# **Developer Guide. Cbonds API**

#### 23 August, 2023

Definitions Getting data from a web service User authorization Getting the service scheme Data request Key response parameters Data request using filters Examples Limits and errors Request volume Data update frequency Queries frequency Restrictions on the number of records List of possible errors in the web service response Demo version of the web service Example of accessing a web service in Python 3.x List of endpoints Bonds Issuers Indices Stocks

## Definitions

ETF and Mutual Funds

**Web service** is a software system identified by a URL string. A description of this software system can be found by other software systems that can interact with it according to this description through messages transmitted via Internet protocols. Cbonds API web service interfaces are defined in XML and JSON.

**WSDL** (Web Services Description Language) is a language for describing web services based on XML.

SOAP (Simple Object Access Protocol) is an XML-based messaging protocol.

XML is an extensible markup language for storing and transmitting structured data.

JSON (JavaScript Object Notation) is a text-based data exchange format based on JavaScript.

**Web service operation/method/endpoint** (hereinafter referred to as endpoint) is a web service function that returns data to the client in WSDL+SOAP or JSON format.

**User** is a client of the Cbonds API service, having a login and password for authorization and accessing a specific dataset.

### Getting data from a web service

#### **User authorization**

In order to prevent unauthorized access to data for all endpoints described below, you must specify the username/password assigned to the service for the user.

To get acquainted with the technical aspect of the web service, you can use access of a preconfigured user (i.e. test user):

Login: Test

Password: Test

The test user has access to a limited dataset, which does not display the completeness of the database.

#### Getting the service scheme

An XSD/XML schema or JSON schema can be obtained by a GET request with a user's username and password specified in the URL:

Schema	Request URL
XSD/XML	https://ws.cbonds.info/services/wsdl?login=LOGIN&password=PASSWORD
JSON	https://ws.cbonds.info/services/json?login=LOGIN&password=PASSWORD

You can also get the schema using the POST request by specifying the username and password in the body of the POST request (not in the URL).

Two parameters in the schema that indicate the possibility of sorting and filtering:

sortable - indicates the possibility of sorting by field (1 - sorting is possible, 0 - not possible);

searchable - indicates the possibility of filtering by field (1 - filtration is possible, 0 - not possible).

#### Data request

Interaction with a web service for receiving data is carried out by sending POST requests of the HTTPS protocol. Depending on your preferred data, you should send queries to the following URLs:

Data format	Request URL
XSD/XML	https://ws.cbonds.info/services/wsdl/(endpoint name)*/?lang=eng
JSON	https://ws.cbonds.info/services/json/(endpoint name)*/?lang=eng

\* for example: https://ws.cbonds.info/services/json/get\_emissions For the operation list, see Endpoints reference

The request body contains the request parameters. Request body structure in JSON format:

```
{
    "auth":{"login":"LOGIN","password":"PASSWORD"},
    "filters":[{"field":"...","operator":"...","value":...}, {}],
    "quantity":{"limit":10,"offset":0},
    "sorting":[{"field":"...","order":"..."}],
    "fields":[{"field": "..."}, {"field": "..."}]
}
```

Where the main request parameters are:

"auth" - contains the user's login and password;

"filters" - contains the specified selection conditions;

"quantity" - contains parameters {"limit":..., "offset":...}

"limit" - number of records per page for a single request;

**"offset"** - page number. It must be a multiple of the limit, e.g. with a limit of 1000 offset can be 0, 1000, 2000, etc.

"sorting" - contains a list of fields for sorting;

"fields" - contains a list of fields to display in response.

