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	1.0	Sheryl Tan	Initial Version

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) of the FIX Client. It has error code test to simulate the output of the Security Request Result (560) for invalid request or system unavailable.

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 addresses of the DSB FIX Conductor
- 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 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.
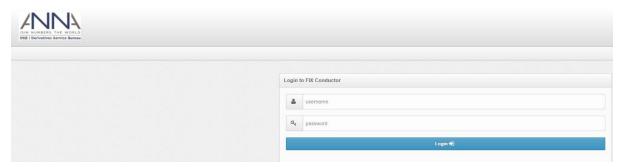
2.2.2   Simulated Interface

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 Report can be generated via "Save Report". Results of all the test cases are saved on this 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. Sender CompID, Target CompID and Port will be sent to the client.

3.2.3 Profile and Questionnaire Progress

Client needs to answer the questionnaire at the start of the certification and % Progress of the questionnaire will reflect on this tab. The client can go back and edit his answers by clicking the "Edit Answers" or he can "Reset Progress" to go back from the start of the Questionnaire. Client can also edit the User Profile and Client Profile in this tab.

Profile and Questionnaire Progress			
Information	Details	Progress	Additional Actions
Questionnaire	General information questions	100%	👁 View Progress ✎ Edit Answers ⊘ Reset Progress
User Profile	sheryl	70%	✎ Edit User Profile
Client Profile	DSB	30%	✎ Edit Client Profile

Sample Questionnaire:

Client ticks on the asset class for each test suites. All marked asset classes will reflect as "Required" test cases on the Test Runner dashboard.
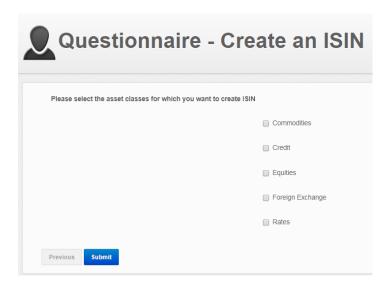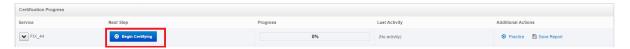

Questionnaire - Create an ISIN

Please select the asset classes for which you want to create ISIN

☐ Commodities

☐ Credit

☐ Equities

☐ Foreign Exchange

☐ Rates

Previous   **Submit**

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	0%	(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	SenderCompID	TargetCompID	Port	Actions
FIX44_client2_P				
FIX_44_client2_S				

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

✎ **Enter Application Details**

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.
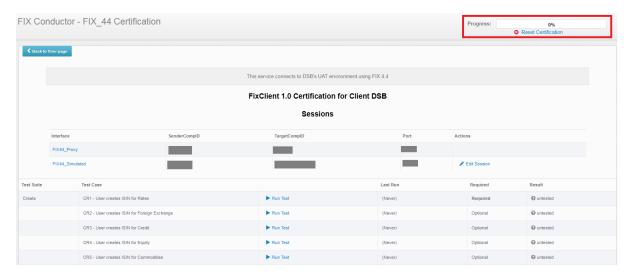
Client has an option to reset certification which is located at the top right side of the Test dashboard.

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

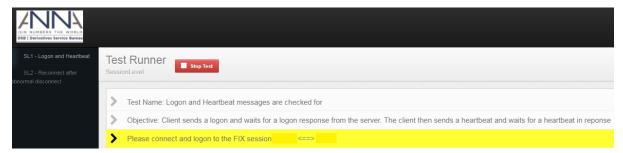| Test Suite	Test Case		Last Run	Required	Result
Create	CR1 - User creates ISIN for Rates	▶ Run Test	(Never)	Required	❓ untested

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.

