



The Derivatives Service Bureau (DSB)

FIX Certification Test

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Preface

Change History

Date	Change	Version	Author	Revision Details
18 July 2017	Creation	1.00	Sheryl Tan	Initial Version
06 Sept 2017	Update	2.00	Sheryl Tan	Added 3.3.5 Retrieve ISIN Record by Attributes and 3.3.6 Search for ISIN Records by Attributes Added Business Message Reject on Error Codes Test Suite
29 Sept 2017	Amendment	2.01	Sheryl Tan	Updated sample fix messages to reflect latest product definitions
21 Feb 2018	Amendment	2.02	Sheryl Tan	Updated the Test Suite to include the ToTV Records and "Other" Asset Class
28 June 2018	Modification	2.03	Hannah Cabuyao/ Sheryl Tan	Updated section 3.3.8: SA2 – User searches for ToTV Records by Attributes SU9 – User subscribes to ToTV Records -ToTV subscription feature withheld until further notice

1 Introduction

1.1 Document Purpose

This document intends to provide a comprehensive guide on the FIX Client Certification by using the FIX Conductor interface. The FIX certification process is designed to ensure that users connecting the DSB via FIX are fully integrated in a robust manner. Successful completion of the DSB's FIX Client Certification is an important milestone in being on-boarded into the DSB's production environment. The client can rerun the certification test until completion of all the required test cases. The FIX Conductor has a Reset Certification feature which will be discussed on the FIX Conductor section.

1.2 Intended Audience

Clients who use FIX that needs certification via FIX Conductor interface.

1.3 Scope

This document focuses on the use of FIX Conductor to setup the connectivity and test the functionality of the FIX Client.

1.4 Contact Information

Please direct your questions or concerns on the FIX Conductor via email to technical.support@anna-dsb.com

1.5 Functional Summary

The FIX Conductor interface provides a real time testing service for the FIX Client certification. It consists of several test cases to check the connectivity (i.e. Logon and Heartbeat) and functionality (i.e. create, search, subscribe, retrieve) of the FIX Client. It has error code test to simulate the output of the Security Request Result (560) for invalid request, system unavailable or business message reject.

Result of the test cases can be viewed on the client's Test Dashboard. The client needs to pass all of the required test cases in order to obtain the certification. Once the client has completed successfully, a certification report is made available for the client and the DSB Technical Support.

The DSB Technical Support Admin has a dashboard to verify that a client has successfully completed the test. The client can contact the DSB Technical Support Team for any issues that may arise while completing the test.

1.6 Document Structure

This document contains the following section:

Section Number	Title	Description
Section 1	Introduction	A brief introduction to this document providing background to the purpose of the document and the FIX Conductor
Section 2	Site Preparation	Provides details of the tasks required before connectivity can take place
Section 3	FIX Conductor	Documents the overview, test suites and messages of the FIX Conductor

2 Site Preparation

2.1 FIX Conductor Setup

2.1.1 Register New Client

Once a client approaches the DSB seeking FIX connectivity to the DSB production environment, the DSB Technical Support Admin will register the new client so that authorized users can access the FIX Conductor.

Client's Name, company email address and services (FIX_4.4 or FIX_5.0) to be used by the client will be based on the Onboarding Form submitted by the client.

2.2 FIX Client Setup

Clients need to undertake the following preparation to connect to the DSB's FIX Conductor interface:

- Select the FIX version to use: DSB FIX interface supports FIX5.0SP2 as well as FIX 4.4
- DSB operations will provide the following connectivity parameters as part of the client registration details for access to the FIX conductor:
 - Company identifiers (Compid); These are used throughout the FIX messages and commonly configured in the FIX engine
 - IP address of the DSB FIX Conductor
 - Port for Proxy and Simulated interface
- Make any network/firewall configuration changes required to connect to the DSB FIX Conductor.
- Verify that the DSB IP FIX Conductor addresses/port numbers are open and visible from any machine that needs to connect to the FIX service.
- Configure the local FIX engine with the DSB FIX Conductor Hostname, Port, Compid accordingly.

There are 2 types of Interface that the client needs to configure:

2.2.1 Proxy Interface

This is required for testing the Create, Search, Subscribe, Retrieve, Search by Attributes and Session Level Test Suites. FIX Client will connect to the FIX Conductor which in turn will connect to the DSB FIX servers to validate the FIX messages.

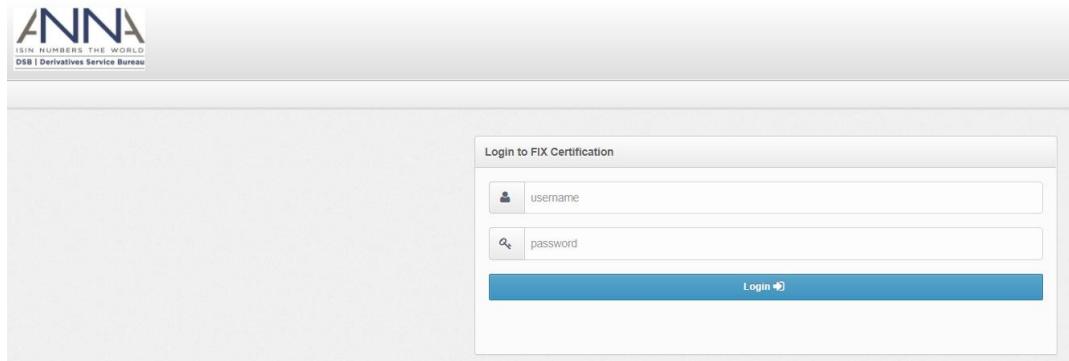
2.2.2 Simulated Interface

FIX Client will run in simulated mode to simulate the errors of the different test scenarios. This is used for Error Codes Test Suite which is required for the client to complete the certification.

3 FIX Conductor

3.1 Login

Client enters the Username and Password to login and access the dashboard.



3.2 Dashboard

3.2.1 Certification Progress

Certification progress can be viewed at a glance on the client dashboard.

To begin the certification, client needs to click the “Begin Certifying” button on the dashboard. The green bar displays the % progress of the certification. Client needs to finish all the required test cases to complete the certification.

Client has an option to choose “Practice” mode under Additional Actions to check the test cases.

Certification Progress				
Service	Next Step	Progress	Last Activity	Additional Actions
FIX_50	Begin Certifying	0%	SL1 - Logon and Heartbeat failed by client1FIX5 on 21-Feb-18 01:54 PM	Practice Save Report

Certification Report can be generated via “Save Report”. Results of all the test cases are saved on this report.

Certification Progress				
Service	Next Step	Progress	Last Activity	Additional Actions
FIX_50	Begin Certifying	0%	SL1 - Logon and Heartbeat failed by client1FIX5 on 21-Feb-18 01:54 PM	Practice Save Report

For additional new test cases, these will reflect as new Service under the Certification Progress to be completed by the client.

Certification Progress				
Service	Next Step	Progress	Last Activity	Additional Actions
FIX_50	Recertify	100%	SL2 - Reconnect after abnormal disconnect passed by client1FIX5 on 21-Feb-18 02:13 PM	Practice Save Report
FIX_50_client1_Other	Begin Certifying	0%	(No activity)	Practice Save Report
FIX_50_client1_TotV	Begin Certifying	0%	(No activity)	Practice Save Report

3.2.2 Interfaces and Sessions

The DSB Technical Support Admin will set the interface and session of the client based on the preferred FIX version that the client will use and certify. SenderCompID, TargetCompID and port will be sent to the client once registered. Please note that the Port which will reflect in this section is NOT exactly the same with the proxy port and simulated port given to clients. The clients need to configure the FIX Application using the credentials that will be sent to their email.

Interfaces and Sessions					
Service	Specs	Interface	SenderComplID	TargetComplID	Port
FIX_44_client2	DSB_FIX44	FIX44_client2_P	[REDACTED]	[REDACTED]	[REDACTED]
	DSB_FIX44	FIX_44_client2_S	[REDACTED]	[REDACTED]	[REDACTED]

3.2.3 Profile and Questionnaire Progress

The Questionnaire is used for optional test cases wherein client will answer the questionnaire at the start of the certification and % Progress of the questionnaire will reflect on this tab. If all the test cases are required, there will be no questionnaire progress on this section. Client can also edit the User Profile and Client Profile on this tab.

Profile and Questionnaire Progress					
Information	Details	Progress	Additional Actions		
User Profile	FIX@user2.test@client3.com	<div style="width: 70%;">70%</div>	Edit User Profile		
Client Profile	client3	<div style="width: 30%;">30%</div>	Edit Client Profile		

3.2.4 Test Runner

Client needs to click the “Begin Certifying” or “Continue Certifying” button next to a service name on the user dashboard to begin or continue the certification.

Certification Progress					
Service	Next Step	Progress	Last Activity	Additional Actions	
FIX_44	Begin Certifying	<div style="width: 0%;">0%</div>	(No activity)	Practice	Save Report

To start with the test cases, the client needs to enter the name and version of the FIX on the Application Details field as shown below.

[Back to User page](#)

Sessions				
Interface	SenderComplID	TargetComplID	Port	Actions
FIX44_client2_P	[REDACTED]	[REDACTED]	[REDACTED]	
FIX_44_client2_S	[REDACTED]	[REDACTED]	[REDACTED]	

Please provide the name and version of the application you're using to certify:

[Enter Application Details](#)

Application Details

Please enter information below, concerning the application for which you will be using to certify. (Or recertify, if you have already completed this certification for another application.)

Application Name:

Application Version:

[Close](#) [Save changes](#)

The test dashboard shows test suites broken down into test cases, with the option to run test as well as when the test was last run, required or optional test case, and the result of the test. Client has an option to reset certification which is located at the top right side of the Test dashboard.

FIX Conductor - FIX_44 Certification

Progress: 0% [Reset Certification](#)

[Back to User page](#)

This service connects to DSB's UAT environment using FIX 4.4

FixClient 1.0 Certification for Client DSB

Sessions				
Interface	SenderCompid	TargetCompid	Port	Actions
FIX44_Proxy	[redacted]	[redacted]	[redacted]	Edit Session
FIX44_Simulated	[redacted]	[redacted]	[redacted]	

Test Suite	Test Case	Last Run	Required	Result
Create	CR1 - User creates ISIN for Rates	► Run Test	(Never)	Required
	CR2 - User creates ISIN for Foreign Exchange	► Run Test	(Never)	Optional
	CR3 - User creates ISIN for Credit	► Run Test	(Never)	Optional
	CR4 - User creates ISIN for Equity	► Run Test	(Never)	Optional
	CR5 - User creates ISIN for Commodities	► Run Test	(Never)	Optional

To access the test cases, click on the “Run Test” button next to a test case.

Test Suite	Test Case	Last Run	Required	Result
Create	CR1 - User creates ISIN for Rates	► Run Test	(Never)	Required

3.3 Test Suite

3.3.1 Session Level

There are 2 session level tests that are required to complete the certification.

SL1 - Logon and Heartbeat

Objective: Client sends a logon and waits for a logon response from the server. The client sends a heartbeat and wait for a heartbeat in response.

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Test Runner [Stop Test](#)

SL1 - Logon and Heartbeat
SessionLevel

Test Name: Logon and Heartbeat messages are checked for
Objective: Client sends a logon and waits for a logon response from the server. The client then sends a heartbeat and waits for a heartbeat in response
Please connect and logon to the FIX session <==>

To proceed with the test, client needs to login to FIX Client so that the FIX Conductor can check the connectivity (35=A Logon) and heartbeat (35=0 Heartbeat).

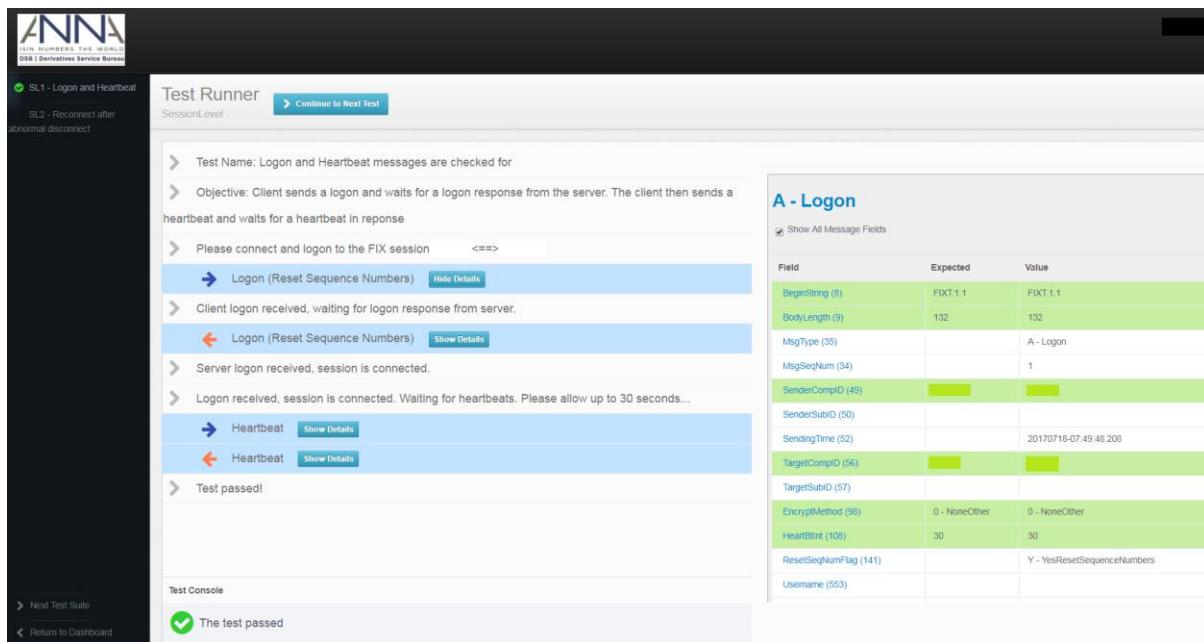
```
8=FIX.4.4^A9=126^A35=A^A34=1^A49=SenderCompID^A50=SenderSubID^A52=20170616-
09:11:00.327^A56=TargetCompID^A57=TargetSubID^A98=0^A108=30^A141=Y^A553=Username^A5
54= password^A10=100^A

8=FIX.4.4^A9=85^A35=A^A34=1^A49= SenderCompID ^A50= SenderSubID ^A52=20170616-
09:10:57.269^A56= TargetCompID^A57=TargetSubID^A98=0^A108=30^A141=Y^A10=063^A

8=FIX.4.4^A9=67^A35=0^A34=2^A49= SenderCompID^A50=SenderSubID ^A52=20170616-
09:11:31.286^A56= A56=TargetCompID^A57=TargetSubID ^A10=225^A

8=FIX.4.4^A9=67^A35=0^A34=2^A49= SenderCompID ^A50= SenderSubID ^A52=20170616-
09:11:27.563^A56= A56=TargetCompID^A57=TargetSubID ^A10=228^A
```

FIX Conductor will check the session connection and heartbeat response to pass this test case.



Test Runner

SessionLevel [Continue to Next Test](#)

- Test Name: Logon and Heartbeat messages are checked for
- Objective: Client sends a logon and waits for a logon response from the server. The client then sends a heartbeat and waits for a heartbeat in response
- Please connect and logon to the FIX session <=>
- Logon (Reset Sequence Numbers) [Show Details](#)
- Client logon received, waiting for logon response from server.
- Logon (Reset Sequence Numbers) [Show Details](#)
- Server logon received, session is connected.
- Logon received, session is connected. Waiting for heartbeats. Please allow up to 30 seconds...
- Heartbeat [Show Details](#)
- Heartbeat [Show Details](#)
- Test passed!

Test Console

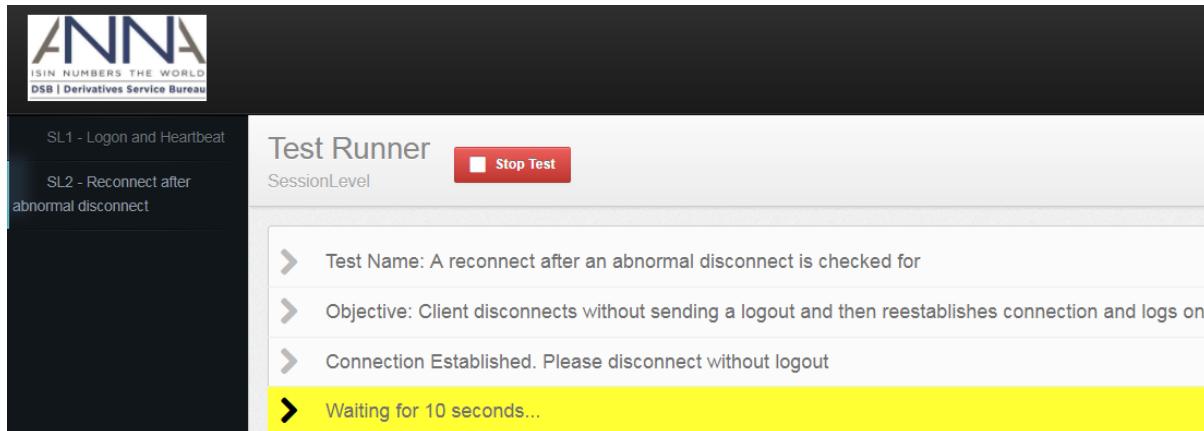
 The test passed

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	132	132
MsgType (35)		A - Logon
MsgSeqNum (34)		1
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170718-07:49:48.208
TargetCompID (56)		
TargetSubID (57)		
EncryptMethod (98)	0 - NoneOther	0 - NoneOther
HeartBlt (108)	30	30
ResetSeqNumFlag (141)		Y - YesResetSequenceNumbers
Username (553)		

SL2 - Reconnect after abnormal disconnect

Objective: Client disconnects without sending a logout and then re-establishes connection and logs on

Client needs to disconnect on FIX Client without sending a logout.



Test Runner

SessionLevel [Stop Test](#)

- Test Name: A reconnect after an abnormal disconnect is checked for
- Objective: Client disconnects without sending a logout and then reestablishes connection and logs on
- Connection Established. Please disconnect without logout
- Waiting for 10 seconds...

Once disconnected, client needs to relogin on FIX Client. The FIX Conductor will check the connectivity and heartbeat.

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Test Runner [Return to Certification Dashboard](#)

Session Level

- SL1 - Login and Heartbeat
- SL2 - Reconnect after abnormal disconnect

Test Name: A reconnect after an abnormal disconnect is checked for

Objective: Client disconnects without sending a logout and then reestablishes connection and logs on

Connection Established. Please disconnect without logout

Waiting for 10 seconds...

Connection has been abnormally disconnected. Please reconnect.

Please connect and logon to the FIX session <==>

→ Logon (Reset Sequence Numbers) [Show Details](#)

Client logon received, waiting for logon response from server.

← Logon (Reset Sequence Numbers) [Hide Details](#)

Server logon received, session is connected.

Connection established successfully.

Waiting for a heartbeat...

→ Heartbeat [Show Details](#)

Test passed!

Test Console

✓ SL2 - Reconnect after abnormal disconnect

A - Logon		
<input checked="" type="checkbox"/> Show All Message Fields		
Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	91	91
MsgType (35)		A - Logon
MsgSeqNum (34)		1
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170718-06:06:49.289
TargetCompID (56)		
TargetSubID (57)		
EncryptMethod (98)	0 - NoneOther	0 - NoneOther
HeartBltnt (108)	30	30
ResetSeqNumFlag (141)		Y - YesResetSequenceNumbers
DefaultApplVerID (1137)	9	9
CheckSum (10)	165	165

3.3.2 Create ISIN

Client needs to create an ISIN per Asset Class to test the scenarios below. Once ISIN has been created, the FIX Conductor will display the result of the test.

