The Derivatives Service Bureau (DSB)

REST Rules of Engagement

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Proprietary Information

Contents

Preface

Change History

Date	Change	Version	Author	Revision Details
7 June 2017	Creation	1.00	Yuval Cohen	Initial Version
26 June 2017	Additions	1.01	Yuval Cohen	Added: File download workflows
18 July 2017	Corrections and amendments	1.02	Yuval Cohen	Titles of section 5.4 and 5.5 got mismatched. Update /search to be a GET method Added clarifications in section 3 and 4
27 July 2017	Additions	2.00	Yuval Cohen	Clarification about token Added workflow: Test for ISIN existence
3 August 2017	Additions	2.01	Yuval Cohen	Clarifications about status codes and maintenance schedule
30 August 2017	Corrections and amendments	2.02	Hannah Cabuyao	Updated the file download URL for "Download historical ISINs" method Updated the GitHub Product Definition URL Updated the product definition examples Corrected the sample method for GET /schemas?SchemaName on section 3.2 Corrected the sample method for POST /records&create=false on section 5.5
05 September 2017	Corrections	2.03	Hannah Cabuyao	Corrected the Production and UAT url on sections 2.1 and 4.7
25 October 2017	Additions	2.04	Sheryl Tan	Updated section 2.1 to include the DSB Enterprise offering
20 September 2017	Additions	3.00	Yuval Cohen	Additions for MiFiD II (ToTV) workflows
3 November 2017	Additions	3.01	Yuval Cohen	Added ToTV example
26 February 2018	Amendment	3.02	Sheryl Tan	Updated section 3.6 Search for ISIN or ToTV Records by attributes
24 March 2018	Correction	3.03	Hannah Cabuyao	Corrected the sample queries on sections 3.6, 5.5 and 5.7
7 April 2018	Amendment	3.04	Kurt Aquino	Updated section 3.3 Retrieve or Create ISIN Record by Attribute
17 April 2018	Additions	3.05	Sheryl Tan	Addition of section 3.8, 4.8 and 5.10 for the download of historical ToTVs
20 April 2018	Correction	3.06	Hannah Cabuyao	Corrected few arguments on sections 3.2, 4.4, 4.5 and 4.6 to use lowercase
18 September 2018	Amendments and Addition	3.07	Sheryl Tan	Updated section 3.7 file download path, section 4.6 maximum pageSize, section 5.8 GET /search Added section 5.9 Search for ToTV Records by Attributes

1 Introduction

1.1 Document Purpose

This specification defines the implementation of the Representational State Transfer (REST or RESTful) Web Service by the Derivatives Service Bureau (DSB) Limited for determining the ISIN for a financial instrument. In doing so it aims to provide a comprehensive reference guide to any such institutions who wish to automate the usage of the DSB REST API Web service.

1.2 Intended Audience

Anyone with an interest in creating or querying ISINs for financial OTC derivatives instruments using an automated REST API web service.

1.3 Scope

This document focuses on the use of the DSB REST API to define and query for ISINs for OTC derivative financial products.

1.4 Contact Information

Please direct your questions on the REST API via email technical.support@anna-dsb.com

1.5 Functional Summary

The DSB REST API provides a near real time service to determine ISINs for OTC derivative financial instruments. Each financial instrument supported by the DSB service is defined by a unique set of attributes verified by industry.

1.6 Activity Diagram Summary

The following diagram illustrates, the DSB REST API Web service:

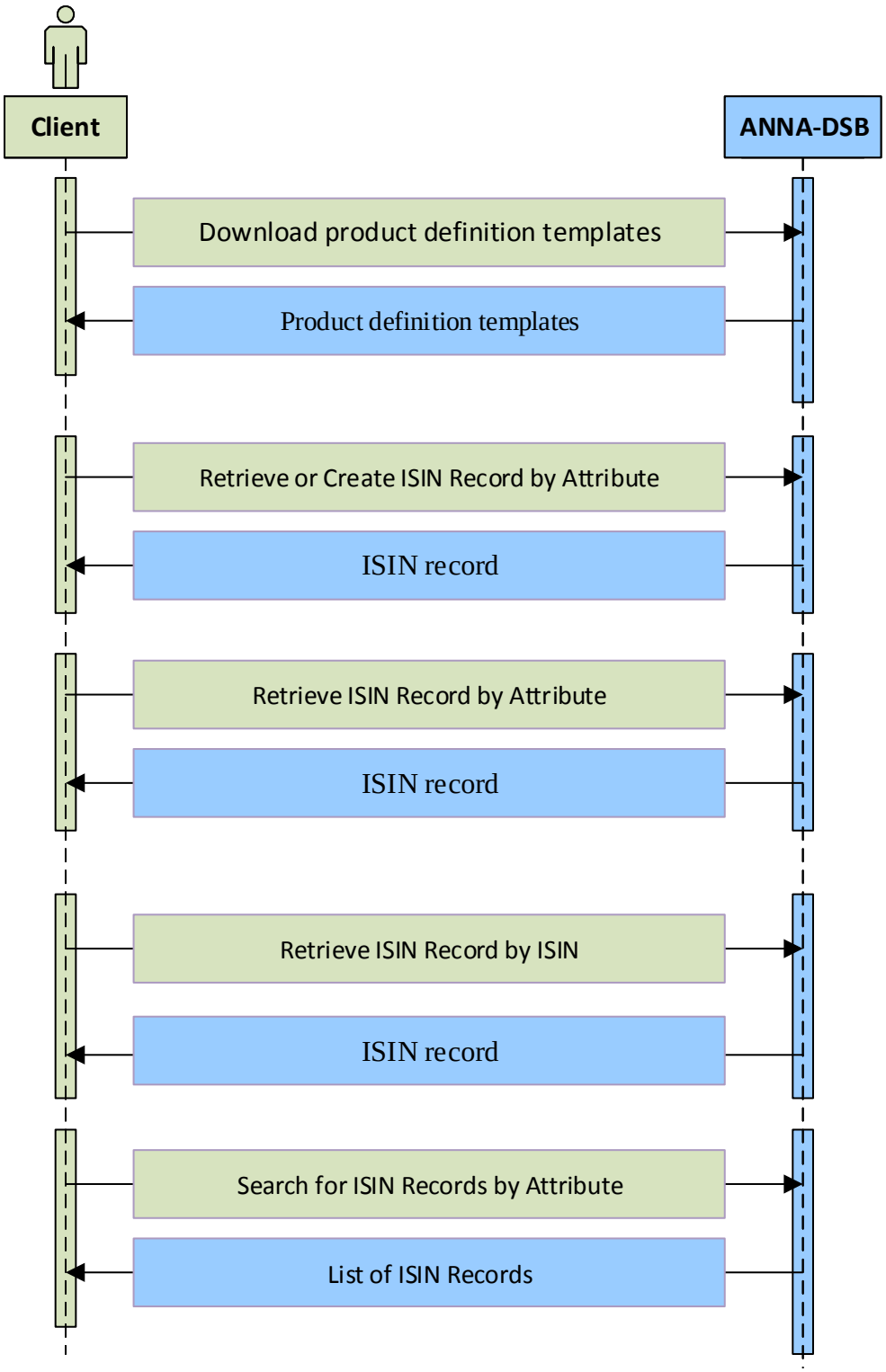

Diagram 1: Activity Diagram

1.7 Document Structure

This document contains the following sections:

Section Number	Title	Description
Section 1	Introduction	A brief introduction to this document providing background to the purpose of the document and the DSB REST API Web service.
Section 2	Site Preparation	Provides details of the REST API implementation and the tasks that are required to use the service.
Section 3	REST API methods	Provides details of the methods and workflows that are supported DSB.
Section 4	REST API methods Reference	Contains the definitions of the methods that are supported by the DSB REST API service including possible arguments and expected response codes.
Section 5	Methods samples	Some sample methods that illustrate the possible contents of the methods as well as their response.