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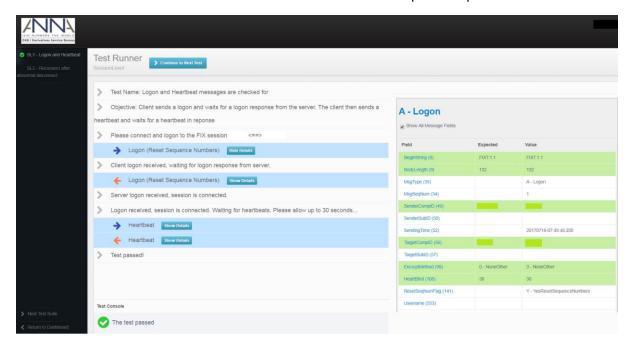
```
8=FIX.4.4^A9=126^A35=A^A34=1^A49=SenderCompID^A50=SenderSubID^A52=20170616-
09:11:00.327^A56=TargetCompID^A57=TargetSubID^A98=0^A108=30^A141=Y^A553=Username^A5
54= password^A10=100^A

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.

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.

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

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.

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

```
8=FIXT.1.1^A9=354^A35=c^A34=77^A49=SenderCompID^A50=SenderSubID^A52=20170718-
08:44:11.031^A56=TargetCompID^A57=TargetSubID^A55=[N/A]^A320=DREQ3^A321=1^A1184=247
^A1185={
        "Header": {
                "AssetClass": "Rates",
                "InstrumentType": "Swap",
                "UseCase": "Fixed_Fixed",
                "Level": "InstRefDataReporting"
        },
        "Attributes": {
                "NotionalCurrency": "EUR",
                "ExpiryDate": "2027-02-08",
                "NotionalSchedule": "Constant"
        }
}^A10=226^A
```

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

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)	354	354
MsgType (35)		c - SecurityDefinitionRequest
MsgSeqNum (34)		77
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170718-08:44:11.031
TargetCompID (56)		
TargetSubID (57)		
Symbol (55)		[N/A]
SecurityXMLLen (1184)		247
SecurityXML (1185)		{ "Header": { "AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting" }, "Attributes": { "NotionalCurrency": "EUR", "ExpiryDate": "2027-02-08", "NotionalSchedule": "Constant" } }
SecurityReqID (320)	DREQ3	DREQ3
SecurityRequestType (321)	1 - RequestSecurityIdentityForSpecifications	1 - RequestSecurityIdentityForSpecifications
CheckSum (10)	226	226
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

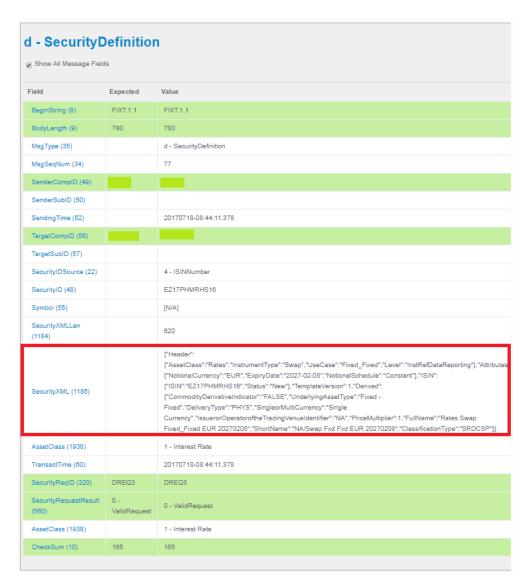|		
SenderSubID(49) ⇔ TargetSubID(57)	Subclient ⇔ UAT	Client Sub Comp Configured for each client ⇔ The DSB Sub Comp ID is configured for each environment (i.e.: Demo / UAT / Prod)
SendingTime (52)	Time of message transmission	
Symbol (55)	Use: "[N/A]"	
SecurityXMLLen (1184)	Length of JSON record payload	
SecurityXML(1185)	Request Product payload	{ "Header": { "AssetClass": "Rates", "InstrumentType": "Swap", "UseCase": "Fixed_Fixed", "Level": "InstRefDataReporting" }, "Attributes": { "NotionalCurrency": "EUR", "ExpiryDate": "2027-02-08", "NotionalSchedule": "Constant" } }
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=780^A35=d^A34=77^A49=TargetCompID^A50=TargetSubID^A52=20170718-
08:44:11.378^A56=SenderCompID^A57=SenderSubID^A22=4^A48=EZ17PHMRHS16^A55=[N/A]^A60=
2017071808:44:11.378^A320=DREQ3^A560=0^A1184=620^A1185={"Header":{"AssetClass":"Rat