CASE 1: Test Passed

The FIX Conductor will request client to create an ISIN for the specific asset class.

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Test Runner [Stop Test](#)

Create

- CR1 - User creates ISIN for Rates
- CR2 - User creates ISIN for Foreign Exchange
- CR3 - User creates ISIN for Credit
- CR4 - User creates ISIN for Equity
- CR5 - User creates ISIN for Commodities

➤ Test Name: A new ISIN is requested for Rates

➤ Objective: Client submits a Security Definition Request with OTC product definitions for Rates for which the client gets a new ISIN

➤ Please send a Security Definition Request (35=c) to create a new ISIN for Rates

The following is a snapshot of the SecurityDefinitionRequest message (35=c) in the FIX log.

```
8=FIXT.1.1^A9=445^A35=c^A34=3^A49=SenderCompID^A50=SenderSubID^A52=20170929-
06:51:01.483^A56=TargetCompID^A57=TargetSubID^A55=[N/A]^A320=DREQ1^A321=1^A1184=331
^A1185={

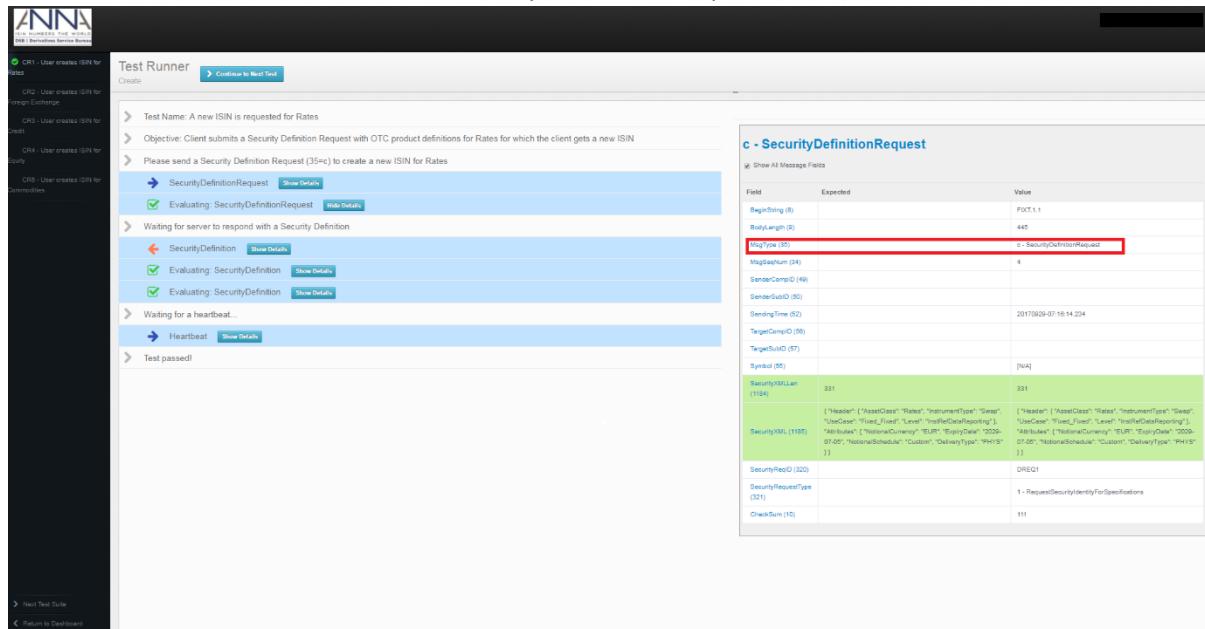
  "Header": {
    "AssetClass": "Rates",
    "InstrumentType": "Swap",
    "UseCase": "Fixed_Fixed",
    "Level": "InstRefDataReporting"
  },
  "Attributes": {
    "NotionalCurrency": "EUR",
    "ExpiryDate": "2029-07-05",
    "NotionalSchedule": "Custom",
  }
}
```

```

    "DeliveryType": "PHYS"
  }
} ^A10=110^A

```

The FIX Conductor will check for the Security Definition Request (35=c) for the new ISIN created.



The screenshot shows the ANNA Test Runner interface with a successful test result. The left sidebar lists various test cases (C1-C6). The main area shows a test named 'Test Name: A new ISIN is requested for Rates' with an objective of sending a Security Definition Request (35=c) to create a new ISIN for Rates. The test status is 'Test passed'. On the right, a detailed view of the 'c - SecurityDefinitionRequest' message is shown in a table format:

Field	Expected	Value
BeginString (8)		FIXT.1.1
BodyLength (8)		440
MsgType (5)		0 - SecurityDefinitionRequest
MsgNum (94)		4
SenderCompID (46)		
SenderSubID (85)		
SendingTime (82)		20170929-07:16:14.234
TargetCompID (86)		
TargetSubID (87)		
Symbol (85)		[NA]
SecurityXMLLen (1184)	331	331
SecurityXML (1185)		["Message": { "Header": { "Field": "BeginString", "Value": "FIXT.1.1", "Level": "Product" }, "Body": { "Field": "SecurityDefinitionRequest", "Value": "0 - SecurityDefinitionRequest", "Level": "Product" } }, "Attributes": [{ "Field": "TargetCompID", "Value": "DSB", "Level": "Product" }, { "Field": "TargetSubID", "Value": "1", "Level": "Product" }, { "Field": "Symbol", "Value": "EURUSD", "Level": "Product" }, { "Field": "SecurityType", "Value": "FX", "Level": "Product" }, { "Field": "DeliveryType", "Value": "PHYS", "Level": "Product" }, { "Field": "ExpiryDate", "Value": "2018-07-05", "Level": "Product" }, { "Field": "NationalCurrency", "Value": "EUR", "Level": "Product" }, { "Field": "NationalSchedule", "Value": "Custom", "Level": "Product" }, { "Field": "DeliveryDate", "Value": "2018-07-05", "Level": "Product" }, { "Field": "DeliveryType", "Value": "PHYS", "Level": "Product" }]]
SecurityReqID (320)		DREQ1
SecurityResponseType (321)		1 - RequestSecurityIdentifyForSpecifications
Checksum (15)		111

Client can validate the details of the ISIN submitted on the SecurityXML (1185) or Request Product Payload.

c - SecurityDefinitionRequest

Show All Message Fields

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	445	445
MsgType (35)		c - SecurityDefinitionRequest
MsgSeqNum (34)		4
SenderCompID (49)	[REDACTED]	[REDACTED]
SenderSubID (50)		
SendingTime (52)		20170929-07:16:14.234
TargetCompID (56)	[REDACTED]	[REDACTED]
TargetSubID (57)		
Symbol (55)		[N/A]
SecurityXMLLen (1184)		331
SecurityXML (1185)		<pre>{ "Header": { "AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting" }, "Attributes": { "NotionalCurrency": "EUR", "ExpiryDate": "2029-07-05", "NotionalSchedule": "Custom", "DeliveryType": "PHYS" } }</pre>
SecurityReqID (320)	DREQ1	DREQ1
SecurityRequestType (321)	1 - RequestSecurityIdentityForSpecifications	1 - RequestSecurityIdentityForSpecifications
CheckSum (10)	111	111
SecurityRequestType		

The table below provides an explanation of the sample content:

Field	Description	Comment
Begin String (8)	FIX 5.0: Always set to: FIXT.1.1 FIX 4.4: Always set to: FIX4.4	
Body Length (9)	Message length, in bytes, forward to the CheckSum field. Always the second field of the message.	
MsgType (35)	c = SecurityDefinitionRequest Request (or create) the ISIN for an OTC derivative financial instrument as identified by its unique attributes	
MsgSeqNum (34)	Integer message sequence number	
SenderCompID(49) ↔ TargetCompID(56)	Client ↔ DSB	Client Comp ID Configured for each client The DSB comp ID
SenderSubID(49) ↔ TargetSubID(57)	Subclient ↔ UAT	Client Sub Comp Configured for each client The DSB Sub Comp ID is configured for each environment (i.e.: Demo / UAT / Prod)
SendingTime (52)	Time of message transmission	

Symbol (55)	Use: "[N/A]"	
SecurityXMLLen (1184)	Length of JSON record payload	
SecurityXML(1185)	Request Product payload	{"Header": { "AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting" }, "Attributes": { "NotionalCurrency": "EUR", "ExpiryDate": "2029-07-05", "NotionalSchedule": "Custom", "DeliveryType": "PHYS" } }
SecurityReqID (320)	Identifies the request ID	
SecurityRequestType (321)	0 = Request Security Identity And Specifications 1 = Request Security Identity For Specifications Provided	
CheckSum(10)	As per FIX specification	

FIX Conductor will wait for the server to respond with a Security Definition (35=d).

The following is a sample of a SecurityDefinition message (35=d).

```
8=FIXT.1.1^A9=846^A35=d^A34=3^A49=TargetCompID^A50=TargetSubID^A52=20170929-
06:51:01.165^A56=SenderCompID^A57=SenderSubID^A22=4^A48=EZ5VM8R4T037^A55=[N/A]^A60=
20170929-
06:51:01.165^A320=DREQ1^A560=0^A1184=679^A1185={"Header": {"AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2029-07-05", "NotionalSchedule": "Custom", "DeliveryType": "PHYS", "PriceMultiplier": 1}, "ISIN": {"ISIN": "EZ5VM8R4T037", "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2017-09-29T06:51:01"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "FALSE", "UnderlyingAssetType": "Fixed - Fixed", "SingleorMultiCurrency": "Single Currency", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Rates Swap Fixed_Fixed EUR 20290705", "ShortName": "NA/Swap Fxd Fxd EUR 20290705", "ClassificationType": "SRDYSP"} }^A1938=1^A10=044^A
```

Simultaneously, FIX Conductor will display the details of the SecurityDefinition (35=d) message. The ISIN created will reflect on the SecurityXML (1185) which is the Record Payload.

d - SecurityDefinition

Show All Message Fields

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	846	846
MsgType (35)		d - SecurityDefinition
MsgSeqNum (34)		4
SenderCompID (49)	[REDACTED]	[REDACTED]
SenderSubID (50)		
SendingTime (52)		20170929-07:16:13.890
TargetCompID (56)	[REDACTED]	[REDACTED]
TargetSubID (57)		
SecurityIDSource (22)		4 - ISINNumber
SecurityID (48)		EZ5VM8R4T037
Symbol (55)		[N/A]
SecurityXMLLen (1184)		679
SecurityXML (1185)		<pre>{"Header": {"AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2029-07-05", "NotionalSchedule": "Custom", "DeliveryType": "PHYS", "PriceMultiplier": 1}, "ISIN": {"ISIN": "EZ5VM8R4T037", "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2017-09-29T06:51:01"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "FALSE", "UnderlyingAssetType": "Fixed", "SingleorMultiCurrency": "Single", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Rates Swap Fixed_EUR 20290705", "ShortName": "NA/Swap Fxd Fxd EUR 20290705", "ClassificationType": "SRDYSP"}}</pre>
AssetClass (1938)		1 - Interest Rate
TransactTime (80)		20170929-07:16:13.890
SecurityReqID (320)	DREQ1	DREQ1
SecurityRequestResult (560)	0 - ValidRequest	0 - ValidRequest
AssetClass (1938)		1 - Interest Rate
CheckSum (10)	065	065

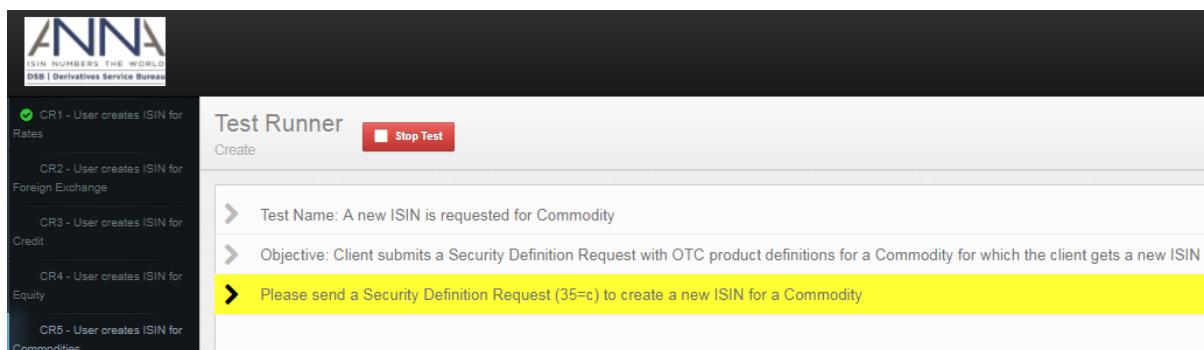
The table below provides an explanation of the sample content:

Field	Description	Comment
SecurityXML(1185)	Record Payload	<pre>{"Header": {"AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2029-07-05", "NotionalSchedule": "Custom", "DeliveryType": "PHYS", "PriceMultiplier": 1}, "ISIN": {"ISIN": "EZ5VM8R4T037", "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2017-09-29T06:51:01"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "FALSE", "UnderlyingAssetType": "Fixed", "SingleorMultiCurrency": "Single", "IssuerorOperatoroftheTr</pre>

		adingVenueIdentifier":"NA","FullNa m e":"Rates Swap Fixed_Fixed EUR 20290705","ShortName":"NA/Swap Fxd Fxd EUR 20290705","ClassificationType":"SRD YSP"}}}
AssetClass (1938)	Filter the request to products of a single asset class 1 = Interest rate 2 = Currency (Foreign Exchange) 3 = Credit 4 = Equity 5 = Commodity 6 = Other	
TransactTime (60)	Time of transaction	
SecurityRequestResult (560)	0 = Valid request 1 = Invalid or unsupported request 2 = No Instruments found that match selection criteria 3 = Not authorized to retrieve instrument data 4 = Instrument data temporarily unavailable	

CASE 2: Test Failed

Client sends an ISIN for Credit instead of Commodity Asset Class which the FIX Conductor is expecting.



The screenshot shows the ANNA Test Runner interface. On the left, there is a sidebar with five test cases listed: CR1 - User creates ISIN for Rates, CR2 - User creates ISIN for Foreign Exchange, CR3 - User creates ISIN for Credit, CR4 - User creates ISIN for Equity, and CR5 - User creates ISIN for Commodities. The CR3 test is highlighted with a green checkmark. In the main area, there is a "Test Runner" section with a "Create" button and a "Stop Test" button. Below this, there is a list of test steps. The first two steps are standard: "Test Name: A new ISIN is requested for Commodity" and "Objective: Client submits a Security Definition Request with OTC product definitions for a Commodity for which the client gets a new ISIN". The third step, "Please send a Security Definition Request (35=c) to create a new ISIN for a Commodity", is highlighted with a yellow background, indicating it is the failing step.

The following is a snapshot of the SecurityDefinitionRequest message (35=c) in the FIX log.

```
8=FIXT.1.1^A9=469^A35=c^A34=3^A49=SenderCompID^A50=SenderSubID^A52=20170929-
07:40:08.516^A56=TargetCompID^A57=TargetSubID^A55=[N/A]^A320=DREQ1^A321=1^A1184=355
^A1185={

  "Header": {
    "AssetClass": "Credit",
    "InstrumentType": "Swap",
    "UseCase": "Total_Return_Swap",
    "Level": "InstRefDataReporting"
  },
  "Attributes": {
    "NotionalCurrency": "EUR",
    "ExpiryDate": "2029-11-25",
    "Underlying": {
      "InstrumentLEI": "20K7BBFL2B65D1GO0B40"
    }
  }
}
```

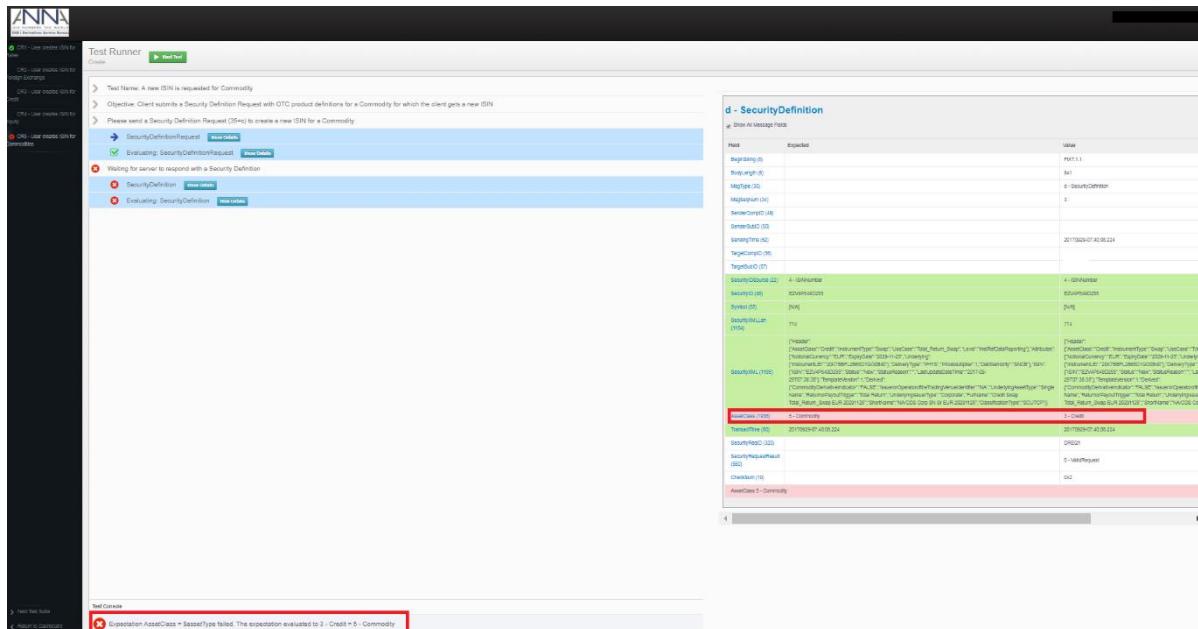
```

    }
}

} ^A10=094^A

```

Asset Type failed due to asset class mismatch. The FIX Conductor was expecting for Commodity but ISIN for Credit asset class was created.

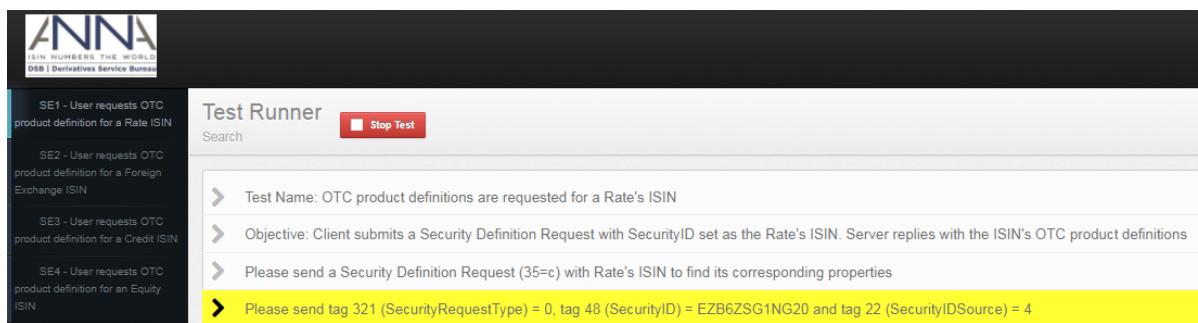


3.3.3 Search ISIN

Client submits an ISIN per asset class to request the OTC product definition for an ISIN.

