport
	62 - SYSTEM	38. Step - System TradeReport
	63 - TradeCaptureReport	39. Step - TradeReportID=1070
	64 - SYSTEM	End Of Day operations
	65 - SYSTEM	Next Day Operations

59, 61 and 62 System step: Trade Report messages expected from counterparty will be sent from simulator when these system steps are clicked.

64 – System step: The simulator application simulates finishing the process of Continuous Session and operating end of day process.. This step assumes all “opening” and “continuous” session messages are sent successfully and messages that have to be sent in end of day session are sent, like cancelation of expired orders.

65 – System step: The simulator application simulates next day operations. This step assumes all “opening” and “continuous” session messages are sent successfully and the messages that have to be sent in the following day will be sent like long orders.

Table 8: Continous Auction Partition 2 (Advanced Level)

Simülatör Stepı		Sertifikasyon Programı	
Continous Trading	01 - NewOrderSingle	15. Step - ClOrdID=420	Continous Trading
	02 - NewOrderSingle	15. Step - ClOrdID=430	
	03 - OrderCancelReplaceRequest	16. Step - ClOrdID=440	
	04 - OrderCancelReplaceRequest	17. Step - ClOrdID=450	
	05 - TradeCaptureReport	31. Step - TradeReportID=1010	
	06 - TradeCaptureReport	32. Step - TradeReportID=1020	
	07 - System	33. Step - System Trade Report	
	08 - System	End of Day Operations	

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07 System step: Trade Report messages expected from counterparty will be sent from simulator when these system steps are clicked.

08 – System step: The simulator application simulates finishing the process of Continuous Session and operating end of day process.. This step assumes all “opening” and “continuous” session messages are sent successfully and messages that have to be sent in end of day session are sent, like cancelation of expired orders.

4.4 Base and Advanced Level Reference Data Messages

Base and Advanced level reference messages of the simulator application and their corresponding messages in the certification documents are given in Table 9. and Table 10. respectively.

Table 9: Base Level Reference Data

Simulator Step		Certification Step	
RDS Request	01 - Logon	1. Step - Logon	Reference Data
	02 - ApplicationMessageRequest	3. Step - ApplicationMessageRequest	
	03 - ApplicationMessageRequest	4. Step – Resend ApplicationMessageRequest	

Table 10: Advanced Level Reference Data

Simulator Step		Certification Step	
RDS Request	01 - Logon	1. Step - Logon	Reference Data
	02 - ApplicationMessageRequest	3. Step - ApplicationMessageRequest	
	03 - SecurityDefinitionRequest	4. Step - SecurityDefinitionRequest	
	04 - SecurityDefinitionRequest	4. Step - SecurityDefinitionRequest	
	05 - SecurityStatusRequest	5. Step - SecurityStatusRequest	
	06 - SecurityStatusRequest	5. Step - SecurityStatusRequest	
	07 - PriceReferenceRequest	6. Step - PriceReferenceRequest	
	08 - PriceReferenceRequest	6. Step - PriceReferenceRequest	
	09 - ApplicationMessageRequest	7. Step – Resend ApplicationMessageRequest	

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4.5 Market Maker Functionality

Only partition 1 is used for Market Maker functionality tests. Messages of the simulator application and their corresponding messages in the certification documents are given in Table 11 and Table 12. Respectively.

Table 11: Market Maker Functionality - Opening Session

Simülatör Stepı		Sertifikasyon Programı	
Opening Session	01 - NewOrderSingle	1. Step - ClOrdID=5010	Opening Session
	02 - NewOrderSingle	1. Step - ClOrdID=5020	
	03 - MassQuote	2. Step - QuoteID=5030	
	04 - SYSTEM	Opening Matching	
	05 - MassQuote	3. Step - QuoteID=5040	

04-System step: The simulator application simulates closing of opening session. When clicking this step, it is assumed that all opening session messages are sent successfully and all the messages in Opening Uncrossing Session will be sent automatically to the company.

Table 12: Market Maker Functionality - Continous Auction

Simülatör Stepı		Sertifikasyon Programı	
Continous Auction	01 - MassQuote	4. Step - Quote=5050	Continous Trading
	02 - MassQuote	5. Step - Quote=5060	
	03 - NewOrderSingle	6. Step - ClOrdID=5070	
	04 - NewOrderSingle	6. Step - ClOrdID=5080	
	05 - NewOrderSingle	6. Step - ClOrdID=5090	
	06 - MassQuote	7. Step - Quote=5100	
	07 - MassQuote	8. Step - Quote=5110	
	08 - MassQuote	9. Step - Quote=5120	
	09 - MassQuote	10. Step - Quote=5130	
	10 - MassQuote	11. Step - Quote=5140	
	11 - MassQuote	12. Step - Quote=5150	
	12 - MassQuote	13. Step - Quote=5160	
	13 - MassQuote	14. Step - Quote=5170	
	14 - MassQuote	15. Step - Quote=5180	
	15 - MassQuote	16. Step - Quote=5190	
	16 - MassQuote	17. Step - Quote=5200	

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