es","InstrumentType":"Swap","UseCase":"Fixed_Fixed","Level":"InstRefDataReporting"}
,"Attributes":{"NotionalCurrency":"EUR","ExpiryDate":"2027-02-
08","NotionalSchedule":"Constant"},"ISIN":{"ISIN":"EZ17PHMRHS16","Status":"New"},"T
emplateVersion":1,"Derived":{"CommodityDerivativeIndicator":"FALSE","UnderlyingAsse
tType":"Fixed - Fixed","DeliveryType":"PHYS","SingleorMultiCurrency":"Single
Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"F
ullName":"Rates Swap Fixed_Fixed EUR 20270208","ShortName":"NA/Swap Fxd Fxd EUR
20270208","ClassificationType":"SRDCSP"}}^A1938=1^A10=165^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)	780	780
MsgType (35)		d - SecurityDefinition
MsgSeqNum (34)		77
SenderCompID (49)		
SenderSubID (50)		
SendingTime (52)		20170718-08:44:11.378
TargetCompID (56)		
TargetSubID (57)		
SecurityIDSource (22)		4 - ISINNumber
SecurityID (48)		EZ17PHMRHS16
Symbol (55)		[N/A]
SecurityXMLLen (1184)		620
SecurityXML (1185)		{"Header": {"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Fixed_Fixed","Level":"InstRefDataReporting"},"Attributes": {"NotionalCurrency":"EUR","ExpiryDate":"2027-02-08","NotionalSchedule":"Constant"}, "ISIN": {"ISIN":"EZ17PHMRHS16","Status":"New"},"TemplateVersion":1,"Derived": {"CommodityDerivativeIndicator":"FALSE","UnderlyingAssetType":"Fixed - Fixed","DeliveryType":"PHYS","SingleorMultiCurrency":"Single Currency","IssuearOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"FullName":"Rates Swap Fixed_Fixed EUR 20270208","ShortName":"NA/Swap Fxd Fxd EUR 20270208","ClassificationType":"SRDCSP"}}
AssetClass (1938)		1 - Interest Rate
TransactTime (60)		20170718-08:44:11.378
SecurityReqID (320)	DREQ3	DREQ3
SecurityRequestResult (560)	0 - ValidRequest	0 - ValidRequest
AssetClass (1938)		1 - Interest Rate
CheckSum (10)	165	165

The table below provides an explanation of the sample content:

Field	Description	Comment
SecurityXML(1185)	Record Payload	{"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Fixed_Fixed","Level":"InstRefDataReporting"},"Attributes":{"NotionalCurrency":"EUR","ExpiryDate":"2027-02-08","NotionalSchedule":"Constant"}, "ISIN":{"ISIN":"EZ17PHMRHS16","Status":"New"},"TemplateVersion":1,"Derived":{"CommodityDerivativeIndicator":"FALSE","UnderlyingAssetType":"Fixed - Fixed","DeliveryType":"PHYS","SingleorMultiCurrency":"Single Currency","IssueorOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"FullName":"Rates Swap Fixed_Fixed EUR 20270208","ShortName":"NA/Swap Fxd Fxd EUR

		20270208","ClassificationType":"SRD CSP"}}
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	
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 following is a snapshot of the SecurityDefinitionRequest message (35=c) in the FIX log.