CASE 1: Test Passed

The client needs to send the ISIN provided in the FIX Conductor.



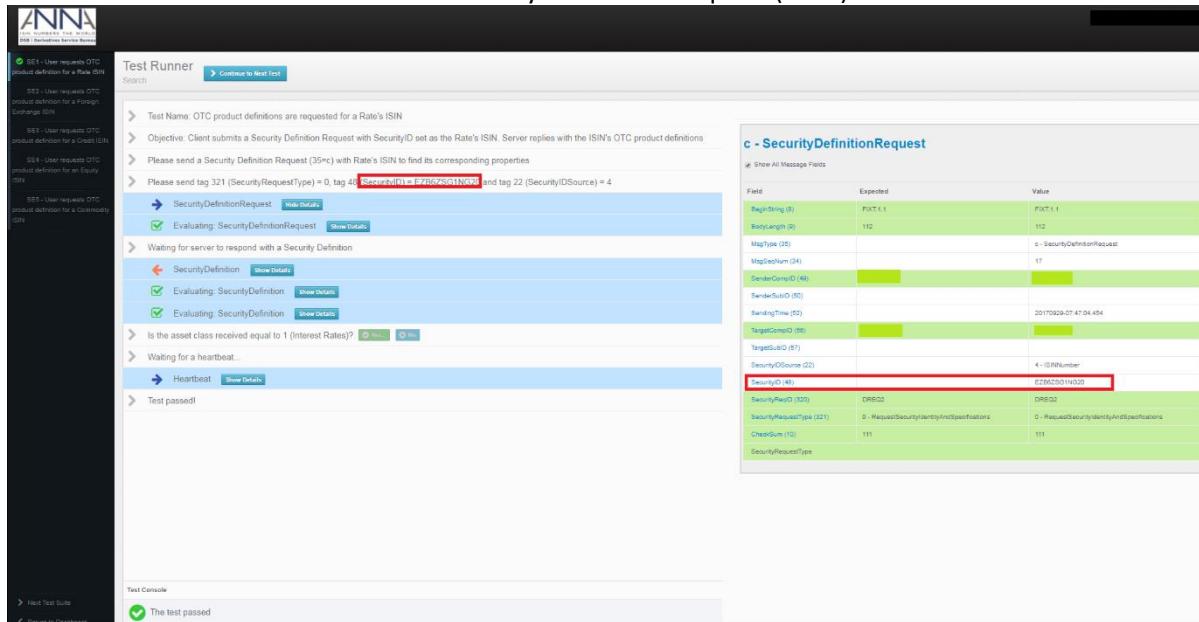
The following is a sample of a SecurityDefinitionRequest message (35=c) having an ISIN.

```

8=FIXT.1.1^A9=112^A35=c^A34=17^A49=SenderCompID^A50=SenderSubID^A52=20170929-
07:47:04.454^A56=TargetCompID^A57=TargetSubID^A22=4^A48=EZB6ZSG1NG20^A320=DREQ2^A32
1=0^A10=111^A

```

The FIX Conductor will check for the Security Definition Request (35=c).



The screenshot shows the ANNA Test Runner interface with a successful test run. The left pane displays a tree view of test steps, and the right pane shows a detailed view of the 'c - SecurityDefinitionRequest' message with its fields and values.

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	112	112
MsgType (2)		4 - SecurityDefinitionRequest
MsgSeqNum (34)		17
SenderCompID (46)		EZB6ZSG1NG20
TargetSubID (8)		20170929-07-47-04-454
TargetCompID (9)		
TargetSubID (8)		
SecurityID (22)		4 - ISINNumber
SecurityID (48)		EZB6ZSG1NG20
SecurityReqID (32)	DREQ2	DREQ2
SecurityRequestType (21)	0 - RequestSecurityDetailsByProductFactors	0 - RequestSecurityIdentityAndSpecifications
Checksum (10)	111	111
SecurityRequestType		

The FIX Conductor will wait for the server to respond with a Security Definition (35=d).

```
8=FIXT.1.1^A9=1028^A35=d^A34=17^A49=TargetCompID^A50=TargetSubID^A52=20170929-
07:47:04.155^A56=SenderCompID^A57=SenderSubID^A22=4^A48=EZB6ZSG1NG20^A55=[N/A] ^A60=
20170929-
07:47:04.155^A320=DREQ2^A560=0^A1184=860^A1185={"Header": {"AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Inflation_Fixed_Float_YoY", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2261-07-25", "ReferenceRate": "DEM-CPI-NRW", "ReferenceRateTermValue": -604, "ReferenceRateTermUnit": "YEAR", "NotionalSchedule": "Accreting", "DeliveryType": "CASH", "PriceMultiplier": 1}, "ISIN": {"ISIN": "EZB6ZSG1NG20", "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2017-08-26T16:43:54"}, "TemplateVersion": 1, "Derived": {"ISOReferenceRate": "DEM-CPI-NRW", "CommodityDerivativeIndicator": "FALSE", "UnderlyingAssetType": "Inflation Rate Index", "SingleorMultiCurrency": "Single Currency", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Rates Swap Inflation_Fixed_Float_YoY DEM-CPI-NRW -604 YEAR 22610725", "ShortName": "NA/Swap Infl Idx EUR 22610725", "ClassificationType": "SRGISC"} }^A1938=1^A10=011^A
```

Client can verify the product definition on the SecurityDefinition details in the FIX Conductor. The test passed since the asset class of the ISIN submitted matched the expected asset class.

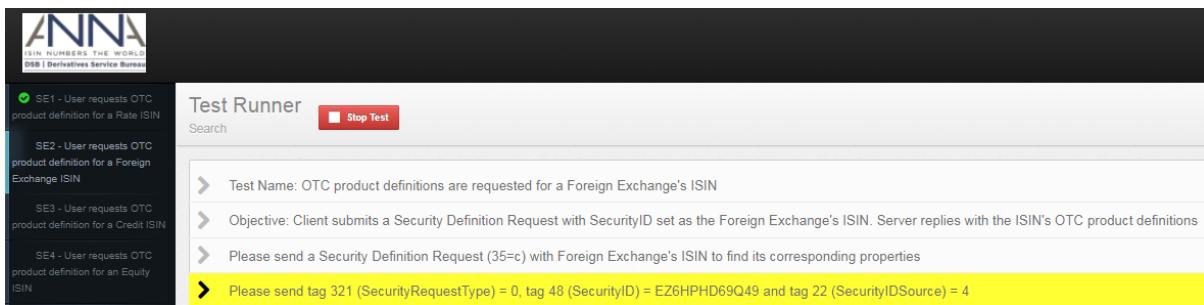
d - SecurityDefinition

Show All Message Fields

Field	Expected	Value
BeginString (8)		FIXT.1.1
BodyLength (9)		1028
MsgType (35)		d - SecurityDefinition
MsgSeqNum (34)		17
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170929-07:47:04.155
TargetCompID (56)		
TargetSubID (57)		
SecurityIDSource (22)	4	4
SecurityID (48)	EZB6ZSG1NG20	EZB6ZSG1NG20
Symbol (55)		[N/A]
SecurityXMLLen (1184)		860
SecurityXML (1185)		<pre>{"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Inflation_Fixed_Float_YoY","Level":1,"NotionalCurrency":"EUR","ExpiryDate":"2261-07-25","ReferenceRateID":"DEM-CPI-NRW","ReferenceRateTermValue":-604,"ReferenceRateTermUnit":"YEAR","NotionalSchedule":"Accreting","ISIN":"EZB6ZSG1NG20","Status":"New","StatusReason":"","LastUpdateDateTime":"2017-08-26T16:43:54","ISOReferenceRateID":"DEM-CPI-NRW","CommodityDerivativeIndicator":false,"UnderlyingAssetType":"Index","SingleOrMultiCurrency":true,"IssuerOrOperatorOrTradingVenueIdentifier":NA,"FullN":DEM-CPI-NRW -604 YEAR 22610725,"ShortName":NA/Swap Infl Idx EUR 22610725,"ClassificationType":}</pre>
AssetClass (1938)		1 - Interest Rate
TransactTime (60)		20170929-07:47:04.155
SecurityReqID (320)		DREQ2
SecurityRequestResult (320)		0 - ValidRequest

CASE 2: Test Failed

Client inputs an ISIN except the Security ID listed in the FIX Conductor.



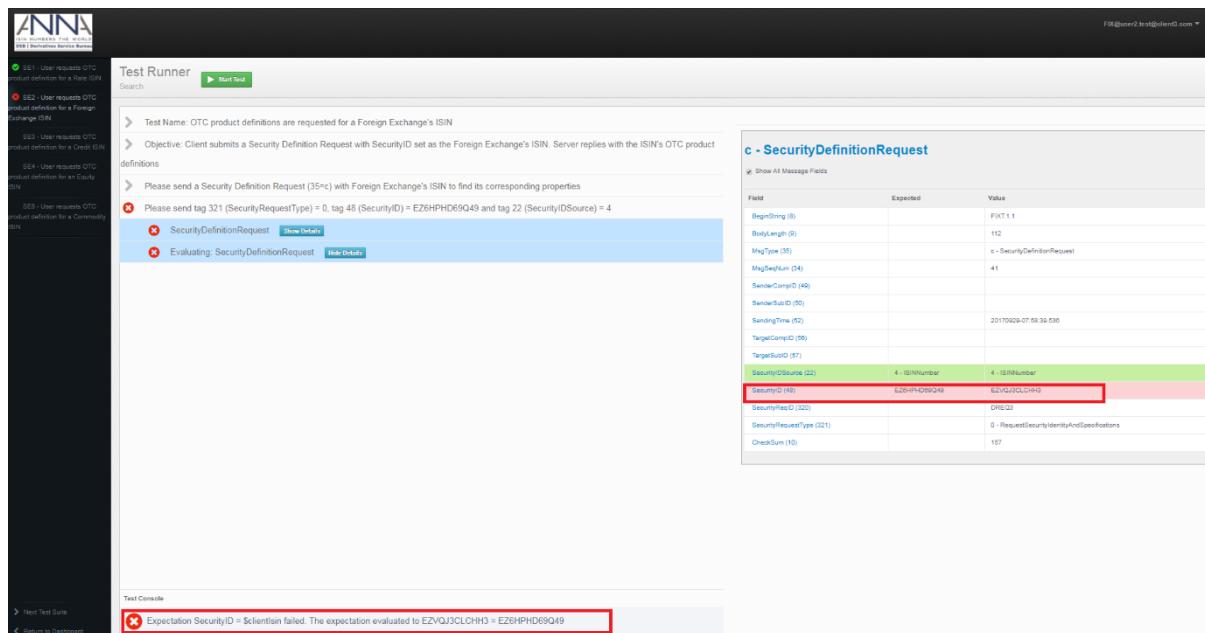
The screenshot shows the ANNA Test Runner interface. On the left, a sidebar lists four test steps: SE1, SE2, SE3, and SE4. SE1 is marked as completed with a green checkmark. The main area is titled "Test Runner" and contains a "Stop Test" button. Below it, a list of test steps is shown:

- Test Name: OTC product definitions are requested for a Foreign Exchange's ISIN
- Objective: Client submits a Security Definition Request with SecurityID set as the Foreign Exchange's ISIN. Server replies with the ISIN's OTC product definitions
- Please send a Security Definition Request (35=c) with Foreign Exchange's ISIN to find its corresponding properties
- Please send tag 321 (SecurityRequestType) = 0, tag 48 (SecurityID) = EZ6PHHD69Q49 and tag 22 (SecurityIDSource) = 4** (This step is highlighted in yellow)

The following is a sample of a SecurityDefinitionRequest message (35=c) having an ISIN.

8=FIXT.1.1^A9=112^A35=c^A34=41^A49=SenderCompID^A50=SenderSubID^A52=20170929-07:58:39.536^A56=TargetCompID^A57=TargetSubID^A22=4^A48=EZVQJ3CLCHH3^A320=DREQ3^A321=0^A10=157^A

The Test failed due to security ID did not match.



The screenshot shows the ANNA Test Runner interface. On the left, there's a sidebar with several test cases listed under 'Test Suite' and 'Test Dashboard'. The main area is titled 'Test Runner' with a 'Start Test' button. Below it, a list of test steps is shown:

- > Test Name: OTC product definitions are requested for a Foreign Exchange's ISIN
- > Objective: Client submits a Security Definition Request with SecurityID set as the Foreign Exchange's ISIN. Server replies with the ISIN's OTC product definitions
- > Please send a Security Definition Request (35=c) with Foreign Exchange's ISIN to find its corresponding properties
- ✖ Please send tag 321 (SecurityRequestType) = 0, tag 48 (SecurityID) = EZ6PHD69Q49 and tag 22 (SecurityIDSource) = 4
 - SecurityDefinitionRequest [Show Details](#)
 - Evaluating SecurityDefinitionRequest [Hide Details](#)

To the right, a detailed view of the 'c - SecurityDefinitionRequest' message is displayed in a table format. The table has columns for 'Field', 'Expected', and 'Value'. Several fields are highlighted in green or red, indicating successful or failed expectations. At the bottom of the table, a red box highlights the 'SecurityID (48)' field.

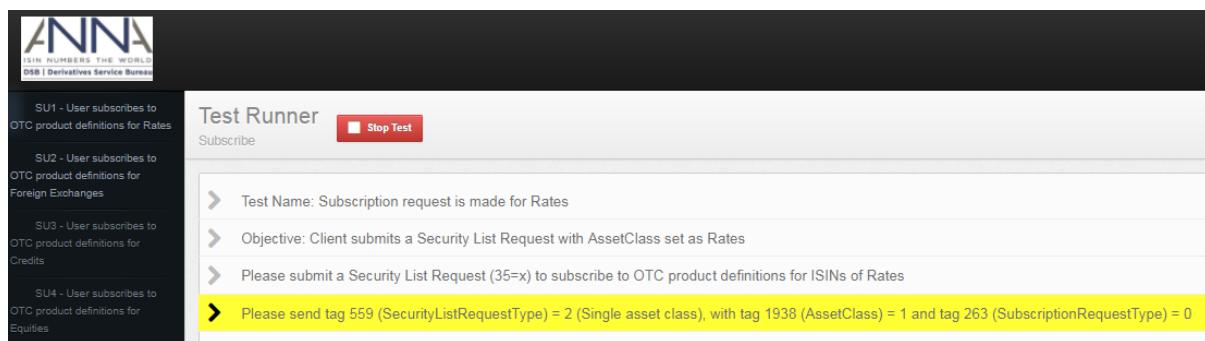
At the bottom of the interface, a 'Test Console' section shows a red error message: 'Expectation SecurityID = \$clientIn failed. The expectation evaluated to EZVQJ3CLCH3 = EZ6PHD69Q49'.

3.3.4 Subscribe

Client needs to subscribe to Asset Class and send SubscriptionRequestType listed in the FIX Conductor.

CASE 1: Test Passed

Client should subscribe to Rates Asset Class (1938=1) and send SubscriptionRequestType (263=0).



The screenshot shows the ANNA Test Runner interface. On the left, there's a sidebar with four test cases listed under 'Test Suite' and 'Test Dashboard': SU1, SU2, SU3, and SU4. The main area is titled 'Test Runner' with a 'Stop Test' button. Below it, a list of test steps is shown:

- > Test Name: Subscription request is made for Rates
- > Objective: Client submits a Security List Request with AssetClass set as Rates
- > Please submit a Security List Request (35=x) to subscribe to OTC product definitions for ISINs of Rates
 - Please send tag 559 (SecurityListRequestType) = 2 (Single asset class), with tag 1938 (AssetClass) = 1 and tag 263 (SubscriptionRequestType) = 0

The table below provides an explanation of the sample content:

Name	Data Type	Tag	Rq	Description
SecurityListRequestType	Int	559	Y	2= Product: Filter the request to products of a single asset class 4 = All Securities (that were created today, i.e. since midnight).
AssetClass	String	1938	N	Filter the request to products of a single asset class 1 = Interest rate 2 = Currency (Foreign Exchange) 3 = Credit 4 = Equity 5 = Commodity 6 = Other
SubscriptionRequestType	Char	263	Y	0 = Snapshot 1 = Snapshot + updates 2 = Unsubscribe

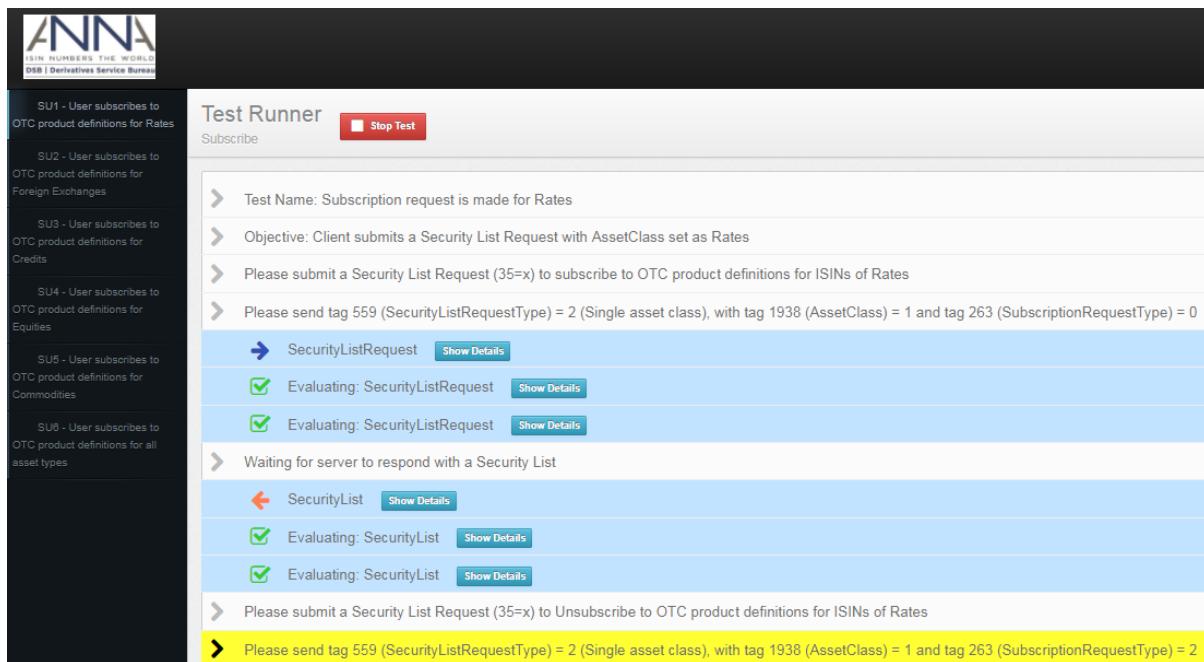
The following is a sample of a SecurityListRequest message (35=x). The request is for a snapshot of Rates asset class.

```
8=FIXT.1.1^A9=104^A35=x^A34=54^A49=SenderCompID^A50=SenderSubID^A52=20170929-
08:04:19.018^A56=TargetCompID^A57=TargetSubID^A263=0^A320=LREQ7^A559=2^A1938=1^A10=
056^A
```

The following is a sample of a SecurityList message (35=y).

```
8=FIXT.1.1^A9=629778^A35=y^A34=65^A49=TargetCompID^A50=TargetSubID^A52=20170929-
08:04:20.574^A56=SenderCompID^A57=SenderSubID^A60=20170929-
08:04:20.568^A320=LREQ7^A393=716^A560=0^A146=716^A55=[N/A]^A48=EZ3K13MY0S
41^A22=4^A1938=1^A1184=988^A1185={"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Basis","Level":"InstRefDataReporting"},"Attributes":{"NotionalCurrency":"USD","OtherLegReferenceRateTermUnit":"Mnth","ExpiryDate":"2017-09-28","NotionalSchedule":"Constant","ReferenceRateTermValue":3,"OtherLegReferenceRateTermValue":6,"ReferenceRate":"USD-LIBOR-BBA","ReferenceRateTermUnit":"Mnth","OtherLegReferenceRate":"USD-LIBOR-BBA","DeliveryType":"PHYS","PriceMultiplier":1},"ISIN":{"ISIN":"EZ3K13MY0S41","Status":"Expired","StatusReason":"","LastUpdateDateTime":"2017-09-28T00:16:54"}, "TemplateVersion":1,"Derived":{"ISOReferenceRate":"LIBO","ISOOtherLegReferenceRate":"LIBO","CommodityDerivativeIndicator":false,"UnderlyingAssetType":"Basis Swap (Float - Float)","SingleorMultiCurrency":"Single Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","FullName":"Rates Swap Basis USD-LIBOR-BBA 3 Mnth USD-LIBOR-BBA 6 Mnth 20170928","ShortName":"NA/Swap Flt Flt USD 20170928","ClassificationType":"SRACSP"} }^A55=[N/A]^A48=ZZ27KTJ0TR86^A22=4^A1938=1^A1184=837^A1185={"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Fixed_Float_Zero_Coupon","Level":"InstRefDataReporting"},"Attributes":{"ReferenceRate":"GBP-LIBOR-BBA","ExpiryDate":"2049-04-01","NotionalCurrency":"GBP","NotionalSchedule":"Constant","ReferenceRateTermValue":6,"ReferenceRateTermUnit":"Mnth","DeliveryType":"PHYS","PriceMultiplier":1},"ISIN":{"ISIN":"ZZ27KTJ0TR86","Status":"New","StatusReason":"","LastUpdateDateTime":<Truncated>}}
```

Client needs to Unsubscribe (SubscriptionRequestType 263=2) to OTC product definition for Rates to proceed on the next test case.