2 Site Preparation

2.1 Introduction

The following preparation is required to use the DSB REST API Web Service:

- Users should follow and adhere to the REST architectural constraints called RESTful APIs.

- Web service methods are transmitted over the internet using HTTPS (HTTP secure over SSL) protocol through port 443

- DSB operations will provide authentication parameters: username and password
    - Users should attach the authentication parameters to each of the REST methods' header with:
      key = "Authorization"
      value = base64(username + ":" + password)

      The username and password are concatenated with a colon separator and encoded in base64.

- Access to the DSB Web Service is by default restricted to a throughput of one message per minute. Users wishing to increase this throughput rate may ask DSB operations to provide a DSB-Token for use with the REST API. The token increases the message rate for Power Users as per the DSB Acceptable Use Policy (currently set at 60 messages per minute).
    - Users should attach the DSB-token to each of the REST methods' header with:
      key = "DSB-Token"
      value = <token>

  DSB Web Service responds with status code 429 (too many request) when a client exceeds its rate limit.

- Users should make any network/firewall configuration changes required to enable connectivity to the base DSB websites (below) over port 443

  In the event that you are unable to configure your firewall or proxy via DNS aliases using the shared DSB Service stack, a separate DSB Enterprise offering is available that allows

individual IP whitelisting. Please send an email to secretariat@anna-dsb.com and technical.support@anna-dsb.com with subject ReST DSB Enterprise to get more details.

- The default Base URL for REST methods (except file-download – see Download Historical ISINs and Download Historical ToTVs) are:
  - Production environment: https://prod.anna-dsb.com/api
  - UAT environment: https://uat.anna-dsb.com/api

- The response to all methods in the REST API contains "responseCode" which follows the HTTP status codes.
  - In case of either client errors (4XX) or Server errors (5XX) the response will contain indicative (human readable) "message".

- The DSB Web Service schedule weekly maintenance periods which currently commence on Saturday 12:00:00 and finish on Sunday 12:00:00 [mid-day] UTC. During these hours, all REST methods are expected to be responded to with HTTP status code 503 (Service unavailable).

- Common HTTP status codes:
  - 200: OK, Success.
  - 401: Unauthorized
  - 429: too many request [The user has sent too many requests in a given amount of time. Intended for use with rate-limiting schemes]
  - 503: Service unavailable: [The server is currently unavailable because it is down for maintenance]

  Additional HTTP status codes are listed in section 4.

2.2 JSON Product Definitions Representation as JSON Schema

2.2.1 Product Definitions

The DSB Product Committee defines the set of Product Definitions for all OTC derivatives in scope and any future changes or additions will be made under the advisement of the Product Committee. Each Product Definition can be identified by:

- Asset Class
- Instrument Type
- Product (Use case)
- Level

Further information about the Product Definition will be available on our web-site.

2.2.2 JSON and JSON Schema

JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others. JSON Schema describe existing data format in a clear, human and machine-readable documentation and provides complete structural validation which is useful to validate the client submitted data.

JSON standards are available in ECMA-404 as well as in RFC-7159.

JSON Schema standards are available in: JSON-SCHEMA-04

2.2.3 Product Definition as JSON Schema

The Product Definitions are formatted in a machine-readable format in a set of JSON schema files, which are made available by the DSB system. Users are expected to use these JSON schema when requesting an ISIN via the RESTful API.

For each Product Definition there are two JSON schema files:

1	**File**: Request schema file **Description**: a schema that defines the attributes in order to request a new ISIN **Naming Convention**: Request.<AssetClass>.<InstrumentType>.<Product>.<Level>.json **Example of a name:** Request.Rate.Swap.FixedFloatPlainVanilla.InstRefDataReporting.json
2	**File**: Record schema file **Description**: a schema that defines the attributes in the ISIN Record which is returned from the DSB **Naming Convention**: <AssetClass>.<InstrumentType>.<Product>.<Level>.<Version>.json **Example of a name:** Rate.Swap.FixedFloatPlainVanilla.InstRefDataReporting.V1.json

The example for the name above is for a Product Definition where:

- Asset Class = Rate
- Instrument Type = Swap
- Product (Use Case) = FixedFloatPlainVanilla
- Level = InstRefDataReporting

The (Template) Version is added for backwards compatibility to the record file only

- Template Version = V1

2.2.4 Using JSON Schema

This subsection lists some of the main tasks and procedures to interact with the DSB system

1. User needs to obtain the up-to-date JSON schema
    I. Users can download JSON schema using REST API (see Obtain JSON schemas)
    II. JSON schema are available to download from the DSB web-site (in the file-download section)
    III. JSON schema are also available through GitHub in: https://github.com/ANNA-DSB/Product-Definitions
2. To request for a new ISIN, user needs to:
    I. Select a 'Request' JSON schema which matches their needs. Each Request JSON Schema can be uniquely identified by four attributes:
        - Asset Class
        - Instrument Type
        - Product (Use Case)
        - Level
    II. Format the required instrument and supply its attributes as a valid *JSON request for an instrument record* based on the Request JSON Schema
    III. Embed the *JSON request for an instrument record* within a POST /records (see Request the ISIN for a financial instrument) method
3. In case the responseCode is continue (100) or successful (200) the response contains a *JSON instrument record*
4. To parse the *JSON instrument record,* the user needs to:
    I. Extract the TemplateVersion attribute and Header which contains:
        - Asset Class
        - Instrument Type
        - Product (Use Case)
        - Level
    II. Select the relevant JSON record schema that matches above attribute
    III. Continue to parse additional attributes in the *JSON instrument record* as it must be a valid record based on the schema found above

2.3 MiFiD II Data (ToTV)

The DSB provides access to a composite instruments records that are available in FiRDS reference data or in FiRDS transparency data
The business requirements as well as the methodology to create and update these records are available in: https://github.com/ANNA-DSB/ToTV-uToTV
The ToTV records are reported as JSON records based on the JSON schema that is available in: https://github.com/ANNA-DSB/ToTV-uToTV

The ToTV records contain:

- The entire ISIN record, if such is available in the DSB
- All the reference data that was reported in FiRDS aggregated by MIC
- The transparency thresholds like pre-trade and post-trade 'large in scale' (LIS) and 'instrument size specific' (SSTI) and others.
- Derived flags like the ToTV and uToTV flag.
- The last modified date of the record

Users can indicate in the REST API if they would like to receive DSB ISIN records or ToTV records.

3 REST API methods

3.1 Introduction

This section looks at the methods that will be supported by DSB REST API.

All the DSB REST methods are HTTP based RESTful methods that adhere to the REST architectural constraints.
The HTTP Status codes in the response adhere to the standard HTTP/1.1 (RFC 7231).

3.2 Obtain JSON schemas

To obtain the JSON schemas user needs to invoke `GET /schemas?names` that will return the list of schema names. Using each of these names the user may invoke `GET /schemas?schemaName=<NAME>` that will return the JSON schema for that name.