```
8=FIXT.1.1^A9=543^A35=c^A34=163^A49=SenderCompID^A50=SenderSubID^A52=20170718-
09:26:38.335^A56=TargetCompID^A57=TargetSubID^A55=[N/A]^A320=DREQ5^A321=1^A1184=435
^A1185={
    "Header": {
        "AssetClass": "Credit",
        "InstrumentType": "Option",
        "UseCase": "Index_Swaption",
        "Level": "InstRefDataReporting"
    },
    "Attributes": {
        "NotionalCurrency": "XBB",
        "ExpiryDate": "2027-02-08",
        "UnderlyingInstrumentISIN": "EZ1234567890",
        "OptionType": "OPTL",
        "OptionExerciseStyle": "BERM",
        "ValuationMethodorTrigger": "Vanilla"
    }
```

```
}^A10=173^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=106^A35=c^A34=271^A49=SenderCompID^A50=SenderSubID^A52=20170718-
10:17:20.357^A56=TargetCompID^A57=TargetSubID^A22=4^A48=EZ6Q50YC2WS6^A320=DREQ17^A3
21=0^A10=228^A
```

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

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

```
8=FIXT.1.1^A9=930^A35=d^A34=275^A49=DSB^A50=UAT^A52=20170718-
10:17:20.160^A56=ITIVITI^A57=IT^A22=4^A48=EZ6Q50YC2WS6^A55=[N/A]^A60=20170718-
10:17:20.160^A320=DREQ17^A560=0^A1184=768^A1185={"Header":{"AssetClass":"Rates","In
strumentType":"Swap","UseCase":"Inflation_Swap","Level":"InstRefDataReporting"},"At
tributes":{"NotionalCurrency":"SEK","ExpiryDate":"2027-12-10","ReferenceRate":"HKD-
CPI","ReferenceRateTermValue":-
73800066,"ReferenceRateTermUnit":"YEAR","NotionalSchedule":"Custom"},"ISIN":{"ISIN"
:"EZ6Q50YC2WS6","Status":"New"},"TemplateVersion":1,"Derived":{"ISOReferenceRate":"
CPI","CommodityDerivativeIndicator":"FALSE","UnderlyingAssetType":"Inflation Rate
Index","DeliveryType":"PHYS","SingleorMultiCurrency":"Single
Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"F
ullName":"Rates Swap Inflation_Swap HKD-CPI -73800066 YEAR