Request body structure in WSDL+SOAP format:

```
<SOAP-ENV:Envelope
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <SOAP-ENV:Body
    <m:RequestMessage_emissions xmlns:m="https://ws.cbonds.info/">
     <m:AuthData>
        <m:Login><![CDATA[LOGIN]]></m:Login>
        <m:Password><![CDATA[PASSWORD]]></m:Password>
      </m:AuthData>
      <m:Filters>
        <m:NumericFilter>
          <m:FilterField>....</m:FilterField>
          <m:FilterOperator>...</m:FilterOperator>
          <m:FilterValue><![CDATA[...]]></m:FilterValue>
        </m:NumericFilter>
      </m:Filters>
      <m:QuantityData>
       <m:Limit>10</m:Limit>
       <m:Offset>0</m:Offset>
      </m:QuantityData>
      <m:SortRules>
        <m:SortRule>
         <m:SortField></m:SortField>
         <m:SortOrder>...</m:SortOrder>
        </m:SortRule>
      </m:SortRules>
      <m:ResponseItemFields>
```

```
<m:ResponseItemField>
    <m:ItemField>...</m:ItemField>
    </m:ResponseItemField>
    </m:ResponseItemFields>
```

```
</m:RequestMessage_emissions>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

#### Key response parameters

Response structure in JSON format:

```
{
    "count":4,
    "total":4,
    "limit":10,
    "offset":0,
    "exec_time":0.4443,
    "items":[...],
    "meta":{ "cms_full_gen_time":0.4444, "user_id":33 }
}
```

Where response parameters are:

"count" - the number of records found for the current page (for the last page, it may not be equal to limit);

**"total"** - the number of records found. To build pagination (a sequential request plan for selecting all the data in parts), we focus on the given field in the response (divide it by the limit and get the last page number in the whole part, if we count from zero). For example, if the limit is 1000 and the value total=2500, you will need to perform three queries with offsets 0\*1000=0, 1\*1000=1000, 2\*1000=2000;

"limit" - takes the same value as at the request;

"offset" - the offset value that is not a multiple of the limit is reduced to a multiple to the lower side;

"exec\_time" - this parameter is required for optimization. If there are problems with the performance of the service (and there are opportunities), you can organize logging of this parameter for each operation, in the ideal case - statistics with aggregated values for the operation, filters, offset, etc.

"items" - sends all records for the corresponding page;

"cms\_full\_gen\_time"- is used for optimization;

"user\_id" – your user identifier in our system, for the test user user\_id = 33.

Response structure in WSDL+SOAP format:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
```

```
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="https://ws.cbonds.info/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
 <SOAP-ENV:Body>
   <ns1:ResponseMessage_emitents>
     <ns1:Count>4</ns1:Count>
     <ns1:Total>4</ns1:Total>
     <ns1:Limit>10</ns1:Limit>
     <ns1:Offset>0</ns1:Offset>
      <ns1:ExecTime>0.4139</ns1:ExecTime>
       <ns1:Items><ns1:Item>
          . . .
       </ns1:Item></ns1:Items>
   </ns1:ResponseMessage_emitents>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
<!-- user_id: 33 -->
<!-- cms_full_gen_time: 0.4145 -->
<!-- lang: eng -->
<!-- strict_mode: 1 -->
<!-- performLogging: -1 -->
```

#### Data request using filters

When requesting data, you can create filters selecting only certain information that meets the specified criteria from all the data. The list of fields for which a filter can be created is limited.

Operator	Decoding the operator	Operator value		
'eq'	'equal'	Equal		
'ne'	'not equal'	Not equal		
'lt'	'less'	Strictly less		
'le'	'less or equal'	Less or equal		
'gt'	'greater'	Strictly greater		
'ge'	'greater or equal'	Greater or equal		
'in'	'is in'	Included in the busload		
'ni'	'is not in'	Not included in the busload		
'bw'	'begins with'	Begins with (characters)		
'bn'	'does not begin with'	Does not begin with (characters)		
'ew'	'ends with'	Ends with (characters)		
'en'	'does not end with'	Does not end with (characters)		
'cn'	'contains'	Contains part of the string		
'nc'	'does not contain'	Does not contain part of the string		
'nu'	'is null',	Has a NULL value		
'nn'	'is not null'	Not NULL		

List of possible operators for data filtering:

#### Examples

Examples of requests that can be applied to the "get\_emissions" endpoint (issues static data).