The following diagram illustrates the workflow:

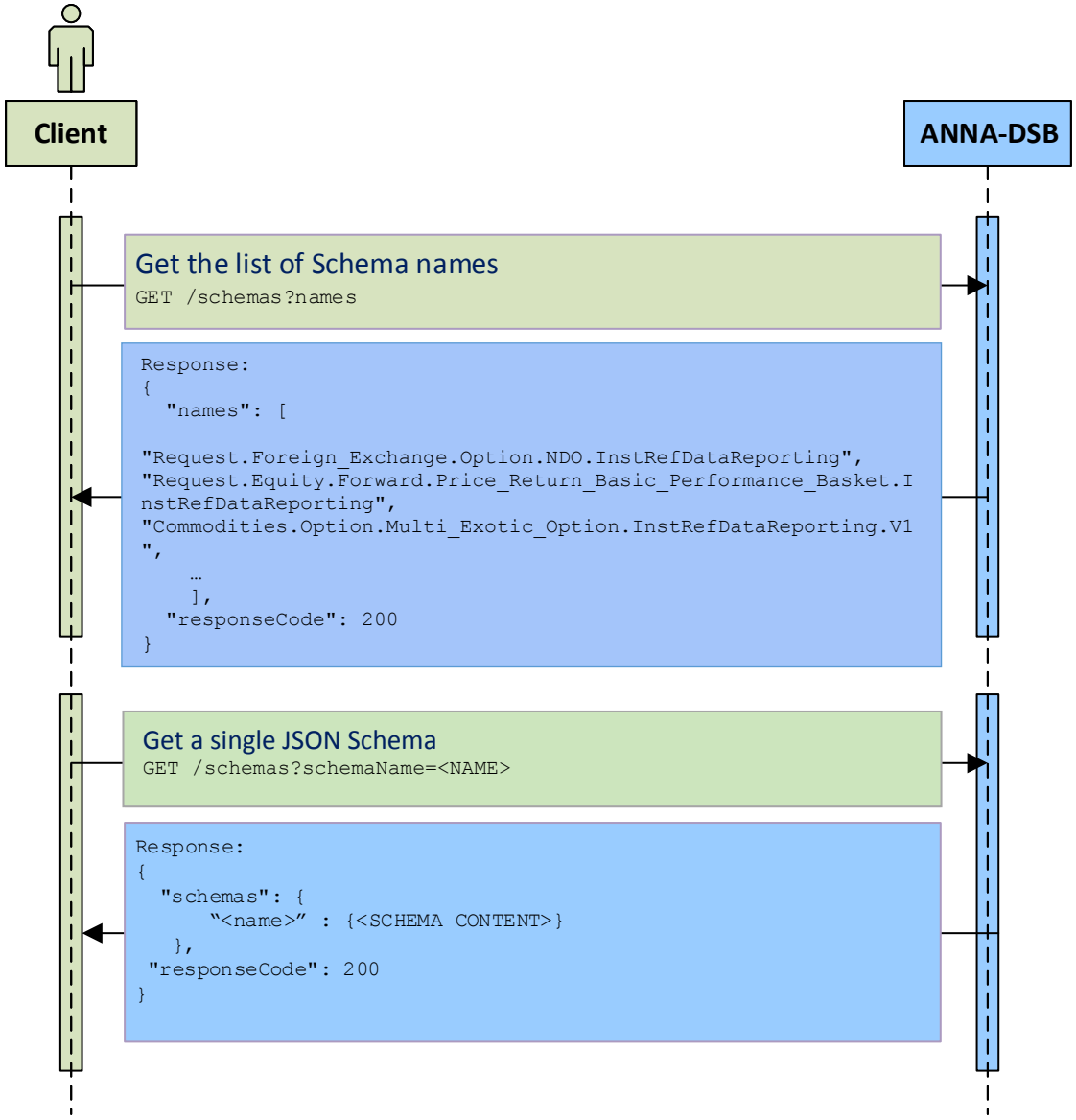

Diagram 2: Obtain JSON schema

3.3 Retrieve or Create ISIN Record by Attribute

The `POST /records` method is used to create the ISIN record for a financial instrument or return the existing record if the ISIN record already exists. The financial instrument is defined by a *JSON instrument request* object provided in the "record" within the body of the request.

The input JSON record must contain a "record" component where the financial instrument is provided. The input may also contain a "requestContext" which will be echoed back in the response and may help users to identify their request.

The REST API service will first search for an existing ISIN that has identical attributes as the record (up to normalization, see section 6 in: DSB UAT Product Definition.pdf) and if such an ISIN exists, the result record will contain the ISIN.

If such an ISIN does not exist, the DSB will allocate a new ISIN for this request.

In both cases, provided the request is valid, the resulting record will contain an ISIN. The client will not be able to tell if the ISIN was just allocated or if it existed prior to this call.

Please note that multiple requests (array) in a single creation of a record is not supported.

The following diagram illustrates the workflow:

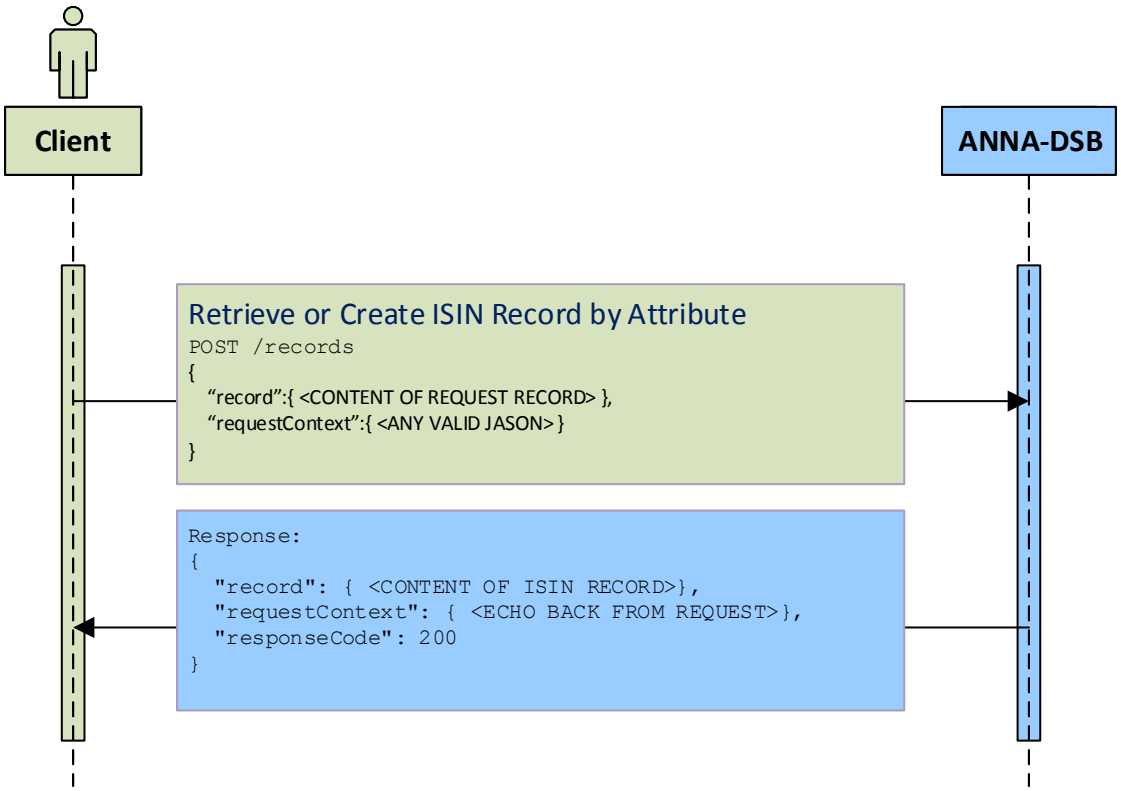

Diagram 3: Retrieve or Create ISIN Record by Attribute

3.4 Retrieve ISIN Record by Attribute

The `POST /records` method that is described in the previous section, can be used with additional parameter: `POST /records?create=false`
The additional parameter: create=false guarantees that no new record will be added to the system.