The screenshot shows a test runner interface with a sidebar of subscription rules and a main panel for a specific test run.

Test Runner

Subscribe

Test Name: Subscription request is made for Rates

Objective: Client submits a Security List Request with AssetClass set as Rates

Instructions:

- Please submit a Security List Request (35=x) to subscribe to OTC product definitions for ISINs of Rates
- Please send tag 559 (SecurityListRequestType) = 2 (Single asset class), with tag 1938 (AssetClass) = 1 and tag 263 (SubscriptionRequestType) = 0

Actions:

- SecurityListRequest [Show Details](#)
- ✓ Evaluating: SecurityListRequest [Show Details](#)
- ✓ Evaluating: SecurityListRequest [Show Details](#)

Waiting for server to respond with a Security List

Actions:

- ← SecurityList [Show Details](#)
- ✓ Evaluating: SecurityList [Show Details](#)
- ✓ Evaluating: SecurityList [Show Details](#)

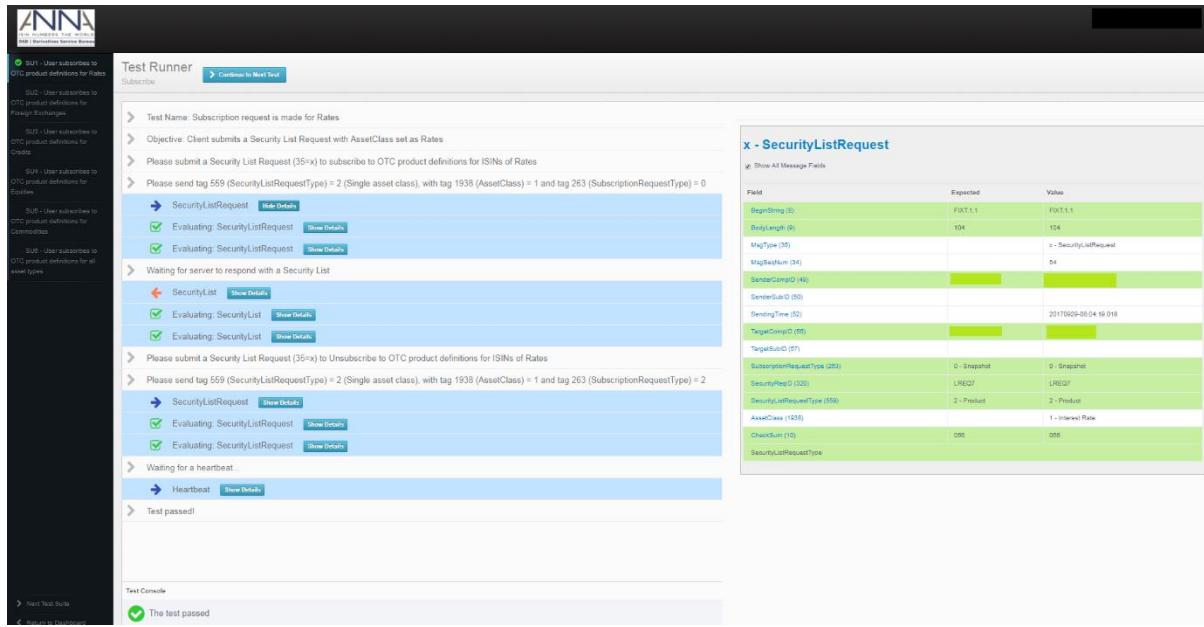
Instructions:

- Please submit a Security List Request (35=x) to Unsubscribe to OTC product definitions for ISINs of Rates
- Please send tag 559 (SecurityListRequestType) = 2 (Single asset class), with tag 1938 (AssetClass) = 1 and tag 263 (SubscriptionRequestType) = 2

The following is a sample of a **SecurityListRequest** message (35=x) with **SubscriptionRequestType** (263=2).

```
8=FIXT.1.1^A9=104^A35=x^A34=55^A49=SenderCompID^A50=SenderSubID^A52=20170929-
08:04:47.926^A56=TargetCompID^A57=TargetSubID^A263=2^A320=LREQ8^A559=2^A1938=1^A10=
069^A
```

The Test Console shows that the test passed.



The screenshot shows a test runner interface with a sidebar of subscription rules and a main panel for a specific test run.

Test Runner

Subscribe

Test Name: Subscription request is made for Rates

Objective: Client submits a Security List Request with AssetClass set as Rates

Instructions:

- Please submit a Security List Request (35=x) to subscribe to OTC product definitions for ISINs of Rates
- Please send tag 559 (SecurityListRequestType) = 2 (Single asset class), with tag 1938 (AssetClass) = 1 and tag 263 (SubscriptionRequestType) = 0

Actions:

- SecurityListRequest [Show Details](#)
- ✓ Evaluating: SecurityListRequest [Show Details](#)
- ✓ Evaluating: SecurityListRequest [Show Details](#)

Waiting for server to respond with a Security List

Actions:

- ← SecurityList [Show Details](#)
- ✓ Evaluating: SecurityList [Show Details](#)
- ✓ Evaluating: SecurityList [Show Details](#)

Instructions:

- Please submit a Security List Request (35=x) to Unsubscribe to OTC product definitions for ISINs of Rates
- Please send tag 559 (SecurityListRequestType) = 2 (Single asset class), with tag 1938 (AssetClass) = 1 and tag 263 (SubscriptionRequestType) = 2

Actions:

- SecurityListRequest [Show Details](#)
- ✓ Evaluating: SecurityListRequest [Show Details](#)
- ✓ Evaluating: SecurityListRequest [Show Details](#)

x - SecurityListRequest

Field	Expected	Value
BeginString (2)	FIXT.1	FIXT.1
BodyLength (9)	104	104
MsgType (5)		x - SecurityListRequest
MsgSeqNum (9)	54	54
SenderCompID (4)		
SenderSubID (5)		
Timestamp (22)	20170929-08:04:19:019	20170929-08:04:19:019
TargetCompID (5)		
TargetSubID (7)		
SubscriptionRequestType (20)	0 - Snapshot	0 - Snapshot
SecurityType (32)	LREQ8	LREQ8
SecurityListRequestType (559)	2 - Product	2 - Product
AssetClass (128)		
CheckSum (10)	000	000
SecurityListRequestType		

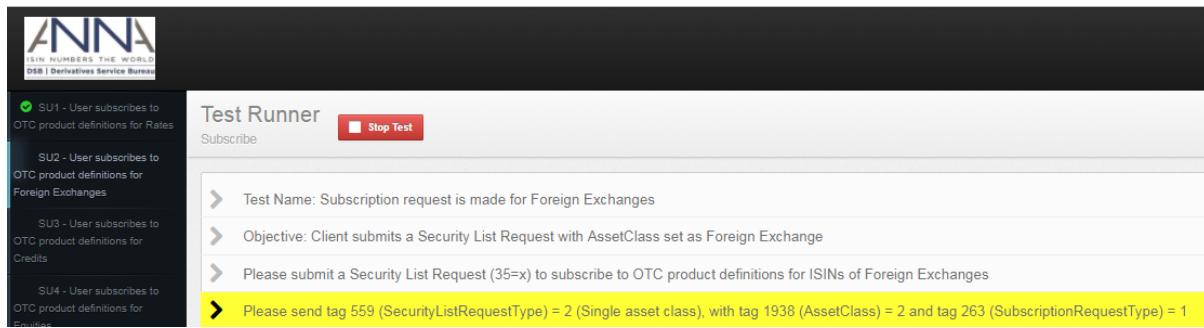
Test Console

✓ The test passed

CASE 2: Test Failed

If the Client subscribes to any Asset Class that is not requested by the FIX Conductor, the test will fail.

In this example, the client should send Foreign Exchange Asset Class (1938=2) with Snapshot +Updates SubscriptionRequestType (263=1).

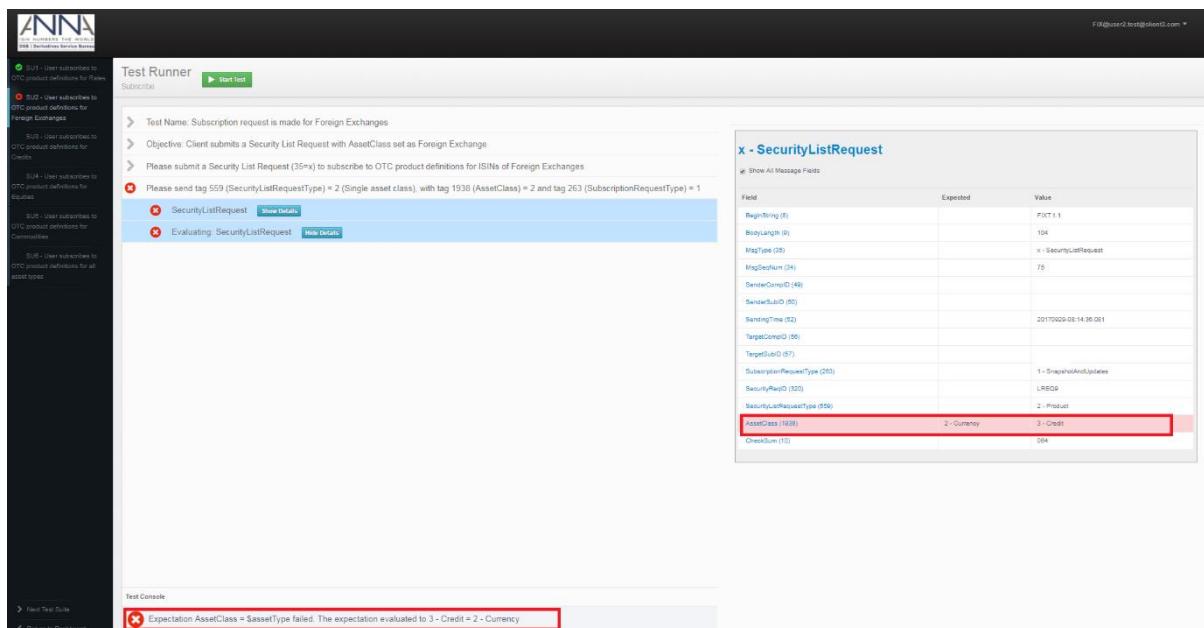


The Test Runner interface shows a test case for a SecurityListRequest message. The test name is "Subscription request is made for Foreign Exchanges". The objective is "Client submits a Security List Request with AssetClass set as Foreign Exchange". The steps include "Please submit a Security List Request (35=x) to subscribe to OTC product definitions for ISINs of Foreign Exchanges" and "Please send tag 559 (SecurityListRequestType) = 2 (Single asset class), with tag 1938 (AssetClass) = 2 and tag 263 (SubscriptionRequestType) = 1".

The following is a sample of a SecurityListRequest message (35=x) with tag 1938=3 (Credit) and 263=1 (Snapshot+Updates).

```
8=FIXT.1.1^A9=104^A35=x^A34=75^A49=SenderCompID^A50=SenderSubID^A52=20170929-
08:14:36.081^A56=TargetCompID^A57=TargetSubID^A263=1^A320=LREQ9^A559=2^A1938=3^A10=
064^A
```

The Test Console shows that the test failed due to AssetClass mismatch.



The Test Console interface shows the failure of the SecurityListRequest test. The error message is "Expectation AssetClass = assetType failed. The expectation evaluated to 3 - Credit = 2 - Currency". The detailed message shows the expected values for AssetClass (1938) and AssetType (102) as 3 - Credit and 2 - Currency respectively.

Field	Expected	Value
AssetClass (1938)	3 - Credit	
AssetType (102)	2 - Currency	

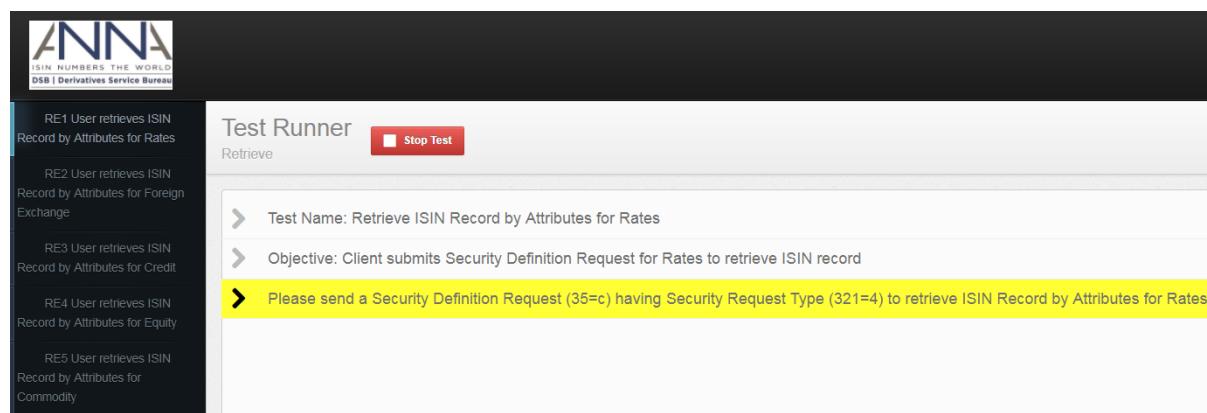
x - SecurityListRequest		
<input checked="" type="checkbox"/> Show All Message Fields		
Field	Expected	Value
BeginString (8)		FIXT.1.1
BodyLength (9)		104
MsgType (35)		x - SecurityListRequest
MsgSeqNum (34)		75
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170929-08:14:36.081
TargetCompID (56)		
TargetSubID (57)		
SubscriptionRequestType (283)		1 - SnapshotAndUpdates
SecurityReqID (320)		LREQ9
SecurityListRequestType (559)		2 - Product
AssetClass (1938)	2 - Currency	3 - Credit
CheckSum (10)		064

3.3.5 Retrieve

The client can retrieve ISIN record by attributes to return the existing record if the ISIN record already exists.

CASE 1: Test Passed

The FIX Conductor will request client to send Security Definition Request (35=c) having Security Request Type (321=4) for the specific asset class.



The screenshot shows the ANNA Test Runner interface. On the left, a sidebar lists five test cases: RE1, RE2, RE3, RE4, and RE5. RE4 is highlighted with a yellow background, indicating it is the current test being run. The main area displays the test steps and objectives:

- Test Name: Retrieve ISIN Record by Attributes for Rates
- Objective: Client submits Security Definition Request for Rates to retrieve ISIN record
- Please send a Security Definition Request (35=c) having Security Request Type (321=4) to retrieve ISIN Record by Attributes for Rates

The following is a snapshot of the SecurityDefinitionRequest message (35=c) having SecurityRequestType (321=4) in the FIX log.

```
8=FIXT.1.1^A9=447^A35=c^A34=96^A49=SenderCompID^A50=SenderSubID^A52=20170929-
08:24:31.579^A56=TargetCompID^A57=TargetSubID^A55=[N/A]^A320=DREQ11^A321=4^A1184=33
1^A1185={

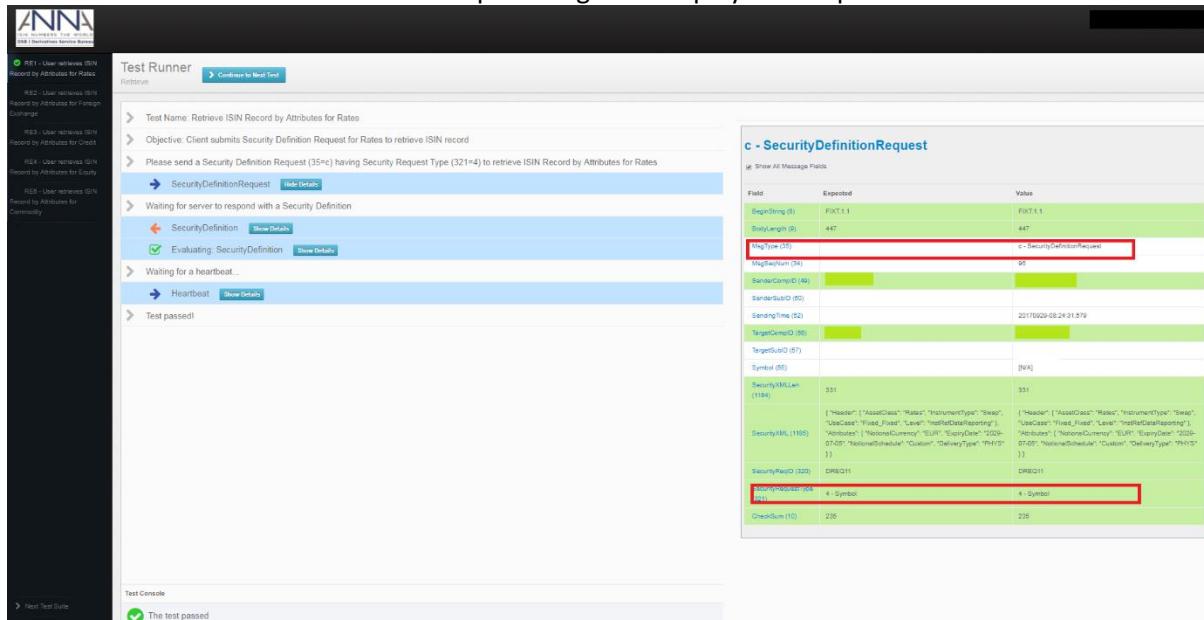
  "Header": {
```

```

    "AssetClass": "Rates",
    "InstrumentType": "Swap",
    "UseCase": "Fixed_Fixed",
    "Level": "InstRefDataReporting"
  },
  "Attributes": {
    "NotionalCurrency": "EUR",
    "ExpiryDate": "2029-07-05",
    "NotionalSchedule": "Custom",
    "DeliveryType": "PHYS"
  }
}
} ^A10=235^A

```

The FIX Conductor will check for the required tags and display the output of the test case.