The request will be sent to the address <u>https://ws.cbonds.info/services/json/get\_emissions/?</u> lang=eng

1. Select an issue with specific ISIN - US037833EL06

Request in JSON format:

```
{
"auth":{"login":"LOGIN","password":"PASSWORD"},
"filters":[{"field":"isin_code","operator":"eq","value":"US037833EL06"}],
"quantity":{"limit":10,"offset":0},
"sorting":[{"field":"id","order":"asc"}]
"fields":[{"field": "id"}, {"field": "maturity_date"}]
}
```

Request in WSDL+SOAP format:

```
<SOAP-ENV:Envelope
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
 <SOAP-ENV:Body>
   <m:RequestMessage_emissions xmlns:m="https://ws.cbonds.info/">
     <m:AuthData>
       <m:Login>LOGIN</m:Login>
        <m:Password>PASSWORD</m:Password>
     </m:AuthData>
      <m:Filters>
       <m:NumericFilter>
          <m:FilterField>isin code</m:FilterField>
          <m:FilterOperator>eq</m:FilterOperator>
         <m:FilterValue><![CDATA[US037833EL06]]></m:FilterValue>
       </m:NumericFilter>
     </m:Filters>
     <m:QuantityData>
       <m:Limit>10</m:Limit>
        <m:Offset>0</m:Offset>
     </m:QuantityData>
      <m:SortRules>
       <m:SortRule>
          <m:SortField>id</m:SortField>
          <m:SortOrder>asc</m:SortOrder>
       </m:SortRule>
      </m:SortRules>
      <m:ResponseItemFields>
       <m:ResponseItemField>
         <m:ItemField>id</m:ItemField>
        </m:ResponseItemField>
        <m:ResponseItemField>
         <m:ItemField>maturity_date</m:ItemField>
        </m:ResponseItemField>
      </m:ResponseItemFields>
    </m:RequestMessage_emissions>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Further, for brevity, all examples will be given only in JSON format.

2. Select multiple issues with specific ISINs, e.g. US037833EL06 and USU5876JAM72.

Request in JSON format:

```
{
"auth":{"login":"LOGIN","password":"PASSWORD"},
"filters":[{"field":"isin_code","operator":"in","value":"US037833EL06;USU5876JAM72"}],
"quantity":{"limit":10,"offset":0},
"sorting":[{"field":"","order":"asc"}],
"fields":[{"field": "id"}, {"fields": "maturity_date"}]
}
```

3. Select issues information on which were updated after August 21, 2023

Request in JSON format:

```
{
"auth":{"login":"LOGIN","password":"PASSWORD"},
"filters":[{"field":"updating_date","operator":"ge","value":"2023-08-21"}],
"quantity":{"limit":10,"offset":0},
"sorting":[{"field":"","order":"asc"}]
"fields":[]
}
```

4. Select issues information on which were updated between August 1 and August 21, 2023

Request in JSON format:

#### Limits and errors

#### **Request volume**

Maximum number of records in the response (items in the items field) 1000

To get all the data, you must run multiple queries by changing the **offset.** Each response contains information about the total number of records (the "total" field) that are available with the filters transferred in the request.

#### Data update frequency

Data in all endpoints, except for the *get\_tradings\_stocks\_full\_realtime\_new* and *get\_tradings\_realtime* endpoints (intraday quotes), is updated 1 time per hour.

#### **Queries frequency**

Period	Limit	
Allowed number of requests per endpoint per minute	No more than 30 times	
Allowed number of requests per endpoint per day	No more than 10,000 times	

#### **Restrictions on the number of records**

To ensure stable and uninterrupted work of the web service, a limit is introduced on the number of records in the result set.

The default maximum number of records is 1,000,000. If this value is exceeded, an error message with status 500100 will be broadcast.

#### List of possible errors in the web service response

- 1. Errors that you can get when accessing a web service:
  - a. HTTP/1.1 301 Moved Permanently access via http instead of https;
  - http:/1.1 403 Forbidden incorrect login; invalid password; no login, no password, no authorization block; the limit of records in the response has been exceeded (more details in paragraph 4. Number of records in the result set exceeded);
  - c. **HTTP/1.1 500 Internal Service Error** config with syntax error; a request for an endpoint to which there is no access;
  - d. HTTP/1.1 504 response waiting time out.
- 2. Software errors:
  - a. https protocol required access via http instead of https;
  - b. Max requests per minute limit max\_per\_minute exceeded. Try to request the next minute. limit on the number of requests per minute;
  - c. Max requests per day limit max\_per\_day exceeded. Try to request next day. limit on the number of requests per day.
- 3. Messages about intercepted errors:
  - a. Undefined index: xxxx
  - b. Invalid field (xxxx) for filtering

- c. The request JSON string is not valid. The collection "%services\_xxxxx%" is not available for user id "yy
- 4. Number of records in the result set exceeded, message text:

"You exceeded the maximum number of records in the result set total size. Please use filtering in your request or refine existing filters to reduce the volume of results. The number of records in the result set is n, the maximum possible number is 1000000."

### Demo version of the web service

The demo version serves as an assistant for developing client applications. The tool contains the same functionality as the full version and differs only in the presence of a visual interface.

To start working with the demo version of the web service, click one of the links:

- 1. https://ws.cbonds.info/services/json/demo/
- 2. https://ws.cbonds.info/services/wsdl/demo/

Below is a description of working only with the demo version for JSON, working with the demo version for WSDL is similar.

1. Enter username and password for access (or test user credentials) and click the "Request service schema"

Creden	tials					
Login	Test	Pas	sword			
Reques	t service so	chema with <d< th=""><th>ocument&gt; tag</th><th>gs localized</th><th>for: eng 🔻</th><th></th></d<>	ocument> tag	gs localized	for: eng 🔻	
Reques	τ			Responsce		

2. After requesting the service schema, the "Request" and "Response" windows will be filled in.

The "Response" window contains the service schema, in this example, a JSON schema.

Cbonds.Database Web	Services »	Json Demo
Credentials		
Login Test	Password ••••	
Request service schema with	<document> tags</document>	s localized for: eng ▼
Available operations: - sel	ect operation -	· •
Request		Responsce
/ services/ json/		success
login=Test&password=test⟨	∙eng	<pre>{"service":{"get_auction_types": {"url":"https:\/\/ws.cbonds.info//services \/json\/get_auction_types\/","arguments": {"auth": {"login":","password":""},"filters": [{"field":"id","type":"int","available_ope rators": ["eq","ne","nu","nn","lt","le","gt","ge"," in","ni"),"title":"id","sortable":0,"searc hable":0}, {"field":"name_eng","type":"string","avail able_operators": ["eq","ne","nu","nn","bw","bn","ew","en"," cn","nc","in","ni"],"title":"Auction type (eng)","sortable":0,"searchable":0}, {"field":"name_rus","type":"string","avail able_operators": ["eq","ne","nu","nn","bw","bn","ew","en"," cn","nc","in","ni"],"title":"Auction type (eng),"sortable":0,"searchable":0), {"field":"statuses_id","type":"int","avail able_operators": ["eq","ne","nu","nn","lt","le","gt","ge"," in","ni"],"title":"id in statuses table","sortable":0,"searchable":0},</pre>

3. Select one of the available endpoints from the "Available operation" drop-down list. For example, let's select the "get\_emissions" endpoint.

Cbonds.Database WebServices »	Json Demo
Credentials Login Test Password •••• Request service schema with <document> tags Available operations: - select operation -</document>	s localized for: eng ▼
Request / services/ json/	Responsce success
login=Test&password=test⟨=eng	<pre>{"service":{"get_auction_types": {"url":"https:\/\/ws.cbonds.info\/services \/json\/get_auction_types\/", "arguments": {"auth": {"login":", "password":""}, "filters": [{"field":"id", "type":"int", "available_ope rators": ["eq", "ne", "nu", "nn", "lt", "le", "gt", "ge", " in", "ni"], "title":"id", "sortable":0, "searc hable":0}, {"field":"name_eng", "type":"string", "avail able_operators": ["eq", "ne", "nu", "nn", "bw", "bn", "ew", "en", " cn", "nc", "in", "ni"], "title":"Auction type (eng)", "sortable":0, "searchable":0}, {"field":"name_rus", "type":"string", "avail able_operators": ["eq", "ne", "nu", "nn", "bw", "bn", "ew", "en", " cn", "nc", "in", "ni"], "title":"Auction type (eng)", "sortable":0, "searchable":0}, {"field": "statuses_id", "type":"int", "avail able_operators": ["eq", "ne", "nu", "nn", "lt", "le", "gt", "ge"," in", "ni"], "title":"id in statuses table", "sortable":0, "searchable":0},</pre>

- 4. After selecting the endpoint, the following request parameter settings will be available:
- select the number of records to send;
- sort by a field in received responses;
- filters on the data to be sent.

These options can be applied to all endpoints except reference endpoints. To work with filters, select a field, click the "append" button, select an operator and a value.

	Creden	tials				
	Login	Test	Password ···	••		
	Reques	t service schema wi	th <document></document>	tags localized fo:	r: eng 🗸	
Set offset	la	ble operations: ge	t_emissions		~	Dictionary: No
	positi	Records Limit (page on) 0	; size) 10 ✔ F	Records Offset (fi	rst recor Se	elect fields for sorting
	Sortin Field	g: - select field -				~
		ascending 🗸				Select fields for display
	-	se fields: - select fields - id issue formal issuer (id) Country of the for Branch of the form Registration form Type formal issues	rmal issuer(id) mal issuer(id) of the formal :	issuer (id)		*
	Restri	formal issuer (eng	1)			Select fields for filters
		field for restrict	ion			_
	id issue 🗸 append					
	id iss	ue	=	✓ US0	37833EL06	x
	Perform	operation				Select an operator and
	Reques			Responsce		enter a value
After setting th parameters, cli Perform operat	login= ne ick	ices/ json/ Test&password=test&l	ing=eng	<pre>{"url":"https: \/json\/get_a: ("auth": {"login":"","] [("field":"id' rators": ["eq","ne","ni in","ni"],"ti: hable":0}, ("field":"nam able_operator: ["eq","ne","ni</pre>	<pre>action_types\/" password":"")," ","type":"int", a","nn","lt","l tle":"ID","sort a_eng","type":"</pre>	<pre>info\/services ', "arguments": 'filters": "available_ope Le", "gt", "ge", " table":0, "searc 'string", "avail on", "ew", "en", "</pre>

#### Cbonds.Database WebServices » Json Demo

5. After the request is completed, the body of the POST request is automatically generated in the "Request" window. The "Response" window will display the response in the appropriate format.