For the input JSON record see the previous section.

The REST API service will search for an existing ISIN that has identical attributes as the supplied record (up to normalization, see section 6 in: DSB UAT Product Definition.pdf) and if such an ISIN exists, the result record will contain the ISIN record.

If such an ISIN does not exist, the DSB will not allocate a new ISIN, instead the system will calculate all derived values and the output record will contain all attributes except of the ISIN value.

This method can be used to resolve the derived attributes (e.g. CFI code, and FISN) of the record without the need to create the associated ISIN.

The following diagram illustrates the workflow:

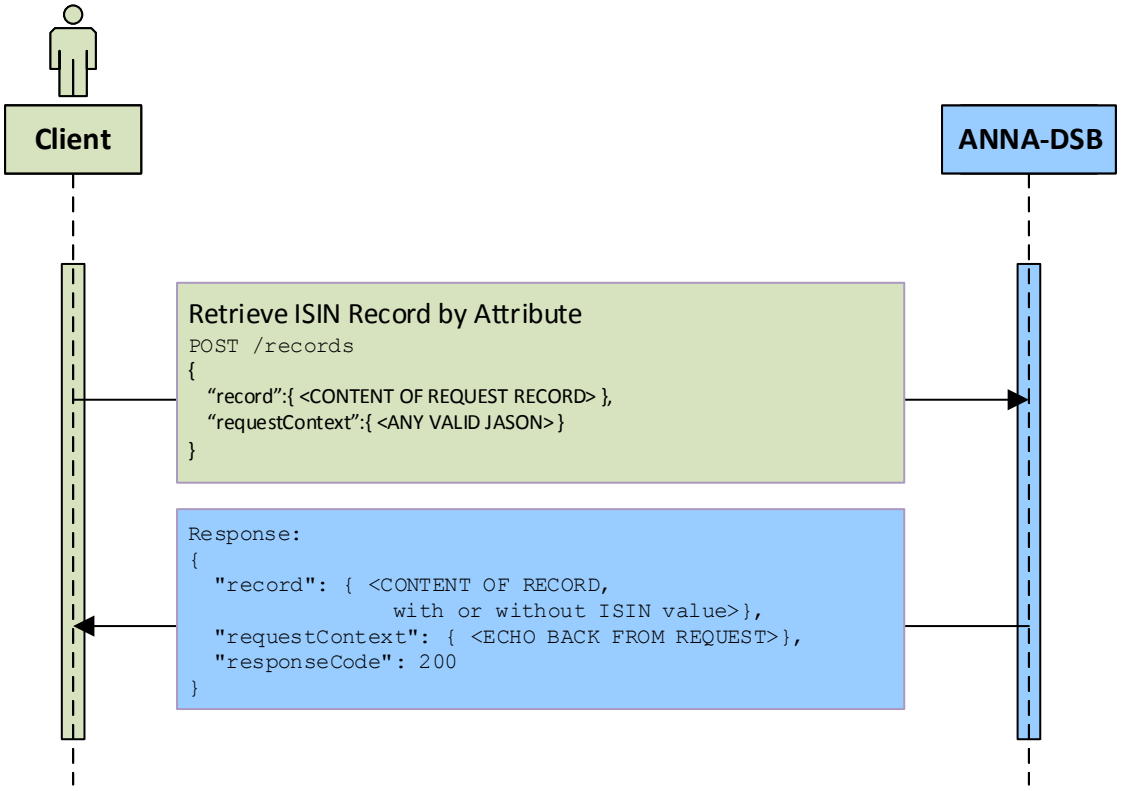

Diagram 4: Retrieve ISIN Record by Attribute

3.5 Retrieve ISIN or ToTV Record by ISIN

The `GET /records/<ISIN>` method is used to return the ISIN record for an existing ISIN. The ISIN is specified in <ISIN>.

By default, the user retrieves an ISIN record. To receive the ToTV record, user needs to add to the request the parameter: totv=true

The following diagram illustrates the workflow:

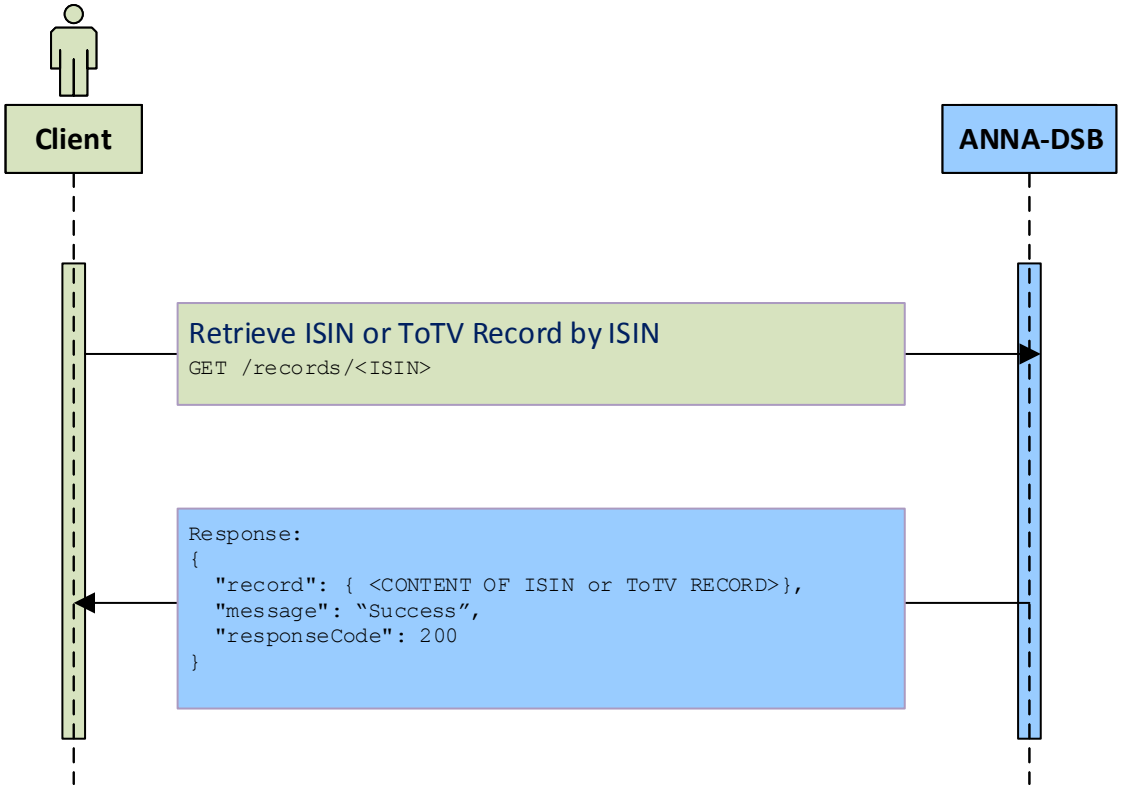

Diagram 5: Retrieve ISIN or ToTV Record by ISIN

3.6 Search for ISIN or ToTV Records by attributes

The GET /search/ method can be used to search for ISIN records that match the supplied criteria.