20271210","ShortName":"NA/Swap Infl Idx SEK
20271210","ClassificationType":"SRGYSP"}}^A1938=1^A10=203^A
```
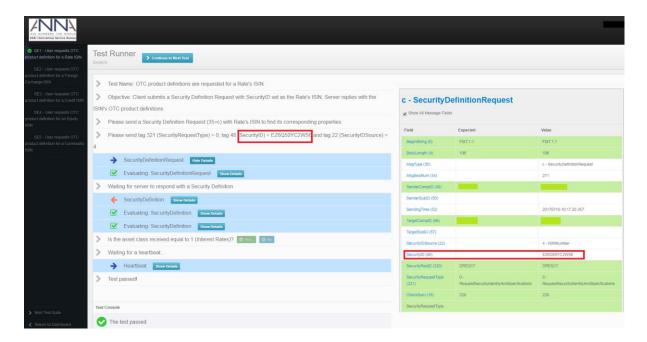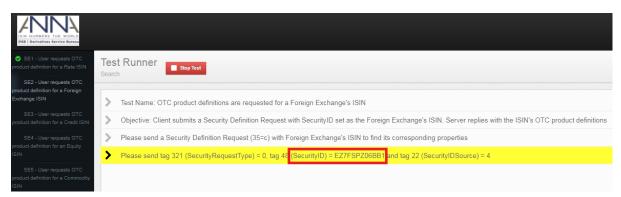
Client can verify the product definition on the SecurityDefinition details in the FIX Conductor. The test passed since the asset class of the ISIN submitted matched the expected asset class.

d - SecurityDefinition

☑ Show All Message Fields

Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	930	930
MsgType (35)		d - SecurityDefinition
MsgSeqNum (34)		275
SenderCompID (49)	▮▮▮	▮▮▮
SenderSubID (50)		
SendingTime (52)		20170718-10:17:20.160
TargetCompID (56)	▮▮▮	▮▮▮
TargetSubID (57)		
SecurityIDSource (22)		4 - ISINNumber
SecurityID (48)		EZ6Q50YC2WS6
Symbol (55)		[N/A]
SecurityXMLLen (1184)		768
SecurityXML (1185)		{"Header": {"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Inflation_Swap","Level":"InstRefDataReporting"},"Att {"NotionalCurrency":"SEK","ExpiryDate":"2027-12-10","ReferenceRate":"HKD-CPI","ReferenceRateTermValue":-73800066,"ReferenceRateTermUnit":"YEAR","NotionalSchedule":"Custom"},"IS {"ISIN":"EZ6Q50YC2WS6","Status":"New"},"TemplateVersion":1,"Derived": {"ISOReferenceRate":"CPI","CommodityDerivativeIndicator":"FALSE","UnderlyingAssetType":"Inflation Rate Index","DeliveryType":"PHYS","SingleorMultiCurrency":"Single Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"FullName":"Rates Swap Inflation_Swap HKD-CPI -73800066 YEAR 20271210","ShortName":"NA/Swap Infl Idx SEK 20271210","ClassificationType":"SRGYSP"}}
AssetClass (1938)		1 - Interest Rate
TransactTime (60)		20170718-10:17:20.160
SecurityReqID (320)	DREQ17	DREQ17

CASE 2: Test Failed

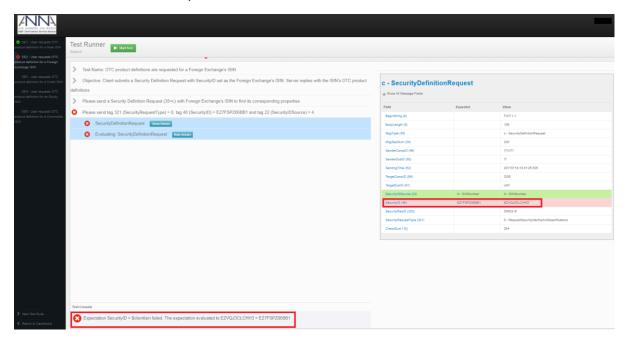Client inputs an ISIN except the Security ID listed in the FIX Conductor.

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