The screenshot shows the FIX Conductor Test Runner interface. On the left, a sidebar lists several test cases: R11 - User retrieves ISIN Record by Attributes for Rates, R12 - User retrieves ISIN Record by Attributes for Swap, R13 - User retrieves ISIN Record by Attributes for Credit, R14 - User retrieves ISIN Record by Attributes for Equity, and R15 - User retrieves ISIN Record by Attributes for Commodity. The main area displays the results for the R11 test case. The 'Test Details' section shows the test name, objective, and a message history indicating a 'SecurityDefinitionRequest' was sent and a 'SecurityDefinition' was evaluated. The 'Test Result' section shows a green status bar with the message 'Test passed'. On the right, a detailed view of the 'c - SecurityDefinitionRequest' message is shown in a table format, comparing 'Expected' and 'Value' fields. The table includes columns for Field, Expected, and Value. Key entries include 'MsgType (35)' with 'Expected' as 'FIXT.1.1' and 'Value' as 'c - SecurityDefinitionRequest'. Other entries like 'SecurityXML (1185)' show a JSON payload representing the request message. A red box highlights the 'MsgType' row.

If the request is valid, Security Request Result will display 560=0 and the JSON payload is available in SecurityXML (1185) and it contains a valid ISIN identifier.

```

8=FIXT.1.1^A9=849^A35=d^A34=118^A49=TargetCompID^A50=TargetSubID^A52=20170929-
08:24:31.358^A56=SenderCompID^A57=SenderSubID^A22=4^A48=EZVM8R4T037^A55=[N/A] ^A60=
20170929-08:24:31.358^A320=DREQ11^A560=0^A1184=679

```

```

^A1185={"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Fixed_Fixed","Level":"InstRefDataReporting"},"Attributes":{"NotionalCurrency":"EUR","ExpiryDate":"2029-07-05","NotionalSchedule": "Custom", "DeliveryType": "PHYS", "PriceMultiplier": 1}, "ISIN": {"ISIN": "EZVM8R4T037", "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2017-09-29T06:51:01"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "FALSE", "UnderlyingAssetType": "Fixed - Fixed", "SingleorMultiCurrency": "Single Currency", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Rates Swap Fixed_Fixed EUR 20290705", "ShortName": "NA/Swap Fxd Fxd EUR 20290705", "ClassificationType": "SRDYSPP"} }^A1938=1^A10=217^A

```

In case JSON payload is available in SecurityXML (1185) yet the ISIN identifier is empty, the Security Request Result will display 560=2 which is no instruments found that match the selection criteria. Other attributes like the CFI and FISN are populated.

```

8=FIX.4.4^A9=835^A35=d^A34=233^A49=TargetCompID^A50=TargetSubID^A52=20170831-
09:46:05.299^A56=SenderCompID^A57=SenderSubID^A55=[N/A]^A60=20170831-
09:46:05.299^A320=DREQ13^A560=2^A1184=687^A1185={"Header": {"AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2389-07-22", "NotionalSchedule": "Accreting", "PriceMultiplier": 17057482.674599454, "DeliveryType": "PHYS"}, "ISIN": {"ISIN": ""}, "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2017-08-31T09:46:05"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "FALSE", "UnderlyingAssetType": "Fixed_Fixed", "SingleorMultiCurrency": "Single", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Rates Swap Fixed_Fixed EUR 23890722", "ShortName": "NA/Swap Fxd Fxd EUR 23890722", "ClassificationType": "SRDISP"} }^A1938=1^A10=015^A

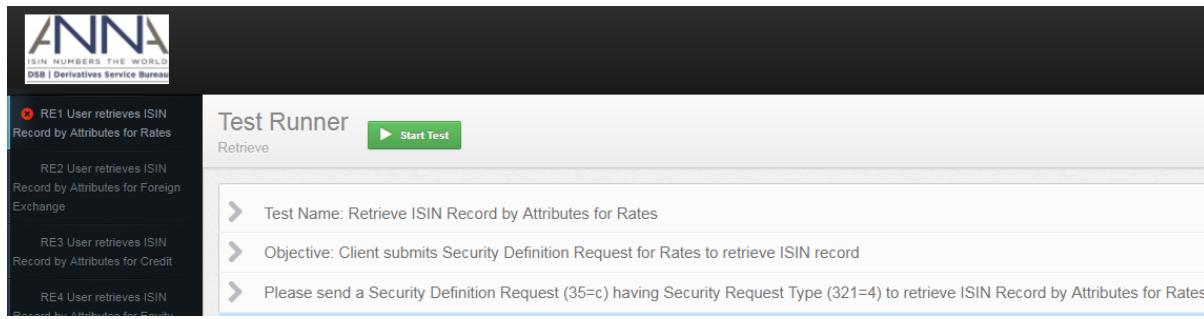
```

The FIX Conductor will display the details of the Security Definition (35=d) message.

d - SecurityDefinition		
<input checked="" type="checkbox"/> Show All Message Fields		
Field	Expected	Value
BeginString (8)	FIX.4.4	FIX.4.4
BodyLength (9)	835	835
MsgType (35)		d - SecurityDefinition
MsgSeqNum (34)		233
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170831-09:46:05.299
TargetCompID (56)		
TargetSubID (57)		
Symbol (55)		[N/A]
SecurityXMLLen (1184)		687
SecurityXML (1185)	<pre>{"Header": {"AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2389-07-22", "NotionalSchedule": "Accreting", "PriceMultiplier": 17057482.674599454, "DeliveryType": "PHYS"}, "ISIN": {"ISIN": ""}, "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2017-08-31T09:46:05"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "FALSE", "UnderlyingAssetType": "Fixed_Fixed", "SingleorMultiCurrency": "Single", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Rates Swap Fixed_Fixed EUR 23890722", "ShortName": "NA/Swap Fxd Fxd EUR 23890722", "ClassificationType": "SRDISP"} }</pre>	
AssetClass (1938)		1 - Interest Rate
TransactTime (60)		20170831-09:46:05.299
SecurityReqID (320)	DREQ13	DREQ13
SecurityRequestResult (560)	2 - NoInstrumentsFound	2 - NoInstrumentsFound

CASE 2: Test Failed

The test will fail if the client sends a Security Definition Request for a different asset class than the FIX Conductor is expecting or if there are missing tags.



The screenshot shows the ANNA Test Runner interface. On the left, there's a sidebar with several test cases listed:

- RE1 User retrieves ISIN Record by Attributes for Rates
- RE2 User retrieves ISIN Record by Attributes for Foreign Exchange
- RE3 User retrieves ISIN Record by Attributes for Credit
- RE4 User retrieves ISIN Record by Attributes for Equity

The main area is titled "Test Runner" and has a "Start Test" button. Below it, there's a "Retrieve" section with the following details:

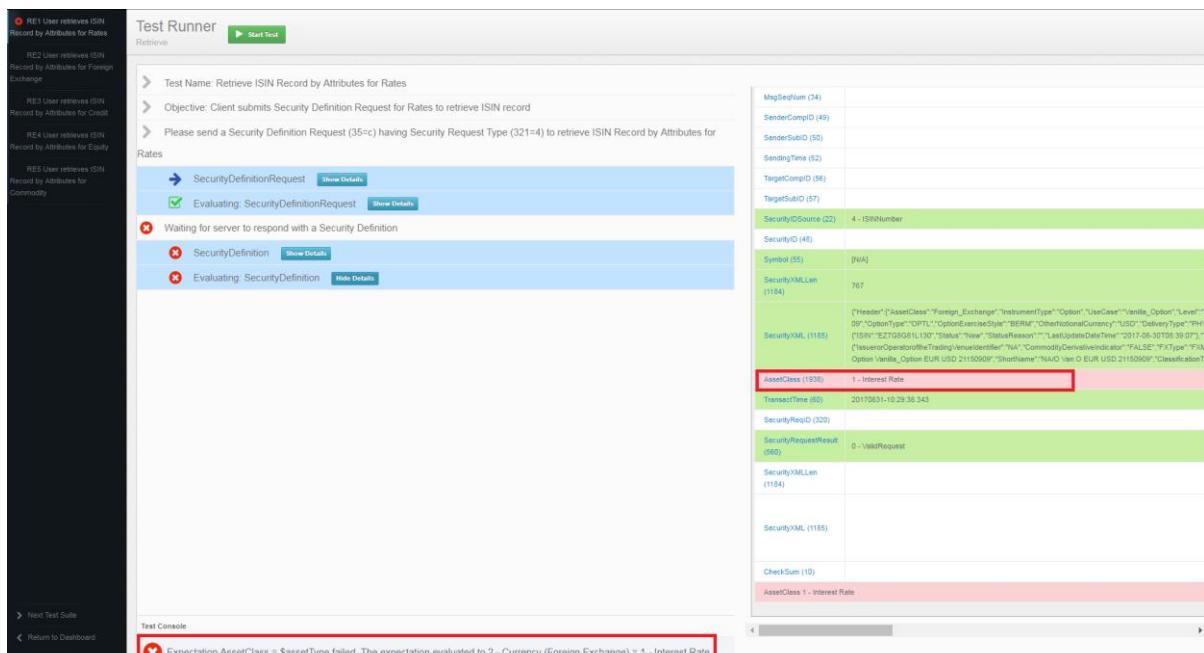
- Test Name: Retrieve ISIN Record by Attributes for Rates
- Objective: Client submits Security Definition Request for Rates to retrieve ISIN record
- Please send a Security Definition Request (35=c) having Security Request Type (321=4) to retrieve ISIN Record by Attributes for Rates

The following is a snapshot of the SecurityDefinitionRequest message (35=c) in the FIX log.

```
8=FIXT.1.1^A9=550^A35=c^A34=115^A49=SenderCompID^A50=SenderSubID^A52=20170929-
08:33:59.165^A56=TargetCompID^A57=TargetSubID^A55=[N/A]^A320=DREQ12^A321=4^A1184=43
3^A1185={

  "Header": {
    "AssetClass": "Foreign_Exchange",
    "InstrumentType": "Option",
    "UseCase": "Vanilla_Option",
    "Level": "InstRefDataReporting"
  },
  "Attributes": {
    "NotionalCurrency": "EUR",
    "ExpiryDate": "2025-05-12",
    "OptionType": "PUTO",
    "OptionExerciseStyle": "BERM",
    "OtherNotionalCurrency": "USD",
    "PriceMultiplier": 11785344.157333411
  }
}^A10=233^A
```

Asset Type failed due to asset class mismatch. The FIX Conductor was expecting for Rates but SecurityDefinitionRequest (35=c) for Foreign Exchange was sent.



The screenshot shows the ANNA Test Runner interface during a test run. The sidebar and main test details are identical to the previous screenshot. However, the status bar at the bottom indicates a failure:

Expectation AssetClass = \$assetType failed. The expectation evaluated to 2 - Currency (Foreign Exchange) = 1 - Interest Rate

The right side of the screen displays the FIX message log and results table. The results table shows the following rows:

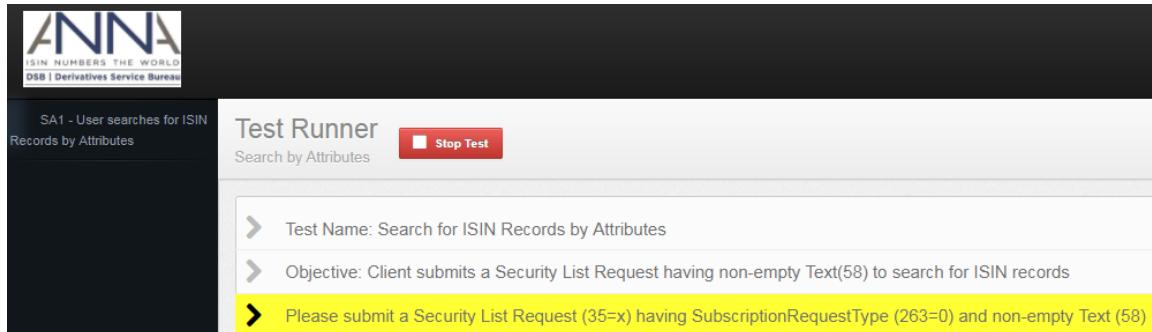
MsgSeqNum (14)	
SenderCompID (49)	
SenderSubID (50)	
SendingTime (52)	
TargetCompID (56)	
TargetSubID (57)	
SecurityID (57)	4 - ISINumber
SecurityID (48)	
Symbol (55)	[N/A]
Security/MtLlen (1184)	767
SecurityXML (1168)	"Header": {"AssetClass": "Foreign_Exchange", "InstrumentType": "Option", "UseCase": "Vanilla_Option", "Level": "InstRefDataReporting"}, "SecurityDefinition": {"NotionalCurrency": "EUR", "ExpiryDate": "2025-05-12", "OptionType": "PUTO", "OptionExerciseStyle": "BERM", "OtherNotionalCurrency": "USD", "DeliveryType": "FVH"}, "SecurityRequest": {"StatusReason": "New", "LastUpdateDate": "2017-09-30 07:17:00", "IssuerOperationalTradingIdentifier": "NA", "CommodityDerivativeIndicator": "FALSE", "FRTyp": "F", "AssetClass": "Interest Rate", "SecurityType": "InterestRate", "SecuritySubType": "InterestRate", "SecurityID": "4", "Symbol": "[N/A]", "SecurityXML": "MTLLEN:767", "SecurityRequestResult": "0 - ValidRequest", "SecurityRequestID": "560", "SecurityRequestTime": "20170930-10:29:30.342", "SecurityRequestType": "DREQ", "SecurityRequestStatus": "0 - ValidRequest", "SecurityRequestStatusReason": "New", "SecurityRequestLastUpdateDate": "2017-09-30 07:17:00", "SecurityRequestIssuerOperationalTradingIdentifier": "NA", "SecurityRequestCommodityDerivativeIndicator": "FALSE", "SecurityRequestFRTyp": "F", "SecurityRequestAssetClass": "Interest Rate", "SecurityRequestSecurityType": "InterestRate", "SecurityRequestSecuritySubType": "InterestRate", "SecurityRequestSecurityID": "560", "SecurityRequestSymbol": "[N/A]", "SecurityRequestSecurityXML": "MTLLEN:1168"}}, "CheckSum (10)
AssetClass (1930)	1 - Interest Rate
TransactionTime (62)	20170930-10:29:30.342
SecurityReqID (202)	
SecurityRequestResult (560)	0 - ValidRequest
SecurityMtLlen (1184)	
SecurityXML (1168)	
Checksum (10)	
AssetClass 1 - Interest Rate	

3.3.6 Search by Attributes

The client can search ISIN records by attributes that match the supplied criteria that is provided in the Text(58) tag.

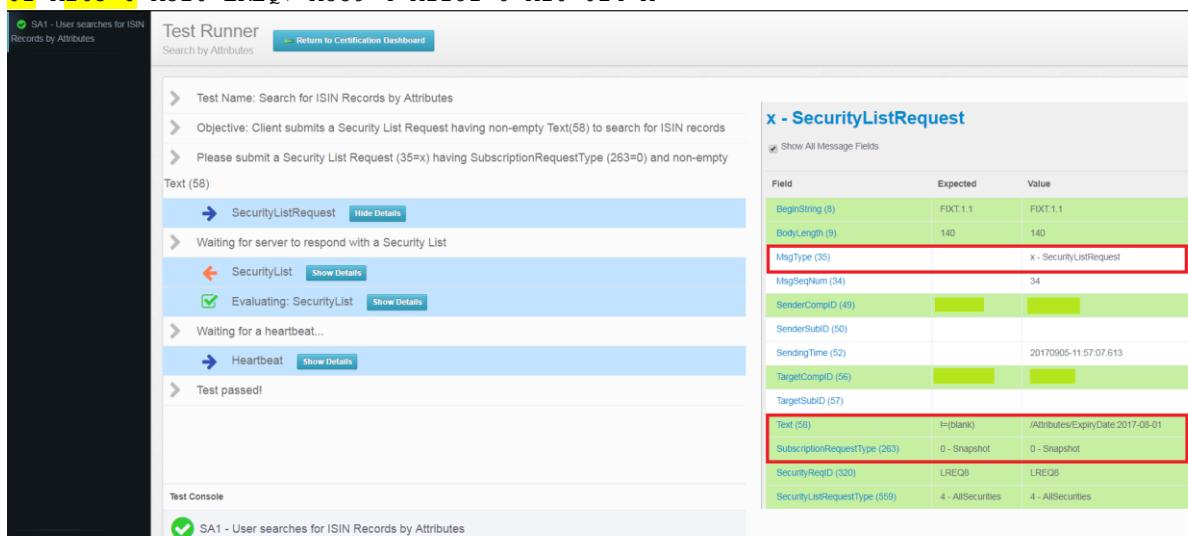
CASE 1: Test Passed

The FIX Conductor will request client to submit a Security List Request (35=x) having Subscription Request Type (263=0) and non-empty Text (58).