The user must specify the following arguments:

- query: (i.e. a query string). Please refer to DSB Search Query Syntax document.
- pageSize: which is the maximum number of results that are returned in each page
- pageNum: see explanation below
- requestContext: a valid JSON record that may help to identify the query

To retrieve the first 100 records, the user should specify:

- "pageSize" : 100
- "pageNum" : 1

To retrieve the next 100 records, the user should invoke the GET /search/ method again, with the same query but using:

- "pageSize" : 100
- "pageNum" : 2

A valid response contains all the above arguments (in a JSON record) together with:

- Records: which contains the result records
- totalResults: The number of total records that matches the query criteria
- responseCode: Matches the HTTP status code

By default, the user retrieves ISIN records. To receive the ToTV records, user needs to add to the request the parameter: totv=true.
Single valid ISIN only can be specified in the search criteria for the ToTV data.

The following diagram illustrates the workflow:

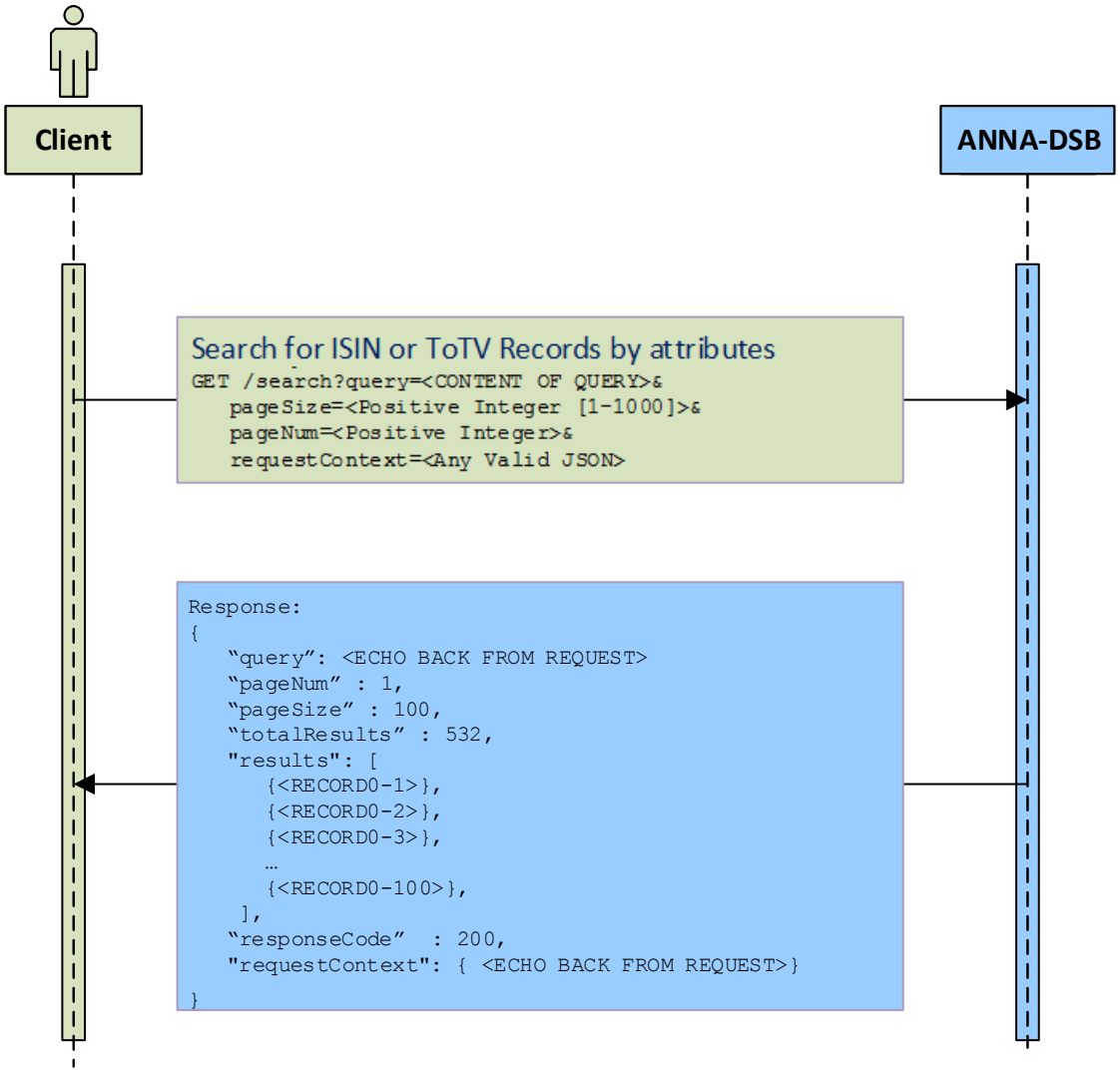

Diagram 6: Search for ISIN Records by attributes

3.7 Download historical ISINs

The `GET /file-download/isin/<YYYYMMDD>/<ASSET-CLASS>/<ASSET-CLASS>-<YYYYMMDD>.records` method is used to download historical ISINs.
The <YYYYMMDD> stands for a valid date when ISINs where created.
<ASSET-CLASS> is one of:

- Credit
- Commodities
- Equity
- Foreign_Exchange
- Rates

The response contains instrument records separated by newline ('\n') that were either allocated or modified on the YYYYMMDD date. Each record is a valid JSON instrument record.

See section 4.6 below for the base URL of this method.

The following diagram illustrates the workflow:

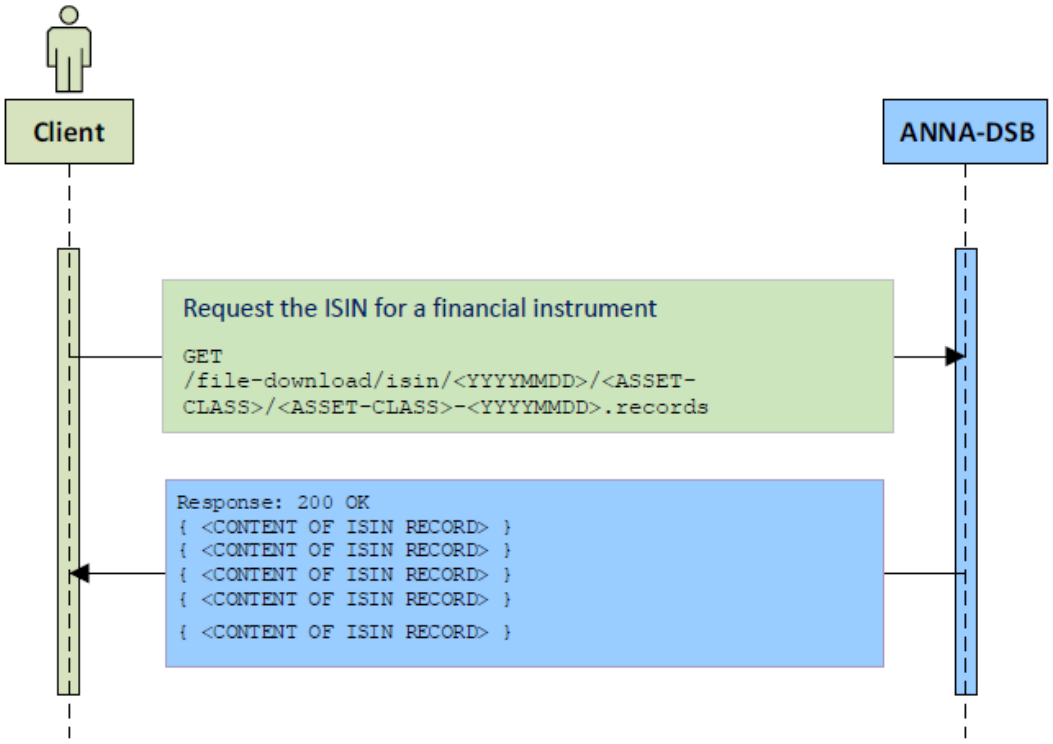

Diagram 7: Download historical ISINs

3.8 Download historical ToTVs

The `GET /file-download/totv/<YYYYMMDD>/ToTV-<CFI letters>-<YYYYMMDD>.zip` method is used to download historical ToTV.
The <YYYYMMDD> stands for a valid date when ToTVs were created.
<CFI letters> see Appendix: CFI groups Categories and Groups

The response contains ToTV records separated by newline ('\n') that were either allocated or modified on the YYYYMMDD date. Each record is a valid JSON instrument record.