```
8=FIXT.1.1^A9=106^A35=c^A34=320^A49=SenderCompID^A50=SenderSubID^A52=20170718-
10:41:25.525^A56=TargetCompID^A57=TargetSubID^A22=4^A48=EZVQJ3CLCHH3^A320=DREQ18^A3
21=0^A10=254^A
```

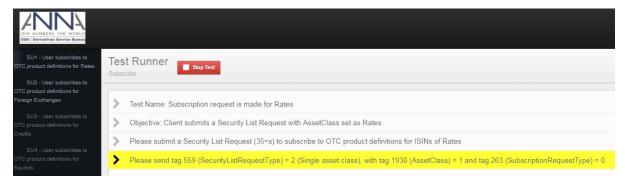The Test failed due to security ID did not match.

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 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
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.
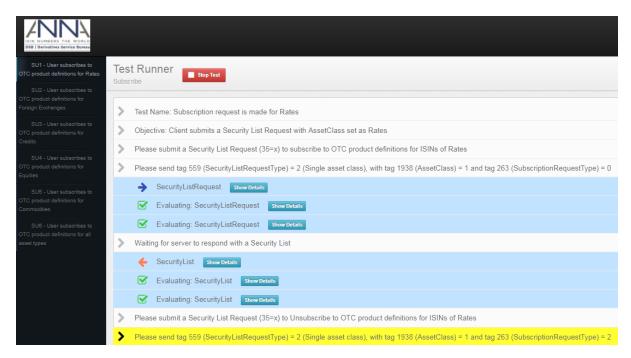
8=FIXT.1.1^A9=98^A35=x^A34=348^A49=SenderCompID^A50=SenderSubID^A52=20170718-
10:55:06.757^A56=TargetCompID^A57=TargetSubID^A263=0^A320=LREQ19^A559=2^A1938=1^A10
=143^A

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

8=FIXT.1.1^A9=2286^A35=y^A34=352^A49=TargetCompID^A50=TargetSubID^A52=20170718-
10:55:08.765^A56=SenderCompID^A57=SenderSubID^A60=20170718-
10:55:08.764^A320=LREQ19^A393=3^A560=0^A146=3^A55=[N/A]^A48=EZ95C0ZXR6B5^A22=4^A193
8=1^A1184=620^A1185={"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCas
e":"Fixed_Fixed","Level":"InstRefDataReporting"},"Attributes":{"NotionalCurrency":"
EUR","ExpiryDate":"2027-02-
07","NotionalSchedule":"Constant"},"ISIN":{"ISIN":"EZ95C0ZXR6B5","Status":"New"},"T
emplateVersion":1,"Derived":{"CommodityDerivativeIndicator":"FALSE","UnderlyingAsse
tType":"Fixed - Fixed","DeliveryType":"PHYS","SingleorMultiCurrency":"Single
Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"F
ullName":"Rates Swap Fixed_Fixed EUR 20270207","ShortName":"NA/Swap Fxd Fxd EUR
20270207","ClassificationType":"SRDCSP"}}^A55=[N/A]^A48=EZ17PHMRHS16^A22=4^A1938=1^
A1184=620^A1185={"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"
Fixed_Fixed","Level":"InstRefDataReporting"},"Attributes":{"NotionalCurrency":"EUR"
,"ExpiryDate":"2027-02-
08","NotionalSchedule":"Constant"},"ISIN":{"ISIN":"EZ17PHMRHS16","Status":"New"},"T
emplateVersion":1,"Derived":{"CommodityDerivativeIndicator":"FALSE","UnderlyingAsse
tType":"Fixed - Fixed","DeliveryType":"PHYS","SingleorMultiCurrency":"Single
Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"F
ullName":"Rates Swap Fixed_Fixed EUR 20270208","ShortName":"NA/Swap Fxd Fxd EUR
20270208","ClassificationType":"SRDCSP"}}^A55=[N/A]^A48=EZ6Q50YC2WS6^A22=4^A1938=1^
A1184=768^A1185={"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"
Inflation_Swap","Level":"InstRefDataReporting"},"Attributes":{"NotionalCurrency":"S
EK","ExpiryDate":"2027-12-10","ReferenceRate":"HKD-CPI","ReferenceRateTermValue":-
73800066,"ReferenceRateTermUnit":"YEAR","NotionalSchedule":"Custom"},"ISIN":{"ISIN"
:"EZ6Q50YC2WS6","Status":"New"},"TemplateVersion":1,"Derived":{"ISOReferenceRate":"
CPI","CommodityDerivativeIndicator":"FALSE","UnderlyingAssetType":"Inflation Rate
Index","DeliveryType":"PHYS","SingleorMultiCurrency":"Single
Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","PriceMultiplier":1,"F
ullName":"Rates Swap Inflation_Swap HKD-CPI -73800066 YEAR
20271210","ShortName":"NA/Swap Infl Idx SEK
20271210","ClassificationType":"SRGYSP"}}^A10=000^A

Client needs to Unsubscribe (SubscriptionRequestType 263=2) to OTC product definition for Rates to proceed on the next test case.
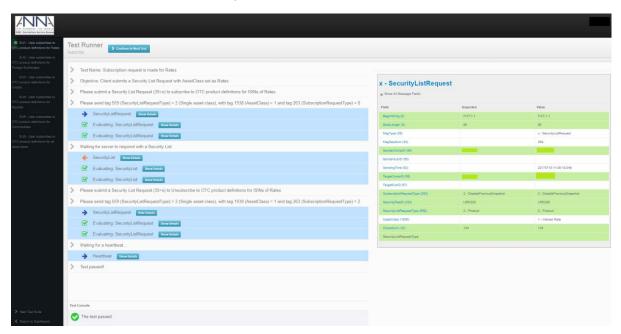
The following is a sample of a SecurityListRequest message (35=x) with SubscriptionRequestType (263=2).