The following is a sample of a SecurityListRequest message (35=x) having SubscriptionRequestType (263=0) and non-empty Text (58).

```
8=FIXT.1.1^A9=140^A35=x^A34=23^A49=SenderCompID^A50=SenderSubID^A52=20170905-
11:52:05.415^A56=TargetCompID^A57=TargetSubID^A58=/Attributes/ExpiryDate:2017-08-
01^A263=0^A320=LREQ7^A559=4^A1181=0^A10=024^A
```



Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	140	140
MsgType (35)	x - SecurityListRequest	
MsgSeqNum (34)	34	
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)	20170905-11:57:07.613	
TargetCompID (56)		
TargetSubID (57)		
Text (58)	=blank	/Attributes/ExpiryDate:2017-08-01
SubscriptionRequestType (263)	0 - Snapshot	0 - Snapshot
SecurityReqID (320)	LREQ0	LREQ0
SecurityListRequestType (559)	4 - AllSecurities	4 - AllSecurities

The following is a sample of a SecurityList message (35=y). A valid response contains

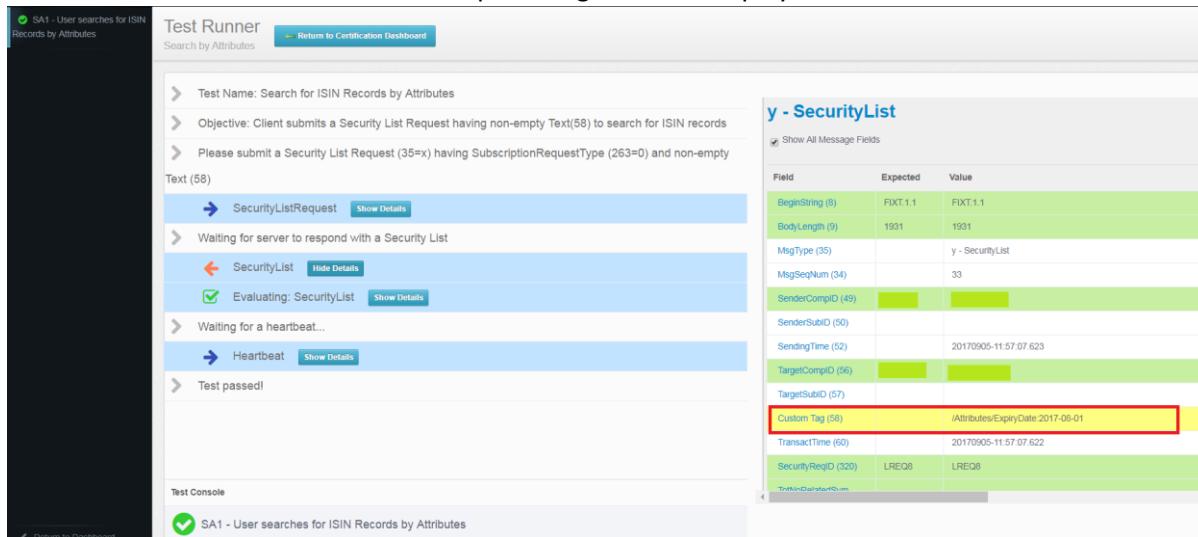
- SecurityRequestResults(560)=Valid Request(0)
- TotNoRelatedSym(393): The total number of ISIN records that matches the search criteria
- NoRelatedSym(146): The number of ISIN records in this message
- ApplSeqNum(1181): as supplied by the user

```
8=FIXT.1.1^A9=1931^A35=y^A34=22^A49=TargetCompID^A50=TargetSubID^A52=20170905-
11:52:05.397^A56=SenderCompID^A57=SenderSubID^A58=/Attributes/ExpiryDate:2017-08-
01^A60=20170905-11:52:05.396^A320=LREQ7^A393=2^A560=0
```

```

^A1181=0^A146=2^A55=[N/A]^A48=EZ84H1HTRFT4^A22=4^A1938=5^A1184=892^A1185={"Header": {"AssetClass": "Commodities", "InstrumentType": "Forward", "UseCase": "Forward", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2017-08-01", "ReturnorPayoutTrigger": "Contract for Difference (CFD)", "DeliveryType": "CASH", "BaseProduct": "AGRI", "TransactionType": "FUTR", "FinalPriceType": "ARGM", "ReferenceRate": "A Fuel oil 0.1% waterborne spot Tokyo bay rim intelligence products", "PriceMultiplier": 1, "SubProduct": "GROS", "AdditionalSubProduct": "FWHT"}, "ISIN": {"ISIN": "EZ84H1HTRFT4", "Status": "Expired", "StatusReason": "", "LastUpdateDateTime": "2017-09-05T11:51:28"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "TRUE", "UnderlyingAssetType": "Agriculture", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Commodities Forward AGRI GROS FWHT EUR 20170801", "ShortName": "NA/Fwd AGRI FWHT EUR 20170801", "ClassificationType": "JTAXCC"} }^A55=[N/A]^A48=EZ3B46BRHK59^A22=4^A1938=3^A1184=764^A1185={"Header": {"AssetClass": "Credit", "InstrumentType": "Option", "UseCase": "Index_Swaption", "Level": "InstRefDataReporting"}, "Attributes": {"NotionalCurrency": "EUR", "ExpiryDate": "2017-08-01", "UnderlyingInstrumentISIN": "Ezb495ZWSFD3", "OptionType": "CALL", "OptionExerciseStyle": "AMER", "ValuationMethodorTrigger": "Vanilla", "UnderlyingAssetType": "CDS on Index", "DeliveryType": "CASH", "PriceMultiplier": 1, "ISIN": {"ISIN": "EZ3B46BRHK59", "Status": "Expired", "StatusReason": "", "LastUpdateDateTime": "2017-09-05T11:52:00"}, "TemplateVersion": 1, "Derived": {"CommodityDerivativeIndicator": "FALSE", "IssuerorOperatoroftheTradingVenueIdentifier": "NA", "FullName": "Credit Option Index_Swaption Ezb495ZWSFD3 EUR 20170801", "ShortName": "NA/CDS Iidx Swt EUR 20170801", "ClassificationType": "HCIBVC"} }^A10=253^A
  
```

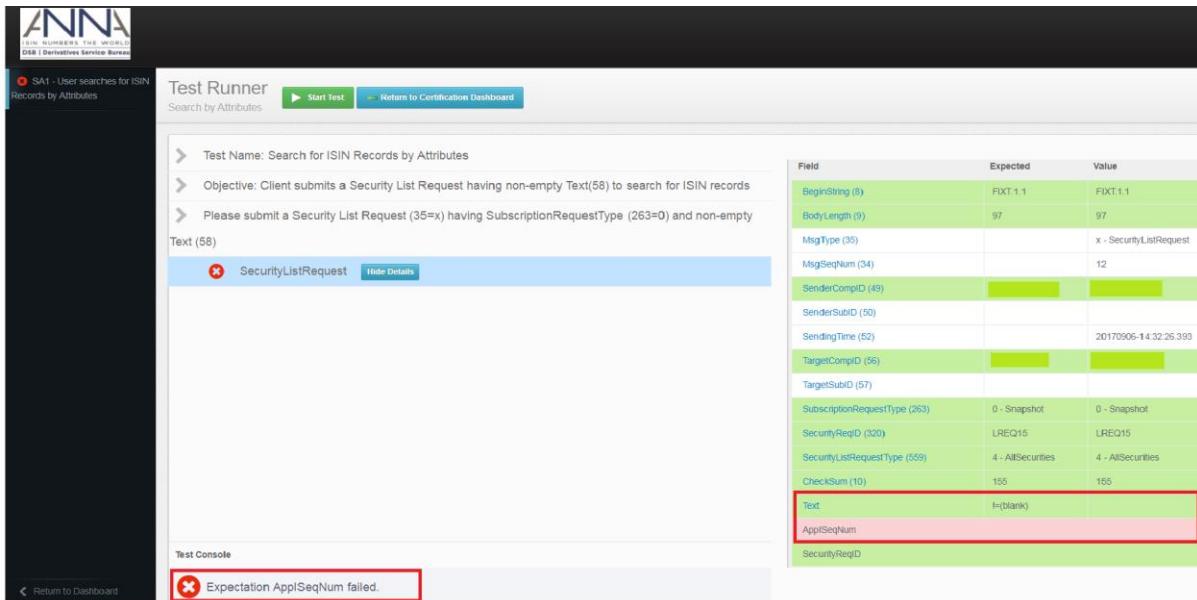
The FIX Conductor will check for the required tags and will display the result of the test case.



Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	1931	1931
MsgType (35)		y - SecurityList
MsgSeqNum (34)		33
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170905-11:57:07.623
TargetCompID (56)		
TargetSubID (57)		
Custom Tag (58)		Attributes/ExpiryDate 2017-08-01
TransactTime (60)		20170905-11:57:07.622
SecurityReqID (320)	LREQ8	LREQ8
Timestamp (59)		

CASE 2: Test Failed

If the Client sends SecurityListRequest message (35=x) having SubscriptionRequestType (263=0) but there are missing tags, then the test will fail.



The screenshot shows the ANNA Test Runner interface. At the top, there's a navigation bar with the ANNA logo, a search bar, and buttons for "Start Test" and "Return to Certification Dashboard". Below this, a list of test steps is shown:

- > Test Name: Search for ISIN Records by Attributes
- > Objective: Client submits a Security List Request having non-empty Text(58) to search for ISIN records
- > Please submit a Security List Request (35=x) having SubscriptionRequestType (263=0) and non-empty Text (58)

In the main area, there's a "SecurityListRequest" section with a "Hide Details" button. To the right is a table of test parameters:

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	97	97
MsgType (35)	x - SecurityListRequest	
MsgSeqNum (34)		12
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170906-14:32:26.393
TargetCompID (56)		
TargetSubID (57)		
SubscriptionRequestType (263)	0 - Snapshot	0 - Snapshot
SecurityReqID (320)	LREQ15	LREQ15
SecurityListRequestType (559)	4 - AllSecurities	4 - AllSecurities
Checksum (10)	155	155
Text	!=blank	
ApplSeqNum		
SecurityReqID		

At the bottom left, there's a "Test Console" section with a red-bordered error message: "Expectation ApplSeqNum failed." A "Return to Dashboard" link is at the bottom left.

The following is a sample of a SecurityListRequest message (35=x) having SubscriptionRequestType (263=0) with incomplete tags.

```
8=FIXT.1.1^A9=97^A35=x^A34=12^A49=SenderCompID^A50=SenderSubID^A52=20170906-
14:32:26.393^A56=TargetCompID^A57=TargetSubID^A263=0^A320=LREQ15^A559=4^A10=155^A
```

The FIX Conductor is expecting for non-empty Text(58) and ApplSeqNum(1181).

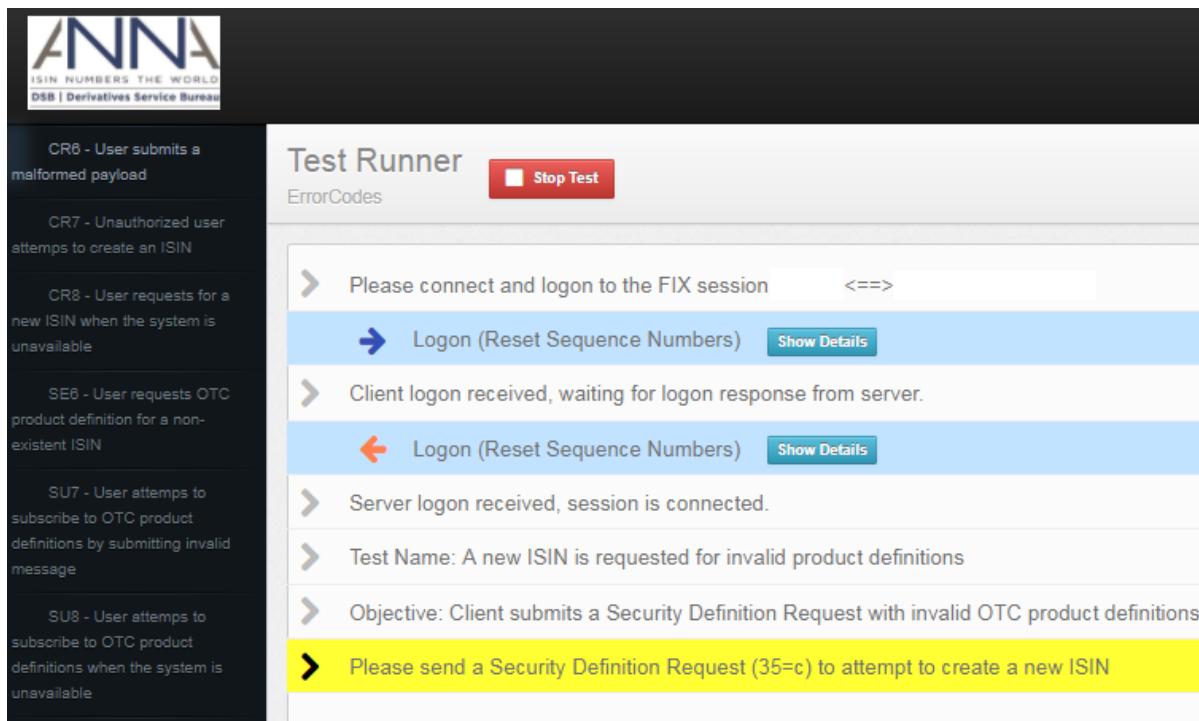
3.3.7 Error Codes

Client needs to connect on Simulated mode to test the output of the error codes.

CR6 - User submits a malformed payload

Objective: Client submits a Security Definition Request with invalid OTC product definitions

In this case, client needs to submit an invalid OTC product definition.



Test Runner

>ErrorCodes

Stop Test

- CR6 - User submits a malformed payload
- CR7 - Unauthorized user attempts to create an ISIN
- CR8 - User requests for a new ISIN when the system is unavailable
- SE6 - User requests OTC product definition for a non-existent ISIN
- SU7 - User attempts to subscribe to OTC product definitions by submitting invalid message
- SU8 - User attempts to subscribe to OTC product definitions when the system is unavailable

Please connect and logon to the FIX session <=>

Logon (Reset Sequence Numbers) Show Details

Client logon received, waiting for logon response from server.

Logon (Reset Sequence Numbers) Show Details

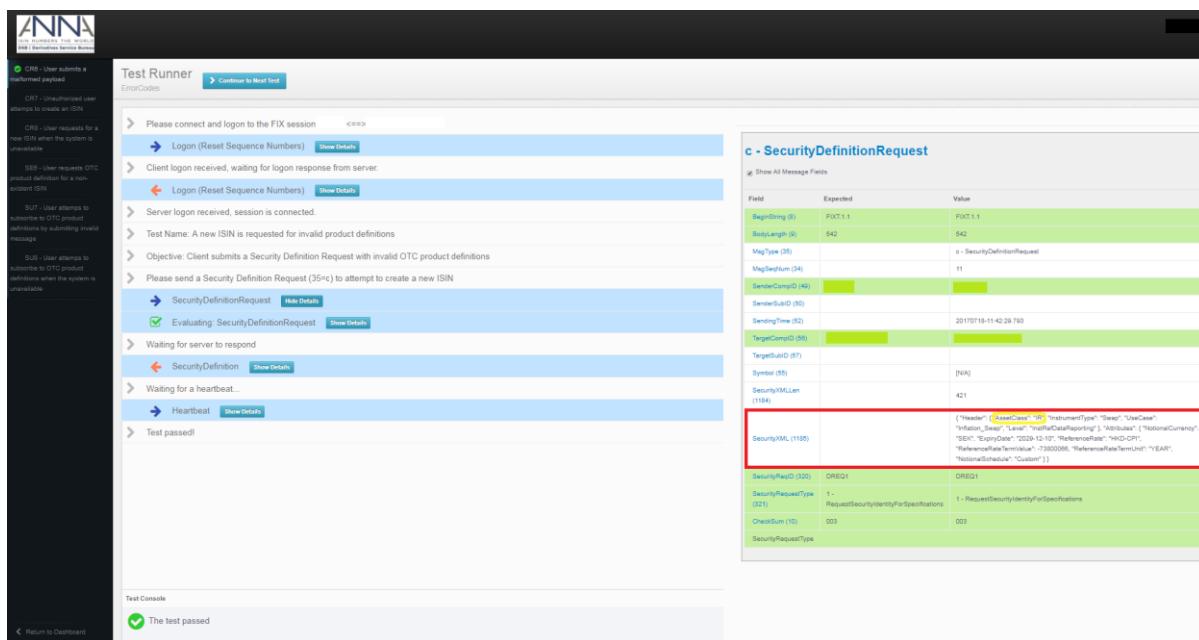
Server logon received, session is connected.

Test Name: A new ISIN is requested for invalid product definitions

Objective: Client submits a Security Definition Request with invalid OTC product definitions

Please send a Security Definition Request (35=c) to attempt to create a new ISIN

The following is a snapshot of Security Definition Request with invalid asset class.



Test Runner Continue to Next Test

ErrorCodes

Please connect and logon to the FIX session <=>

Logon (Reset Sequence Numbers) Show Details

Client logon received, waiting for logon response from server.

Logon (Reset Sequence Numbers) Show Details

Server logon received, session is connected.

Test Name: A new ISIN is requested for invalid product definitions

Objective: Client submits a Security Definition Request with invalid OTC product definitions

Please send a Security Definition Request (35=c) to attempt to create a new ISIN

SecurityDefinitionRequest Show Details

Evaluating: SecurityDefinitionRequest Show Details

Waiting for server to respond

SecurityDefinition Show Details

Waiting for a heartbeat...

Heartbeat Show Details

Test passed

c - SecurityDefinitionRequest

Show All Message Fields

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (4)	642	642
MsgType (5)		x - SecurityDefinitionRequest
MsgSeqNum (34)		11
SenderCompID (46)		
SenderSubID (60)		
SendingTime (52)		20170718-11:42:29.793
TargetCompID (56)		
TargetSubID (57)		
Symbol (55)		(N/A)
SecurityXMLLen (114)		421
SecurityXML (1185)	<pre>[{"Header": {"AssetClass": "IR", "InstrumentType": "Barer", "Side": "Buy"}, "Instruction": "Buy", "Level": "InvestmentReporting", "MinUnits": 1, "NationalCurrency": "SEK", "ExpiryDate": "2020-12-10", "ReferencePrice": "140-CPI", "ReferenceRateTermValue": "23002086", "ReferenceRateTermUnit": "YEAR", "NotionalValue": "Customer"}]</pre>	
SecurityReqID (320)	DREQ1	DREQ1
SecurityRequestType (321)	1 - RequestSecurityIdentityForSpecifications	1 - RequestSecurityIdentityForSpecifications
Checksum (10)	003	003
SecurityRequestType		

Test Console

The test passed

Security Request Result (560) shows Invalid or Unsupported Request due to invalid asset class "IR".

d - SecurityDefinition

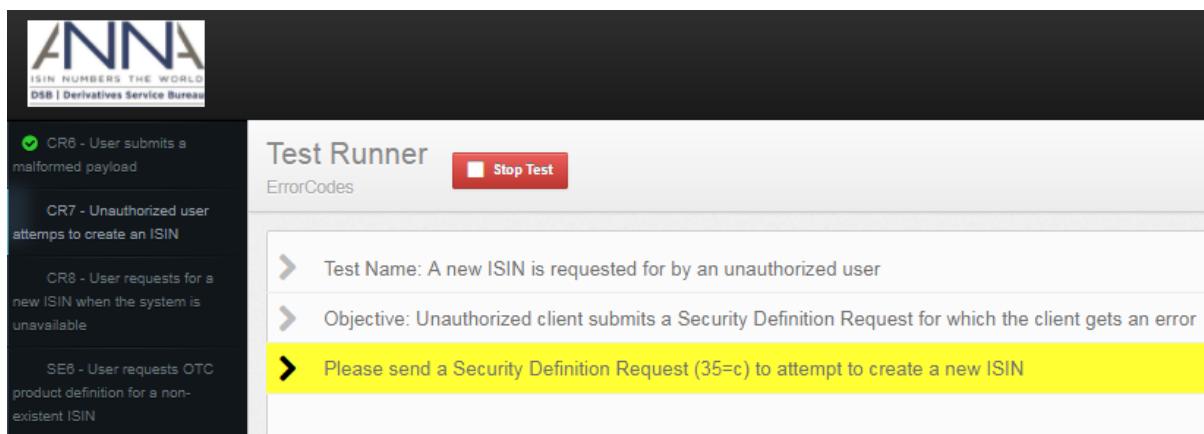
Show All Message Fields

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	133
MsgType (35)	d - SecurityDefinition
SenderComplID (49)	
TargetComplID (56)	
MsgSeqNum (34)	126
SendingTime (52)	20170718-12:37:24.264
SecurityReqID (320)	DREQ7
Text (58)	Error parsing json data inside security XML.
SecurityRequestResult (560)	1 - InvalidOrUnsupportedRequest
CheckSum (10)	172

CR7 - Unauthorized user attempts to create an ISIN

Objective: Unauthorized client submits a Security Definition Request for which the client gets an error

Client creates a new ISIN but is not authorized to submit a Security Definition Request.