See section 4.6 below for the base URL of this method.

The following diagram illustrates the workflow:

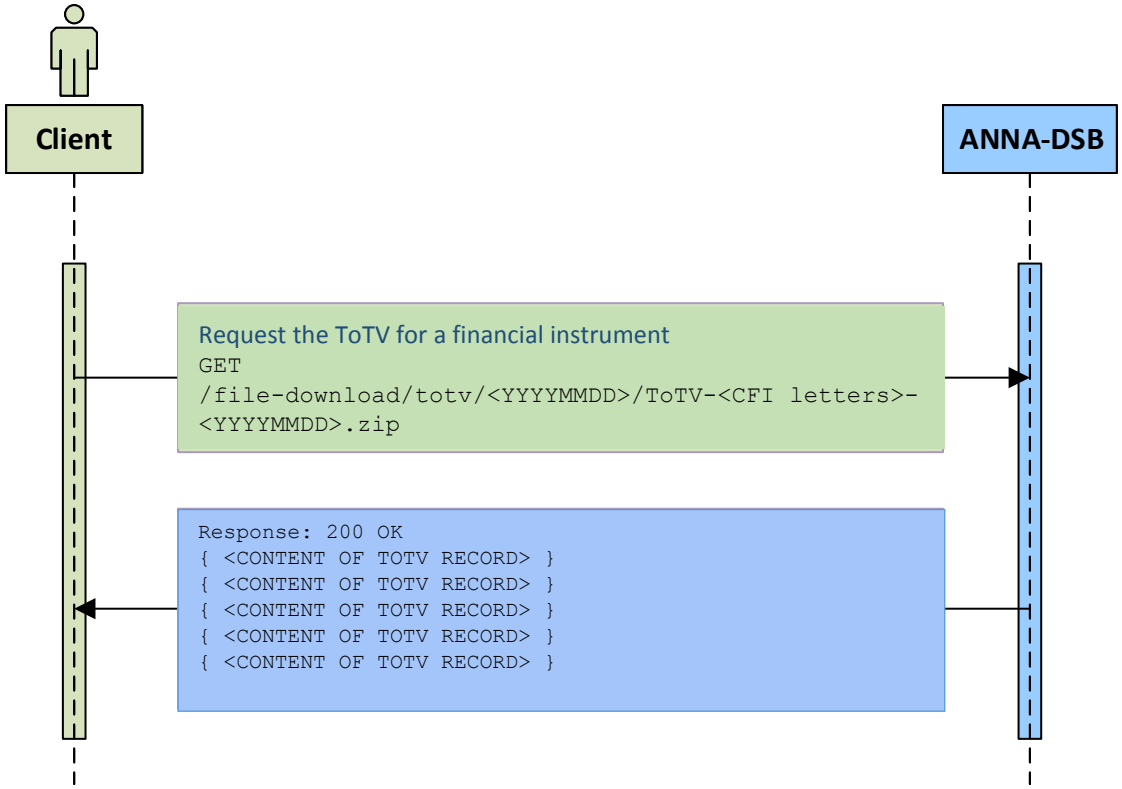

Diagram 8: Download historical ToTVs

4 Methods Reference

4.1 Introduction

This section details the REST API methods that are used by DSB Web service.

4.2 Obtain schema names

Method	Request		Required authorization
GET	**/schemas**		**✖**
Request arguments			
Argument name	**Datatype**	**Required**	**Note**
names	-	✓	No content
Response arguments			
Output JSON record components	**Datatype**	**Required**	**Note**
responseCode	Integer	✓	Matches the HTTP status code: success = 200 Error code = 4XX or 5XX
message	String	✖	Available only if response code indicates an error Contains indicative error message
names	Array of strings	✖	Conditionally required if responseCode=200 Each string indicates a single schema name

4.3 Obtain single schema

Method	Request		Required authorization
GET	**/schemas**		**✖**
Request arguments			
Argument name	**Datatype**	**Required**	**Note**
schemaName	String	✓	Content is expected to be a valid schema name
Response arguments			
Output JSON record components	**Datatype**	**Required**	**Note**
responseCode	Integer	✓	Matches the HTTP status code: success = 200 Schema Name does not exist = 404 Error code = 4XX or 5XX
message	String	✖	Available only if response code indicates an error Contains indicative error message
schemas	JSON record	✖	Conditionally required if responseCode=200 Contains the name of the schema (as key) and the JSON schema as value.

4.4 Retrieve or Create ISIN Record by Attribute
Retrieve ISIN Record by Attribute

Method	Request		Required authorization
POST	**/records**		✓
Request arguments			
Argument name	**Datatype**	**Required**	**Note**
create	Boolean	×	The default is: create=true When create=false, the system will not allocate a new ISIN, and the output will not include ISIN.
Input JSON record components	**Datatype**	**Required**	**Note**
record	JSON record	✓	Content of an *Instrument Request* JSON record which is valid to an *Instrument Request schema*
requestContext	JSON record	×	User may place here any information that will help to identify the request
Response arguments			
Output JSON record components	**Datatype**	**Required**	**Note**
responseCode	Integer	✓	Matches the HTTP status code: success = 200 Authorization failed: 401 Invalid record (invalid per schema): 400 Invalid JSON syntax: 500
message	String	×	Available only if response code indicates an error Contains indicative error message
record	JSON record	×	Available if responseCode=200 Contains a valid *instrument JSON record*.
requestContext	JSON record	×	Echo the user input Conditionally required if requestContext was provided and responseCode is one of: - 200 (Success) - 400 (invalid record) - 401 (authorization failed) Note: requestContext is not available if responseCode is 500

4.5 Retrieve ISIN or ToTV Record by ISIN

Method	Request		Required authorization
GET	**/records/<ISIN>**		✓
Request arguments			
Argument name	**Datatype**	**Required**	**Note**
totv	Boolean	×	When totv=false, the returned record is a valid ISIN record. When totv=true, the returned record is a valid ToTV record. The default is: totv=false.
Response arguments			
Output JSON record components	**Datatype**	**Required**	**Note**
responseCode	Integer	✓	Matches the HTTP status code: success = 200 Authorization failed: 401 No such ISIN: 404
message	String	×	Contains indicative error message Contains: “Success” in case responseCode = 200
record	JSON record	×	Conditionally required if responseCode=200 Contains a valid *instrument JSON record*.