```
8=FIXT.1.1^A9=98^A35=x^A34=369^A49=SenderCompID^A50=SenderSubID^A52=20170718-
11:05:19.049^A56=TargetCompID^A57=TargetSubID^A263=2^A320=LREQ20^A559=2^A1938=1^A10
=134^A
```

The Test Console shows that the test passed.

CASE 2: Test Failed

If the Client subscribes to any Asset Class and SubscriptionRequestType that are not listed in the FIX Conductor, the test will fail.

In this example, the client should send Foreign Exchange Asset Class (1938=2) with Snapshot SubscriptionRequestType (263=0).

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=98^A35=x^A34=405^A49=SenderCompID^A50=SenderSubID^A52=20170718-
11:22:51.363^A56=TargetCompID^A57=TargetSubID^A263=1^A320=LREQ21^A559=2^A1938=3^A10
=121^A
```

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

x - SecurityListRequest

☑ Show All Message Fields

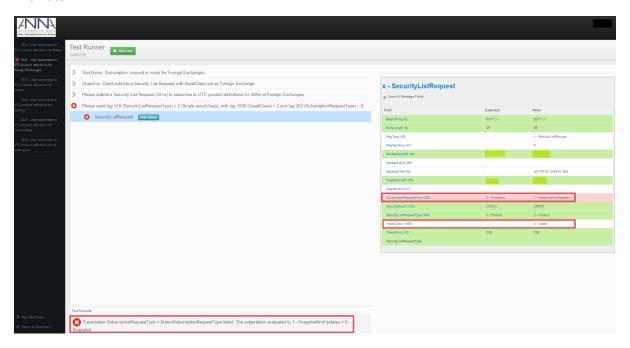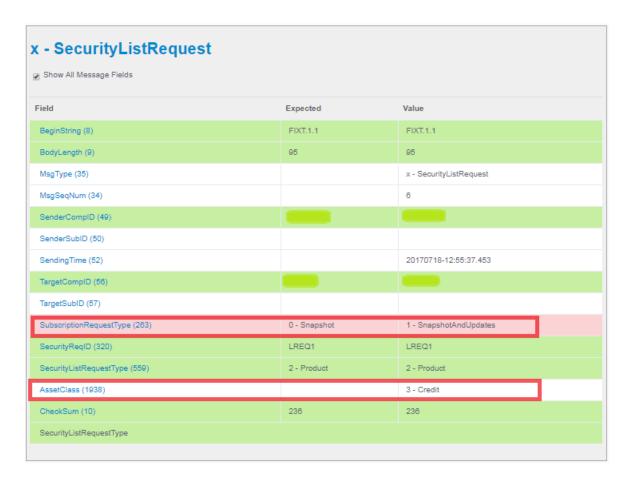| Field	Expected	Value
BeginString (8)	FIXT.1.1	FIXT.1.1
BodyLength (9)	95	95
MsgType (35)		x - SecurityListRequest
MsgSeqNum (34)		6
SenderCompID (49)	▇▇▇	▇▇▇
SenderSubID (50)		
SendingTime (52)		20170718-12:55:37.453
TargetCompID (56)	▇▇▇	▇▇▇
TargetSubID (57)		
SubscriptionRequestType (263)	0 - Snapshot	1 - SnapshotAndUpdates
SecurityReqID (320)	LREQ1	LREQ1
SecurityListRequestType (559)	2 - Product	2 - Product
AssetClass (1938)		3 - Credit
CheckSum (10)	236	236
SecurityListRequestType		

3.3.5 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.

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

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

d - SecurityDefinition

☑ Show All Message Fields

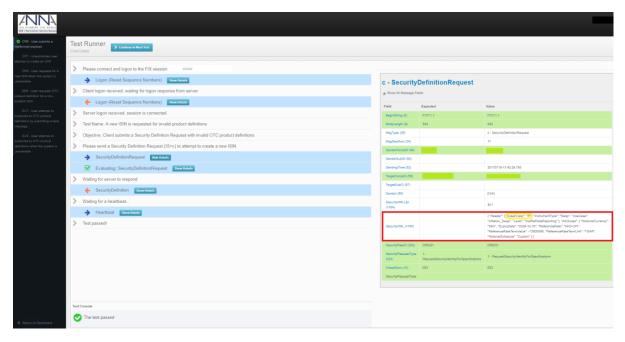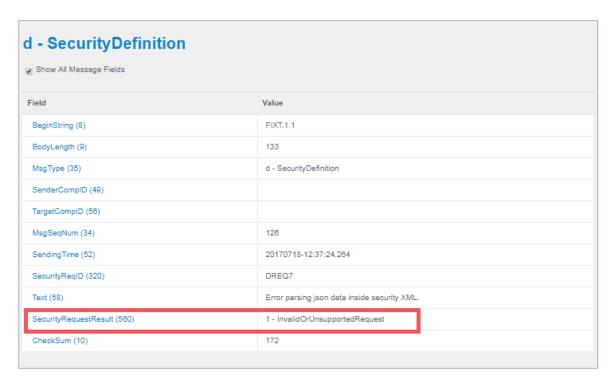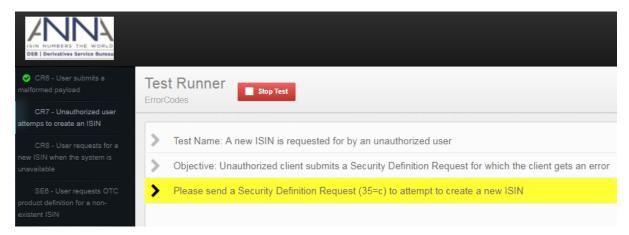| Field	Value
BeginString (8)	FIXT.1.1
BodyLength (9)	133
MsgType (35)	d - SecurityDefinition
SenderCompID (49)	
TargetCompID (56)	
MsgSeqNum (34)	126
SendingTime (52)	20170718-12:37:24.264
SecurityReqID (320)	DREQ7
Text (58)	Error parsing json data inside security XML.
SecurityRequestResult (560)	1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