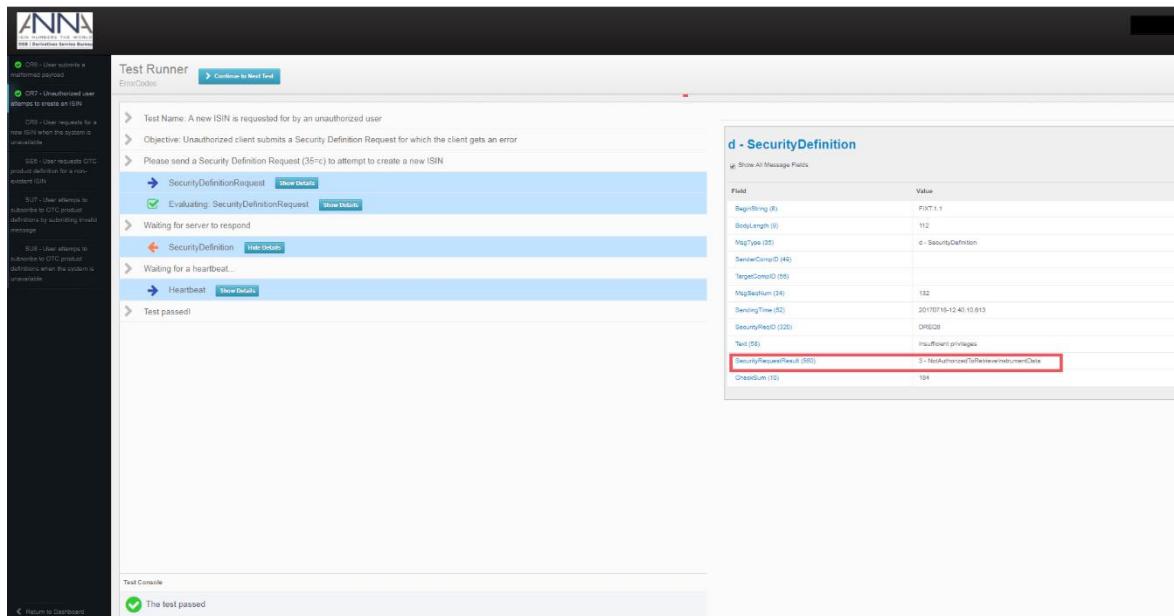
The screenshot shows the ANNA Test Runner interface. On the left, there is a sidebar with a list of test cases:

- CR6 - User submits a malformed payload
- CR7 - Unauthorized user attempts to create an ISIN
- CR8 - User requests for a new ISIN when the system is unavailable
- SE6 - User requests OTC product definition for a non-existent ISIN

The main area is titled "Test Runner" and contains the following information:

- A red "Stop Test" button.
- An "ErrorCodes" section.
- A list of test steps:
 - > Test Name: A new ISIN is requested for by an unauthorized user
 - > Objective: Unauthorized client submits a Security Definition Request for which the client gets an error
 - > Please send a Security Definition Request (35=c) to attempt to create a new ISIN

Security Request Result (560) shows that the client is not authorized to retrieve Instrument Data.



The screenshot shows the ANNA Test Runner interface. On the left, there's a sidebar with various message types and their descriptions. The main panel shows a test runner log with several steps: 'Test Name: A new ISIN is requested for by an unauthorized user', 'Objective: Unauthorized client submits a Security Definition Request for which the client gets an error', 'Please send a Security Definition Request (35-c) to attempt to create a new ISIN', 'SecurityDefinitionRequest' (status: Show Details), 'Evaluating: SecurityDefinitionRequest' (status: Show Details), 'Waiting for server to respond...', 'SecurityDefinition' (status: Show Details), 'Waiting for a heartbeat...', 'Heartbeat' (status: Show Details), and 'Test passed!'. Below the log is a 'Task Console' section with a green checkmark and the message 'The test passed'. On the right, there's a detailed view of a 'd - SecurityDefinition' message with various fields and their values.

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	112
MsgType (35)	d - SecurityDefinition
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	37
SendingTime (52)	20170718-11:55:00.758
SecurityReqID (320)	DREQ2
Text (58)	Insufficient privileges
SecurityRequestResult (560)	3 - NotAuthorizedToRetrieveInstrumentData
Checksum (10)	104

Information of the Security Request Result(560) is available in Text(58) attribute.

d - SecurityDefinition

Show All Message Fields

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	111
MsgType (35)	d - SecurityDefinition
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	37
SendingTime (52)	20170718-11:55:00.758
SecurityReqID (320)	DREQ2
Text (58)	Insufficient privileges
SecurityRequestResult (560)	3 - NotAuthorizedToRetrieveInstrumentData
Checksum (10)	147

CR8 - User requests for a new ISIN when the system is unavailable

Objective: Client submits a Security Definition Request when the system is unavailable for which the client gets an error

Client sends a request for an ISIN assuming the system is unavailable.



Test Runner

CR6 - User submits a malformed payload

CR7 - Unauthorized user attempts to create an ISIN

CR8 - User requests a new ISIN when the system is unavailable

SE6 - User requests OTC product definition for a non-existent ISIN

Stop Test

- Test Name: A new ISIN is requested for when the system is unavailable
- Objective: Client submits a Security Definition Request when the system is unavailable for which the client gets an error
- Please send a Security Definition Request (35=c) to attempt to create a new ISIN

Security Request Result (560) shows that the Instrument data temporarily unavailable (4).

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CRS - User submits a new ISIN

CRT - Unauthorized user attempts to create a new ISIN

CRS - User requests for a new ISIN when the system is unavailable

BUT - User requests GTC product definition for a non-existent ISIN

BUT - User attempts to subscribe to GTC product definitions by submitting invalid message

BUT - User attempts to subscribe to GTC product definitions when the system is unavailable

Test Runner [Continue to Most Test](#)

Test Name: A new ISIN is requested when the system is unavailable

Objective: Client submits a Security Definition Request when the system is unavailable for which the client gets an error

Please send a Security Definition Request (35c*) to attempt to create a new ISIN

SecurityDefinitionRequest [Show Details](#)

Evaluating SecurityDefinitionRequest [Show Details](#)

Waiting for server to respond

SecurityDefinition [Hide Details](#)

Waiting for a heartbeat

Heartbeat [Show Details](#)

Test passed!

d - SecurityDefinition

Show All Message Fields

Field	Value
Requesting (8)	PVCT.1.1
BodyLength (4)	94
MsgType (8)	d - SecurityDefinition
SenderCompID (48)	
TargetCompID (59)	
MsgSeqNum (34)	57
SendingTime (62)	20170718-12:04:34.970
SecurityReqID (32)	DREQ1
SecurityRequestResult (50)	4 - InstrumentDataTemporarilyUnavailable
Checksum (16)	130

Test Console

The test passed

d - SecurityDefinition

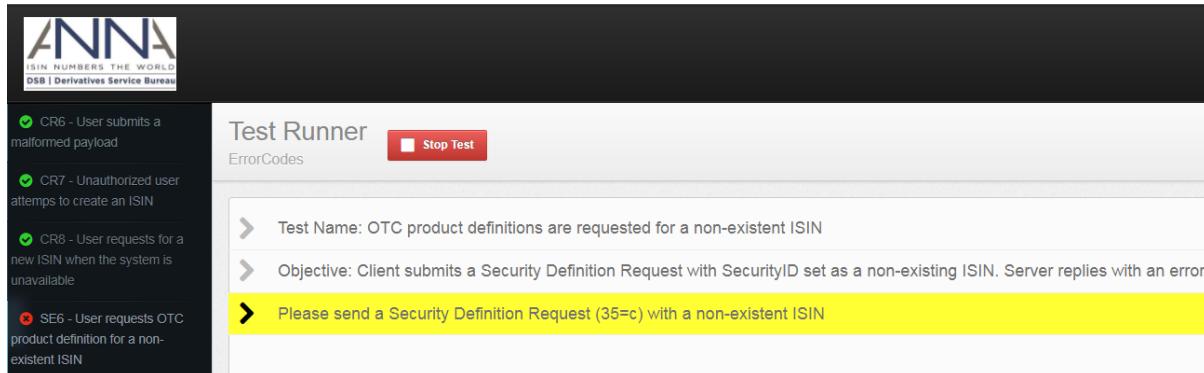
Show All Message Fields

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	85
MsgType (35)	d - SecurityDefinition
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	143
SendingTime (52)	20170718-12:45:24.439
SecurityReqID (320)	DREQ9
SecurityRequestResult (560)	4 - InstrumentDataTemporarilyUnavailable
CheckSum (10)	185

SE6 - User requests OTC product definition for a non-existent ISIN

Objective: Client submits a Security Definition Request with SecurityID set as a non-existing ISIN.

Client sends an invalid (non-existing) ISIN.



The screenshot shows the ANNA Test Runner interface. On the left, there is a sidebar with a list of error codes:

- CR6 - User submits a malformed payload
- CR7 - Unauthorized user attempts to create an ISIN
- CR8 - User requests for a new ISIN when the system is unavailable
- SE6 - User requests OTC product definition for a non-existent ISIN

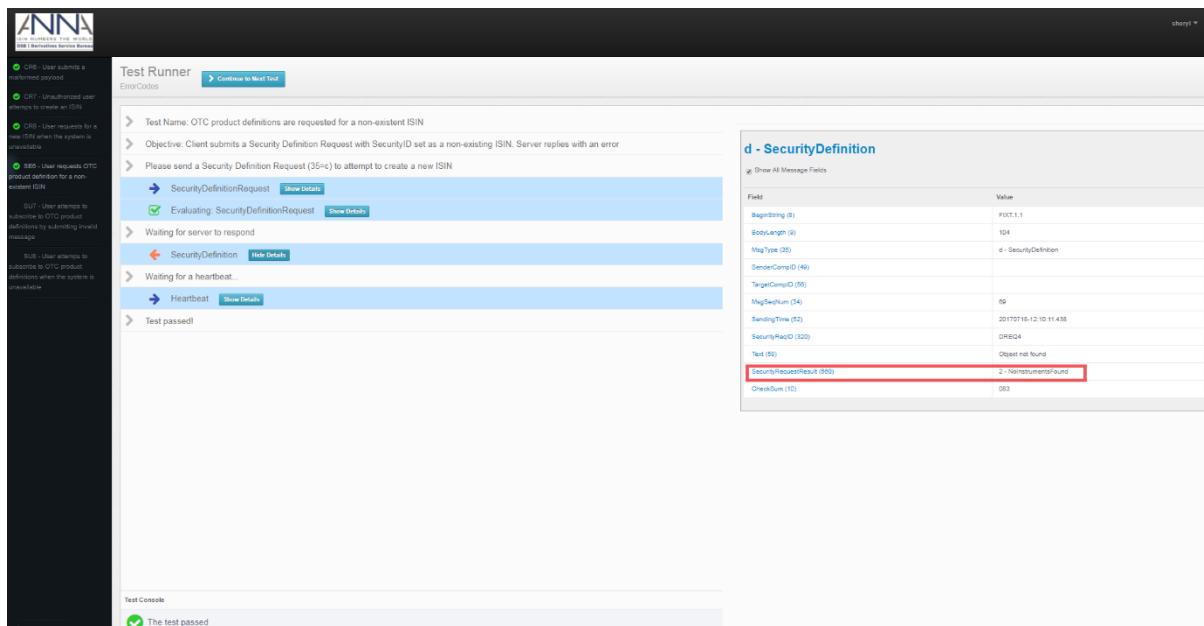
The main area displays the test case details:

Test Name: OTC product definitions are requested for a non-existent ISIN

Objective: Client submits a Security Definition Request with SecurityID set as a non-existing ISIN. Server replies with an error

Please send a Security Definition Request (35=c) with a non-existent ISIN

Security Request Result (560) shows No Instrument Found (2) due to non-existing ISIN.



The screenshot shows the ANNA Test Runner interface with the following details:

Test Runner (sheryl) ➔ Continue to Next Test

Error Codes

Test Log (partial):

- CR6 - User submits a malformed payload
- CR7 - Unauthorized user attempts to create an ISIN
- CR8 - User requests for a new ISIN when the system is unavailable
- SE6 - User requests OTC product definition for a non-existent ISIN
- SUT - User attempts to subscribe to OTC product definitions by submitting invalid message
- SUT - User attempts to subscribe to OTC product definitions when the system is unavailable

d - SecurityDefinition

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	104
MsgType (35)	d - SecurityDefinition
SenderCompID (49)	
TargetCompID (59)	
MsgSeqNum (34)	59
SendTime (52)	20170718-12:10:11.438
SecurityReqID (320)	0RE04
Text (58)	Object not found
SecurityRequestResult (560)	2 - NonInstrumentFound
Checksum (10)	093

Test Console

✓ The test passed

Information of the Security Request Result(560) is available in Text(58) attribute.

d - SecurityDefinition

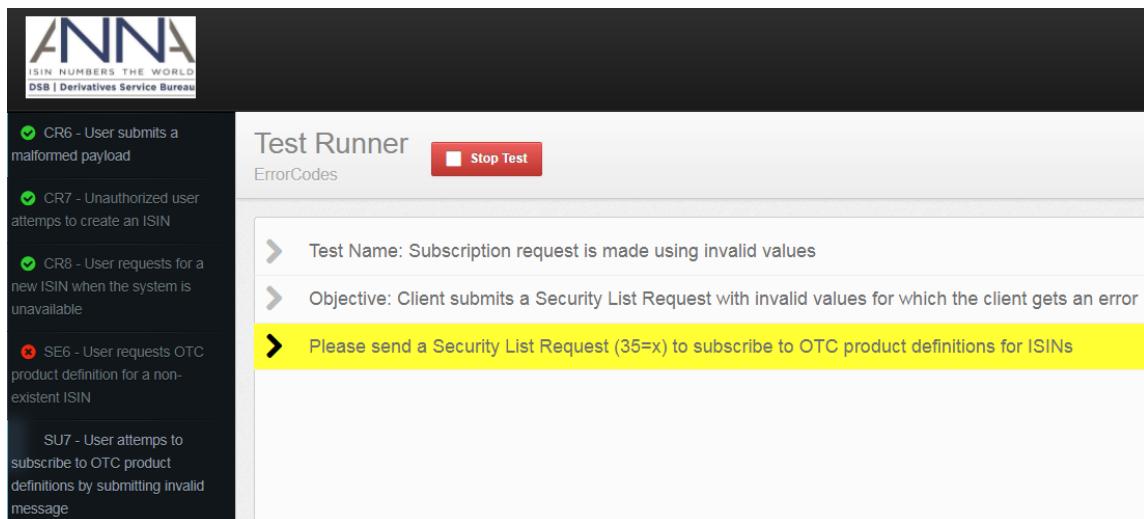
Show All Message Fields

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	106
MsgType (35)	d - SecurityDefinition
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	150
SendingTime (52)	20170718-12:48:28.189
SecurityReqID (320)	DREQ10
Text (58)	Object not found
SecurityRequestResult (560)	2 - NoInstrumentsFound
CheckSum (10)	191

SU7 - User attempts to subscribe to OTC product definitions by submitting invalid message

Objective: Client submits a Security List Request with invalid values for which the client gets an error

Client can send any Security List Request to test this error code.



The screenshot shows the ANNA Test Runner interface. On the left, a sidebar lists several test cases with checkboxes:

- CR6 - User submits a malformed payload (checked)
- CR7 - Unauthorized user attempts to create an ISIN (checked)
- CR8 - User requests for a new ISIN when the system is unavailable (checked)
- SE6 - User requests OTC product definition for a non-existent ISIN (unchecked)
- SU7 - User attempts to subscribe to OTC product definitions by submitting invalid message (checked)

The main area is titled "Test Runner" and "ErrorCodes". It contains a "Stop Test" button and a list of test details:

- Test Name: Subscription request is made using invalid values
- Objective: Client submits a Security List Request with invalid values for which the client gets an error
- Please send a Security List Request (35=x) to subscribe to OTC product definitions for ISINs

Security Request Result (560) shows Invalid or Unsupported Request (1).

y - SecurityList

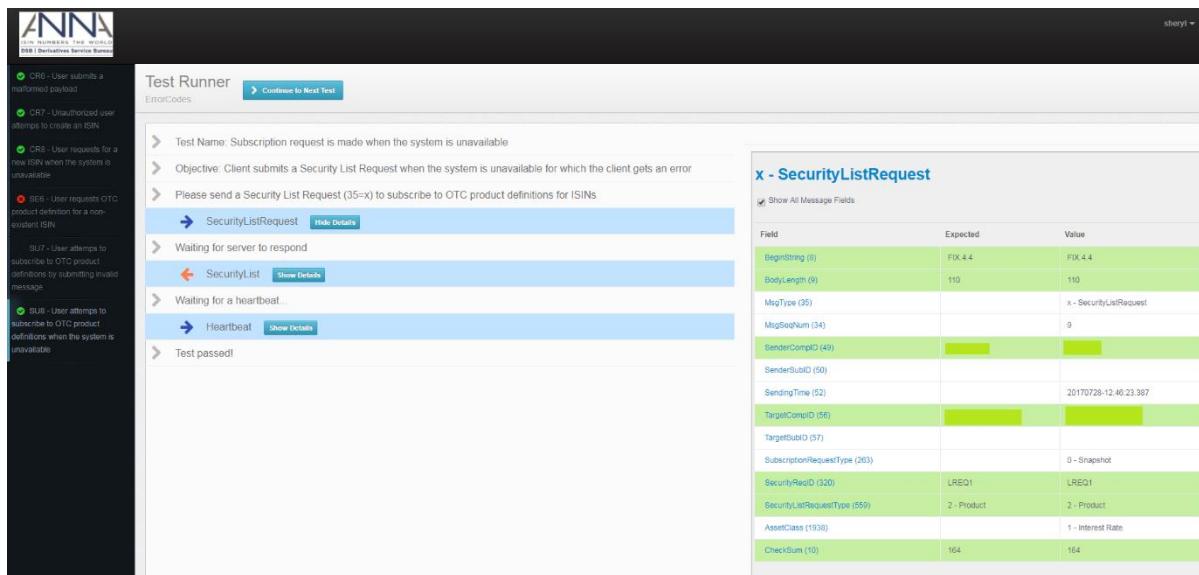
Show All Message Fields

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	84
MsgType (35)	y - SecurityList
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	81
SendingTime (52)	20170718-12:15:45.116
SecurityReqID (320)	LREQ5
SecurityRequestResult (580)	1 - InvalidOrUnsupportedRequest
CheckSum (10)	151

SU8 - User attempts to subscribe to OTC product definitions when the system is unavailable

Objective: Client submits a Security List Request when the system is unavailable for which the client gets an error

Client subscribes to any asset class to test this scenario.



The screenshot shows the ANNA Test Runner interface. On the left, a sidebar lists various test cases with their status (e.g., CR6 - User submits a malformed payload, CR7 - Unauthorized user attempts to create an ISIN, etc.). The main area is titled "Test Runner" and shows a single test named "Subscription request is made when the system is unavailable". The test details include:

- Test Name: Subscription request is made when the system is unavailable
- Objective: Client submits a Security List Request when the system is unavailable for which the client gets an error
- Description: Please send a Security List Request (35=x) to subscribe to OTC product definitions for ISINs
- Actions:
 - SecurityListRequest [Show Details]
 - Waiting for server to respond
 - ← SecurityList [Show Details]
 - Waiting for a heartbeat.
 - Heartbeat [Show Details]
 - Test passed!