4.6 Search for ISIN or ToTV Records by attributes

Method	Request		Required authorization
GET	**/search**		✓
Request arguments			
Argument name	**Datatype**	**Required**	**Note**
totv	Boolean	×	When totv=false, the returned records are valid ISIN records. When totv=true, the returned record is a valid ToTV record The default is: totv=false
query	String	✓	Query string. refer to: DSB Search Query Syntax document.
pageSize	Positive Integer	×	The maximum number of records that return in each page Default and the maximum values are 1000
pageNum	Positive Integer	×	The page number Default to 1
requestContext	JSON record	×	User may place here any information that will help to identify the request
Response arguments			
Output JSON record components	**Datatype**	**Required**	**Note**
responseCode	Integer	✓	Matches the HTTP status code: success = 200 pageSize exceeds maximum = 400 Note: The responseCode does not indicate the case where user is not authorized, instead, in such a case, the totalResults is 0.
message	String	×	Available only if response code indicates an error Contains indicative error message
totalResults	Integer	×	Conditionally required if responseCode=200 Indicate the total number of records that match the query
query	String	×	Echo the user input Conditionally required if responseCode=200
pageSize	Positive Integer	×	Echo the user input Conditionally required if responseCode=200
pageNum	Positive Integer	×	Echo the user input Conditionally required if responseCode=200
records	Array of JSON record	×	Conditionally required if responseCode=200 Contains a valid *instrument JSON records* that matches the query.
requestContext	JSON record	×	Echo the user input

			Conditionally required if requestContext was provided and responseCode is 200 (Success)

4.7 Download Historical ISINs

Method	Request	Required authorization
GET	**/file-download**/isin/<YYYYMMDD>/<ASSET-CLASS>/<ASSET-CLASS>-<YYYYMMDD>.records	✓

Request notes

YYYYMMDD – stands for a valid date

Asset Class – is one of:

- Credit
- Commodities
- Equity
- Foreign_Exchange
- Rates

The base url for this method is:

- Production environment: https://prod.anna-dsb.com
- UAT environment: https://uat.anna-dsb.com

Response notes

The response is a content of file which contains ISIN records

The records are separated by new line

4.8 Download Historical ToTVs

Method	Request	Required authorization
GET	**/file-download**/totv/<YYYYMMDD>/ToTV-<CFI letters>-<YYYYMMDD>.zip	✓
Request notes		
YYYYMMDD – stands for a valid date **CFI letters see Appendix: CFI groups Categories and Groups** **The base url for this method is:** • Production environment: https://prod.anna-dsb.com • UAT environment: https://uat.anna-dsb.com		
Response notes		
The response is a content of file which contains ToTV records The records are separated by new line		

5 REST Methods Samples

5.1 Introduction

This section contains REST method samples.

Some of the responses are <truncated>

5.2 Obtain schema names

GET	/schema?names

Response

```
{
  "names": [
    "Credit.Swap.CDX_Risky_Zero_Tranche.InstRefDataReporting.V1",
    "Credit.Option.iTraxx_Europe_Swaption.InstRefDataReporting.V1",
    "Credit.Swap.Singapore_Corporate.InstRefDataReporting.V1",
    "Credit.Swap.Standard_LCDS_Bullet.InstRefDataReporting.V1",
<truncated>
    "Request.Credit.Swap.Asia_Corporate.InstRefDataReporting"
  ],
  "responseCode": 200
}
```

5.3 Obtain single schema

GET	/schemas?schemaName=<NAME>

```
GET   /schemas?schemaName=Credit.Swap.PO.InstRefDataReporting.V1
```

Response

```
{
  "schemas": {
    "Credit.Swap.PO.InstRefDataReporting.V1": {
      "$schema": "http://json-schema.org/draft-04/schema#",
      "title": "Credit.Swap.PO.InstRefDataReporting.V1",
      "description": "Record template for Credit.Swap.PO",
<truncated>
   },
   "responseCode": 200
}
```

5.4 Retrieve or Create ISIN Record by Attribute

POST **/records**

```
POST /records
{
"record": {
    "Header": {
        "AssetClass": "Foreign_Exchange",
        "InstrumentType": "Forward",
        "UseCase": "NDF",
        "Level": "InstRefDataReporting"
    },
    "Attributes": {
        "NotionalCurrency": "EUR",
        "ExpiryDate": "2033-06-13",
        "OtherNotionalCurrency": "USD",
        "SettlementCurrency": "JMD"
    }
},
"requestContext":{
            "user": "username@email.com",
            "requestID":"ID1",
            "additional information": "blob"
      }
}
```

Response

```
{
        "record": {
                "Header": {
<truncated>
                },
                "Attributes": {
<truncated>
                },
      "ISIN": {
      "ISIN": "EZ6LSHR0B9D5",
      "Status": "New",
      "StatusReason": "",
      "LastUpdateDateTime": "2017-08-30T11:44:13"
<truncated>
                },
                "TemplateVersion": 1,
                "Derived": {
<truncated>
                }
        },
        "responseCode": 200,
        "requestContext": {
                "user": "username@email.com",
                "requestID": "ID1",
                "additional information": "blob"
        }
}
```

5.5 Retrieve ISIN Record by Attribute

POST **/records**

```
POST /records?create=false
{
"record": {
    "Header": {
        "AssetClass": "Foreign_Exchange",
        "InstrumentType": "Forward",
        "UseCase": "NDF",
        "Level": "InstRefDataReporting"
    },
    "Attributes": {
        "NotionalCurrency": "EUR",
        "ExpiryDate": "2055-06-13",
        "OtherNotionalCurrency": "USD",
        "SettlementCurrency": "JMD"
    }
},
"requestContext":{
            "user": "username@email.com",
            "requestID":"ID1",
            "additional information": "blob"
      }
}
```

Response

```
{
        "record": {
                "Header": {
<truncated>
                },
                "Attributes": {
<truncated>
                },
      "ISIN": {
      "ISIN": "",
      "Status": "New",
      "StatusReason": "",
      "LastUpdateDateTime": "2017-08-30T11:56:19"
<truncated>
                },
                "TemplateVersion": 1,
                "Derived": {
<truncated>
                }
        },
        "responseCode": 200,
        "requestContext": {
                "user": "username@email.com",
                "requestID": "ID1",
                "additional information": "blob"
        }
}
```

5.6 Retrieve ISIN Record by ISIN

GET	/records/<ISIN>

```
GET /records/EZ000001HT00
```

Response


```
{
  "record": {
    "Header": {
      "AssetClass": "Commodities",
      "InstrumentType": "Forward",
      "UseCase": "Commodities_Forward",
      "Level": "InstRefDataReporting"
    },
    "Attributes": {
      "NotionalCurrency": "GBP",
      "ExpiryDate": "24170228",
      "ReturnPayout": "Forward price of underlying instrument",
      "DeliveryType": "Cash",
      "BaseProduct": "AGRI",
      "TransactionType": "OTHR",
      "FinalPriceType": "OTHR",
      "SubProduct": "SOFT",
      "AdditionalSubProduct": "ROBU"
    },
    "ISIN": {
      "ISIN": "EZ000001HT00",
      "Status": "New"
    },
    "TemplateVersion": 1,
    "Derived": {
      "Issuer": "NA",
      "PriceMultiplier": 1,
      "CommoditiesDerivativesIndicator": "TRUE",
      "UnderlyingAssetType": "Agriculture",
      "LongName": "Commodities Forward AGRI ROBU GBP 24170228",
      "FISN": "NA/Fwd AGRI ROBU GBP 24170228",
      "CFI": "JTAXFC"
    }
  },
  "responseCode": 200,
  "message": "Success"
}
```