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

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

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.

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

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.

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

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

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.

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

SU8 - User attempts to subscribe to OTC product definitions when the system is unavailable
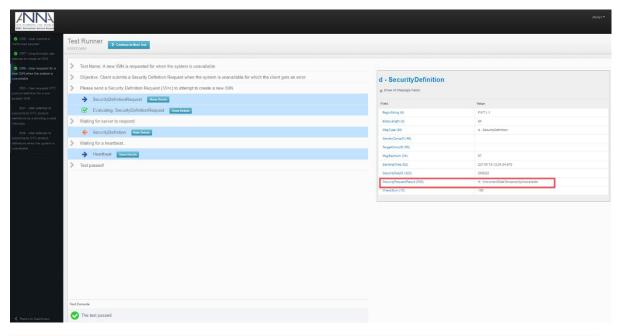
Objective: Client submits a Security List Request when the system is unavailable for which the client gets an error

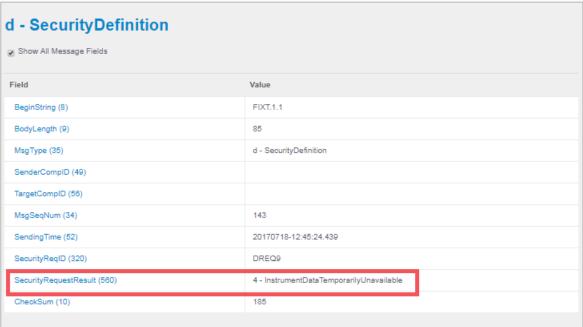Client subscribes to any asset class to test this scenario.

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

3.4   Certification Report

Upon completion of the required test cases, a certification report will be generated for all the test suites with the status of each test case.

- o   Finalize and Submit – Certification for the service is completed and Certification Report is made available to the DSB Technical Support Admin and the client.
- o   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 Heartbeat	2017-07-27 06:00:07.457		PASSED
SL2 - Reconnect after abnormal disconnect	2017-07-21 10:04:08.925		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 Credit	Never run		
CR4 - User creates ISIN for Equity	Never run		
CR5 - User creates ISIN for Commodities	Never run		
SE1 - User requests OTC product definition for a Rate ISIN	2017-07-21 09:52:34.682		PASSED
SE2 - User requests OTC product definition for a Foreign Exchange ISIN	Never run		
SE3 - User requests OTC product definition for a Credit ISIN	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 asset types	Never run		
CR6 - User submits a malformed payload	2017-07-26 08:31:29.657		PASSED
CR7 - Unauthorized user attemps 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-existent ISIN	2017-07-28 12:44:28.836		FAILED
SU7 - User attemps to subscribe to OTC product definitions by submitting invalid message	2017-07-28 12:46:06.347		FAILED
SU8 - User attemps to subscribe to OTC product definitions when the system is unavailable	2017-07-28 12:46:49.032		PASSED

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