To the right of the test details is a table titled "x - SecurityListRequest" showing the message fields and their values:

Field	Expected	Value
BeginString (8)	FIX.4.4	FIX.4.4
BodyLength (9)	110	110
MsgType (35)		x - SecurityListRequest
MsgSeqNum (34)		9
SenderCompID (49)		
TargetCompID (56)		
SendingTime (52)		20170728-12:46:23.387
SubscriptionRequestType (263)		0 - Snapshot
SecurityReqID (320)	LREQ1	LREQ1
SecurityListRequestType (559)	2 - Product	2 - Product
AssetClass (1938)		1 - Interest Rate
CheckSum (10)	164	164

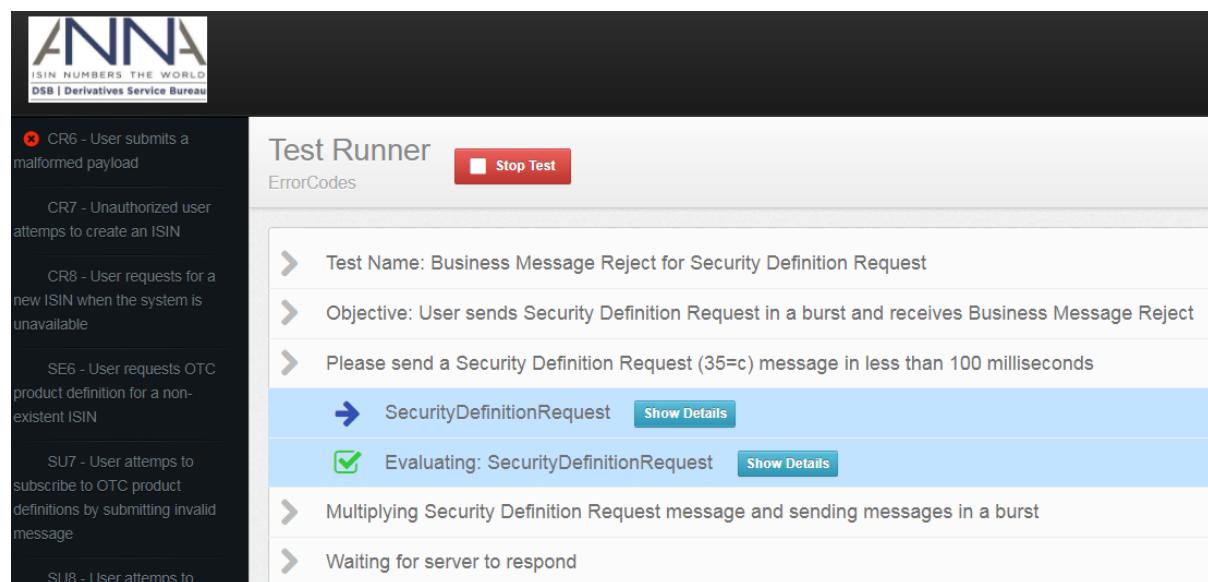
Security Request Result (560) shows Instrument Data Temporarily Unavailable (4).

y - SecurityList	
<input checked="" type="checkbox"/> Show All Message Fields	
Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	85
MsgType (35)	y - SecurityList
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	101
SendingTime (52)	20170718-12:25:21.557
SecurityReqID (320)	LREQ6
SecurityRequestResult (560)	4 - InstrumentDataTemporarilyUnavailable
CheckSum (10)	201

TH1 - User sends Security Definition Request in a burst and receives Business Message Reject

Objective: Client sends Security Definition Request in a burst and receives Business Message Reject

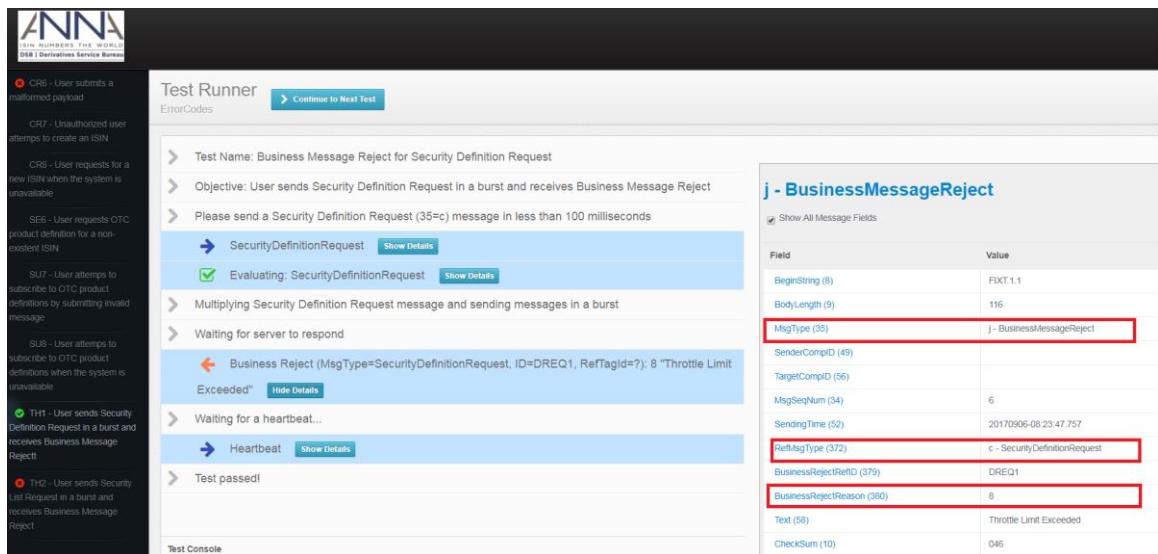
To simulate this test case, client will be requested to send a Security Definition Request message. This will be multiplied to several Security Definition Request messages and will be sent in a burst.



The Test Runner interface displays a list of test cases. On the left, a sidebar lists errors: CR6 (User submits a malformed payload), CR7 (Unauthorized user attempts to create an ISIN), CR8 (User requests a new ISIN when the system is unavailable), SE6 (User requests OTC product definition for a non-existent ISIN), SU7 (User attempts to subscribe to OTC product definitions by submitting invalid message), and SU8 (User attempts to). The main area shows the following test details:

- Test Name: Business Message Reject for Security Definition Request
- Objective: User sends Security Definition Request in a burst and receives Business Message Reject
- Please send a Security Definition Request (35=c) message in less than 100 milliseconds
- SecurityDefinitionRequest (Status: Evaluating, Details button shown)
- Multiplying Security Definition Request message and sending messages in a burst
- Waiting for server to respond

Client will receive BusinessMessageReject (35=j) having business MessageRejectReason (380) = Throttle Limit Exceeded (8) and RefMsgType (372) value = c.



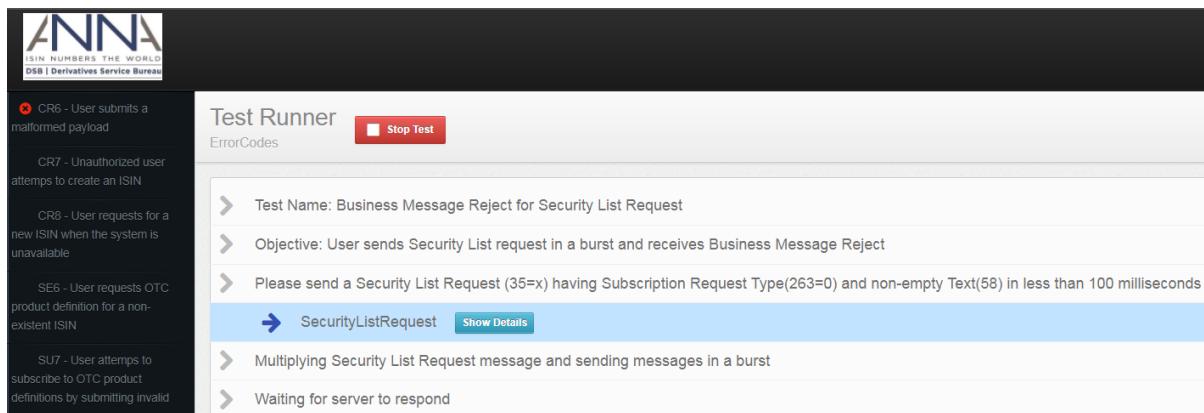
The screenshot shows the ANNA Test Runner interface. On the left, a sidebar lists error codes: CR6 (malformed payload), CR7 (Unauthorized user attempts to create an ISIN), CR8 (User requests for a new ISIN when the system is unavailable), SE6 (User requests OTC product definition for a non-existent ISIN), SU7 (User attempts to subscribe to OTC product definitions by submitting invalid message), TH1 (User sends Security Definition Request in a burst and receives Business Message Reject), and TH2 (User sends Security List Request in a burst and receives Business Message Reject). The main area shows a test named "Business Message Reject for Security Definition Request". The objective is "User sends Security Definition Request in a burst and receives Business Message Reject". The steps include sending a SecurityDefinitionRequest and receiving a Business Reject message. The test passed. To the right, a detailed view of the BusinessReject message is shown in a table:

Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	116
MsgType (35)	J - BusinessMessageReject
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	6
SendingTime (52)	20170906-08:23:47.757
RefMsgType (372)	c - SecurityDefinitionRequest
BusinessRejectRefID (379)	DREQ1
BusinessRejectReason (380)	8
Text (58)	Throttle Limit Exceeded
Checksum (10)	D46

TH2 - User sends Security List Request in a burst and receives Business Message Reject

Objective: Client sends Security List Request in a burst and receives Business Message Reject

To simulate this test case, client will be requested to send a Security List Request message. This will be multiplied to several Security List Request messages and will be sent in a burst.



The screenshot shows the ANNA Test Runner interface. The sidebar and test details are identical to the previous screenshot, but the test name is "Business Message Reject for Security List Request". The steps include sending a SecurityListRequest and receiving a Business Reject message. The test passed. The detailed message view is identical to the one above.

Client will receive BusinessMessageReject (35=j) having business MessageRejectReason (380) = Throttle Limit Exceeded (8) and RefMsgType (372) value = x.

Test Runner

Test Name: Business Message Reject for Security List Request

Objective: User sends Security List request in a burst and receives Business Message Reject

Please send a Security List Request (35=x) having Subscription Request Type(263=0) and non-empty Text(58) in less than 100 milliseconds

Text(58) in less than 100 milliseconds

BusinessListRequest

Multiplying Security List Request message and sending messages in a burst

Waiting for server to respond

Business Reject (MsgType=SecurityListRequest, ID=LREQ2, RefTagId=?): 8 "Throttle Limit Exceeded"

Waiting for a heartbeat...

Heartbeat

Test passed

Test Console

j - BusinessMessageReject

j - BusinessMessageReject	
<input checked="" type="checkbox"/> Show All Message Fields	
Field	Value
BeginString (8)	FXKT.1.1
BodyLength (9)	117
MsgType (35)	j - BusinessMessageReject
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	20
SendingTime (52)	20170906-06:30:22.217
RefMsgType (372)	x - SecurityListRequest
BusinessRejectRefID (379)	LREQ2
BusinessRejectReason (380)	8
Text (58)	Throttle Limit Exceeded
CheckSum (10)	103

3.3.8 ToTV Records

RE7 - User retrieves ToTV Record by ISIN

Objective: Client submits Security Definition Request to retrieve ToTV Record by ISIN

Client needs to send Security Definition Request (35=c) with Security Request Type (321=6) for Product to return the ToTV Record for an existing ISIN.

Test Runner

Test Name: Retrieve ToTV Record by ISIN

Objective: Client submits Security Definition Request to retrieve ToTV Record by ISIN

Please send a Security Definition Request (35=c) having Security Request Type (321=6) to retrieve ToTV Record by ISIN

SecurityDefinitionRequest

Evaluating: SecurityDefinitionRequest

Waiting for server to respond with a Security Definition

c - SecurityDefinitionRequest

Show All Message Fields

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	113	113
MsgType (35)		c - SecurityDefinitionRequest
MsgSeqNum (34)		611
SenderComplID (49)		
SenderSubID (50)		
SendingTime (52)		20180214-10:15:28.753
TargetComplID (56)	DSB	DSB
TargetSubID (57)		
SecurityIDSource (22)		4 - ISINNumber
SecurityID (48)		EZ15BS4SK2S0
SecurityReqID (320)	DREQ42	DREQ42
SecurityRequestType (321)	6 - Product	6 - Product
CheckSum (10)	093	093

Client will receive Security Definition (35=d) with the ToTV record.

d - SecurityDefinition

Show All Message Fields

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	1192	1192
MsgType (35)	d - SecurityDefinition	
MsgSeqNum (34)	613	
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)	20180214-10:15:27.667	
TargetCompID (56)		
TargetSubID (57)		
SecurityIDSource (22)	4 - ISINNumber	
SecurityID (48)	EZ15BS4SK2S0	
Symbol (55)	[N/A]	
SecurityXMLLen (1184)	1022	
SecurityXML (1185)	{"ToTV-record": [{"Header": {"ISIN": "EZ15BS4SK2S0", "LastCompletedProcessingDate": "2018-02-14", "LastModifiedDate": "2018-02-14"}, {"Header": {"AssetClass": "Commodities", "InstrumentType": "Swap", "UseCase": "Swap", "Level": "InstRefDataReporting"}, "Attributes": {"DeliveryType": "CASH", "ExpiryDate": "2019-02-28", "FinalPriceType": "PLAT", "NotionalCurrency": "EUR", "PriceMultiplier": 1, "ReferForDifference": "CFD"}, "TransactionType": "OTCT", "BaseProduct": "NRGY", "SubProduct": "OILP", "AdditionalSubProduct": "NAPH"}, {"ISIN": "EZ15BS4SK2S0", "Status": "New", "StatusReason": "", "LastUpdateDateTime": "2018-02-12T16:36:28"}, {"TemplateVersion": 1, "CommodityDerivativeIndicator": "TRUE", "UnderlyingAssetType": "Energy", "IssuerOrOperatorOfTheTradingVenueIdentifier": "NA", "EUR_20190228": "NA/Swap NRGY NAPH EUR 20190228", "ClassificationType": "STJCXC"}], "Derived": {"ToTV": false}}	
AssetClass (1938)	5 - Commodity	
TransactTime (60)	20180214-10:15:27.666	
SecurityRegID (320)	DREQ42	DREQ42
SecurityRequestResult (580)	0 - ValidRequest	0 - ValidRequest

SA2 – User searches for ToTV Records by Attributes

Objective: Client submits a Security List Request having non-empty Text(58) and Security List Type to search for ToTV records

To search for ToTV records, there is a need to add SecurityListType(1470)=100 to the SecurityListRequest(35=x) message. **Single ISIN** only can be specified in the search criteria for the ToTV data.

Test Runner

ToTV

- Test Name: Searches for ToTV Records by Attributes
- Objective: Client submits a Security List Request having non-empty Text(58) and SecurityListType to search for ToTV records
- Please submit a Security List Request (35=x) having SubscriptionRequestType (263=0) and SecurityListType (1470=100) and non-empty Text (58=<ISIN>)

<input type="button" value="→ SecurityListRequest"/> <input type="button" value="Hide Details"/>	<input checked="" type="checkbox"/> Evaluating: SecurityListRequest <input type="button" value="Show Details"/>
➤ Waiting for server to respond with a Security List	

x - SecurityListRequest

Show All Message Fields

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	127	127
MsgType (35)	x - SecurityListRequest	
MsgSeqNum (34)		6
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20180214-11:50:51.956
TargetCompID (56)		
TargetSubID (57)		
Text (58)	!=blank	EZ15BS4SK2S0
SubscriptionRequestType (263)	0 - Snapshot	0 - Snapshot
SecurityReqID (320)	LREQ1	LREQ1
SecurityListRequestType (559)	4 - AllSecurities	4 - AllSecurities
Custom Tag (1181)		0
SecurityListType (1470)	100	100
CheckSum (10)	252	252

Client will receive Security List (35=y) for the ToTV records.

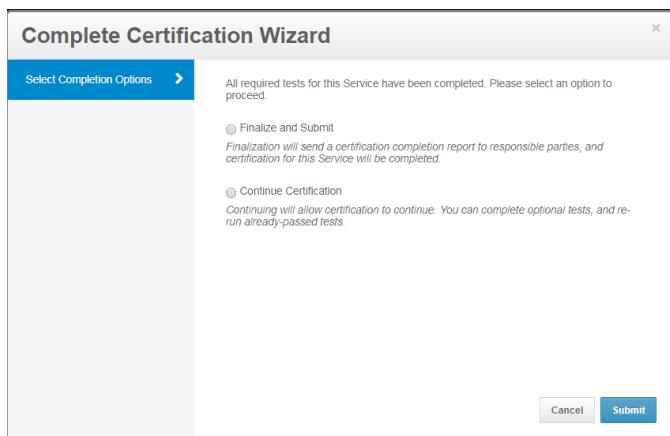
y - SecurityList		
<input checked="" type="checkbox"/> Show All Message Fields		
Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	1224	1224
MsgType (35)	y - SecurityList	
MsgSeqNum (34)	6	
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)	20180214-11:50:51.135	
TargetCompID (56)		
TargetSubID (57)		
Custom Tag (58)	EZ15BS4SK2S0	
TransactTime (60)	20180214-11:50:51.133	
SecurityReqID (320)	LREQ1	LREQ1
ToThisRelatedSym (393)	1	1
SecurityRequestResult (394)	0 - ValidRequest	0 - ValidRequest
ApplSeqNum (1181)	0	0
Custom Tag (58)	EZ15BS4SK2S0	
NoRelatedSym (148)	1	

SU9 – User subscribes to ToTV Records

ToTV subscription feature withheld until further notice.

3.4 Certification Report

Upon completion of the required test cases, a summary of the result of each test case will reflect on the certification report.



- Finalize and Submit – Certification for the service is completed and Certification Report is made available to the DSB Technical Support Admin and the client.
- Continue Certification – This will allow the client to continue optional test cases and rerun passed test cases.

The following is a sample of the Certification Report with the details of the Test Cases, Date Run, User and Result of the Test Cases.



Test	Run	User	Result
SL1 - Logon and Logout	2017-07-27 06:00:07.457		PASSED
SL2 - User logs off after abnormal disconnect	2017-07-27 06:00:07.457		PASSED
CR1 - User creates ISIN for Rates	2017-07-21 09:41:22.659		FAILED
CR2 - User creates ISIN for Foreign Exchange	2017-07-21 09:46:35.835		PASSED
CR3 - User creates ISIN for Equity	Never run		
CR4 - User creates ISIN for Commodity	Never run		
SE1 - User requests OTC product definition for a Rate	2017-07-21 09:52:34.682		PASSED
ISIN			
SE2 - User requests OTC product definition for a Credit	Never run		
Foreign Exchange ISIN			
SE3 - User requests OTC product definition for a Credit	Never run		
SE4 - User requests OTC product definition for an Equity ISIN	Never run		
SE5 - User requests OTC product definition for a Commodity ISIN	Never run		
SU1 - User subscribes to OTC product definitions for Rates	2017-07-21 09:56:36.833		PASSED
SU2 - User subscribes to OTC product definitions for Foreign Exchanges	Never run		
SU3 - User subscribes to OTC product definitions for Credits	Never run		
SU4 - User subscribes to OTC product definitions for Equities	Never run		
SU5 - User subscribes to OTC product definitions for Commodities	Never run		
SU6 - User subscribes to OTC product definitions for all assets	Never run		
CR6 - User submits a malformed payload	2017-07-26 08:31:29.657		PASSED
CR7 - Unauthorized user attempts to create an ISIN	2017-07-26 08:46:20.297		PASSED
CR8 - User requests for a new ISIN when the system is unavailable	2017-07-21 10:09:56.945		PASSED
SE6 - User requests OTC product definition for a non-existing product	2017-07-28 12:44:28.836		FAILED
SU7 - User attempts to subscribe to OTC product definitions by submitting Invalid message	2017-07-28 12:46:06.347		FAILED
SU8 - User attempts to subscribe to OTC product definitions when the system is unavailable	2017-07-28 12:46:49.032		PASSED