5.7 Retrieve ToTV Record by ISIN

GET	/records/<ISIN>?totv=true

```
GET /records/EZ8JND56HJK5?totv=true
```

Response


```
{
  "record": {
        "ToTV-record": {
                "Header": {
                        "ISIN": "EZ8JND56HJK5",
                        "LastModifiedDate": "2017-10-22",
                        "LastCompletedProcessingDate": "2017-10-30",
                        "CFI-Category": "S",
                        "CFI-Group": "R"
                },
                "DSB-ISIN":{
                        "Header":{
                                "AssetClass":"Rates",
                                "InstrumentType":"Swap",
                                "UseCase":"Fixed_Float",
                                "Level":"InstRefDataReporting"
                        },
                        "Attributes":{
                                "NotionalCurrency":"USD",
                                "ExpiryDate":"2048-03-21",
                                "ReferenceRate":"USD-LIBOR-BBA",
                                "ReferenceRateTermValue":3,
                                "ReferenceRateTermUnit":"MNTH",
                                "NotionalSchedule":"Constant",
                                "DeliveryType":"PHYS",
                                "PriceMultiplier":1
                        },
                        "ISIN":{
                                "ISIN":"EZ8JND56HJK5",
                                "Status":"New",
                                "StatusReason":"",
                                "LastUpdateDateTime":"2017-10-22T14:00:40"
                        },
                        "TemplateVersion":1,
                        "Derived":{
                                "ISOReferenceRate":"LIBO",
                                "CommodityDerivativeIndicator":"FALSE",
                                "UnderlyingAssetType":"Fixed - Floating",
                                "SingleorMultiCurrency":"Single Currency",

        "IssuerorOperatoroftheTradingVenueIdentifier":"NA",
                                "FullName":"Rates Swap Fixed_Float USD-
LIBOR-BBA 3 MNTH 20480321",
                                "ShortName":"NA/Swap Fxd Flt USD 20480321",
                                "ClassificationType":"SRCCSP"
                        }
                },
                "Derived":{
                        "ToTV": false,
                        "uToTV": false
                }
        }
  },
  "responseCode": 200,
```

```
  "message": "Success"
}
```

5.8 Search for ISIN Records by attributes

Search for Rates instruments that contains Libor

GET /search

```
GET /search?query=LIBOR AND
Rates&pageSize=5&pageNum=3&requestContext={"requestID":"ID1"}
```

Response

```
{
        "query": "LIBOR AND Rates",
        "pageNum": 3,
        "pageSize": 5,
        "totalResults": 59,
        "records": [
    { <truncated> },
    { <truncated> },
    { <truncated> },
    { <truncated> },
    { <truncated> },
        ],
        "responseCode": 200,
        "requestContext": {
                "requestID": "ID1"
        }
}
```

5.9 Search for ToTV Records by attributes

Search for ToTV Record “DE000CN0XBX2”

GET	/search

```
GET /search?query=
DE000CN0XBX2&pageSize=5&pageNum=0&requestContext={"requestID":"ID1"}&totv=true
```

Response

```
{
        "query": "DE000CN0XBX2",
        "pageNum": 0,
        "pageSize": 5,
        "totalResults": 1,
        "records": [
    { <truncated> },
        ],
        "responseCode": 200,
        "requestContext": {
                "requestID": "ID1"
        }
}
```

5.10 Download Historical ISIN records

GET	/file-download/isin/<YYYYMMDD>/<ASSET-CLASS>/<AssetClass>-<YYYYMMDD>.records

```
GET /file-download/isin/20170403/Rates/Rates-20170403.records
```

Response

```
<truncated>
<truncated>
<truncated>
<truncated>
...
<truncated>
```

5.11 Download Historical ToTV records

GET	/file-download/totv/<YYYYMMDD>/ToTV-<CFI letters>-<YYYYMMDD>.zip

```
GET /file-download/totv/20180411/ToTV-ST-20180411.zip
```

Response

```
<truncated>
<truncated>
<truncated>
<truncated>
...
<truncated>
```

Appendix: CFI groups Categories and Groups

CFI Category	CFI Group	CFI letters
Equities	Common/ordinary shares	ES
Equities	Preferred/preference shares	EP
Equities	Common/ordinary convertible shares	EC
Equities	Preferred/preference convertible shares	EF
Equities	Limited partnership units	EL
Equities	Depositary receipts on equities	ED
Equities	Structured instruments	EY
Equities	Others (miscellaneous)	EM
Collective investment vehicles	Standard (vanilla) investment funds/mutual funds	CI
Collective investment vehicles	Hedge funds	CH
Collective investment vehicles	Real estate investment trusts (REIT)	CB
Collective investment vehicles	Exchange traded funds (ETF)	CE
Collective investment vehicles	Pension funds	CS
Collective investment vehicles	Funds of funds	CF
Collective investment vehicles	Private equity funds	CP
Collective investment vehicles	Others (miscellaneous)	CM
Debt instruments	Bonds	DB
Debt instruments	Convertible bonds	DC
Debt instruments	Bonds with warrants attached	DW
Debt instruments	Medium-term notes	DT
Debt instruments	Money market instruments	DY
Debt instruments	Structured instruments (capital protection)	DS
Debt instruments	Structured instruments (without capital protection)	DE
Debt instruments	Mortgage-backed securities	DG
Debt instruments	Asset-backed securities	DA
Debt instruments	Municipal bonds	DN
Debt instruments	Depositary receipts on debt instruments	DD
Debt instruments	Others (miscellaneous)	DM
Entitlement (rights)	Allotment (bonus) rights	RA
Entitlement (rights)	Subscription rights	RS
Entitlement (rights)	Purchase rights	RP
Entitlement (rights)	Warrants	RW
Entitlement (rights)	Mini-future certificates, constant leverage certificates	RF
Entitlement (rights)	Depositary receipts on entitlements	RD
Entitlement (rights)	Others (miscellaneous)	RM
Listed options	Call options	OC
Listed options	Put options	OP
Listed options	Others (miscellaneous)	OM
Futures	Financial futures	FF
Futures	Commodities futures	FC
Swaps	Rates	SR

Swaps	Commodities	ST
Swaps	Equity	SE
Swaps	Credit	SC
Swaps	Foreign exchange	SF
Swaps	Others (miscellaneous)	SM
Non-listed and complex listed options	Rates	HR
Non-listed and complex listed options	Commodities	HT
Non-listed and complex listed options	Equity	HE
Non-listed and complex listed options	Credit	HC
Non-listed and complex listed options	Foreign exchange	HF
Non-listed and complex listed options	Others (miscellaneous)	HM
Spot	Foreign Exchange	IF
Spot	Commodities	IT
Forwards	Rates	JR
Forwards	Commodities	JT
Forwards	Equity	JE
Forwards	Credit	JC
Forwards	Foreign exchange	JF
Forwards	Others (miscellaneous)	JM
Strategies	Rates	KR
Strategies	Commodities	KT
Strategies	Equity	KE
Strategies	Credit	KC
Strategies	Foreign exchange	KF
Strategies	Mixed assets	KY
Strategies	Others (miscellaneous)	KM
Financing	Loan-lease	LL
Financing	Repurchase agreements	LR
Financing	Securities lending	LS
Referential instruments	Currencies	TC
Referential instruments	Commodities	TT
Referential instruments	Interest rates	TR
Referential instruments	Indices	TI
Referential instruments	Baskets	TB
Referential instruments	Stock dividends	TD
Referential instruments	Others (miscellaneous)	TM
Others (miscellaneous)	Combined instruments	MC
Others (miscellaneous)	Other assets (miscellaneous)	MM

About Derivatives Service Bureau (DSB)

The Association of National Numbering Agencies (“ANNA”), is founding the Derivatives Service Bureau (DSB), for the issuance and maintenance of International Securities Identification Numbers (ISINs) for OTC Derivatives. The DSB will rely on an automated platform capable of allocating ISINs in near real-time.