```
Request
https:// ws.cbonds.info/ services/ json/
get_emissions/ ?lang=eng
{"auth":
    {"login":"Test", "password":"test"}, "filters":
    [{"field":"id", "operator":"eq", "value":"US037
833EL06"], "quantity":
    {"limit":10, "offset":0}, "sorting":
    [{"field":"", "order":"asc"}], "fields":[]}
```

Thus, when developing a product, you can consult the data returned by the web service using demo version.

### **Example of accessing a web service in Python 3.x**

Below there is an example of Python 3.x code performing:

- 1. Data request with filtering;
- 2. Writing data to pandas DataFrame;
- 3. Saving a table to csv.

```
import requests
import pandas as pd
url_emissions = 'https://ws.cbonds.info/services/json/get_emissions/?lang=eng'
json_data_emissions = {"auth":{"LOGIN":"Test","password":"PASSWORD"},
"filters":[{"field":"isin_code","operator":"in","value":"US037833EL06;USU5876JAM72"}],
"quantity":{"limit":10,"offset":0},"sorting":[{"field":"","order":"asc"}]}
response_emissions = requests.get(url_emissions, json=json_data_emissions).json()
print(response_emissions)
initial_dict = response_emissions['items']
df = pd.DataFrame.from_dict(initial_dict)
df
df.to_csv(index=False)
```

## List of endpoints

For each web service endpoint, the list of available, filtered, and sorted fields is limited. All available endpoint fields are divided into basic and additional fields. The basic operation fields are available to all users when connecting to the web service. If necessary, a number of additional fields can be added to the list of available fields for web service endpoints. The list of fields that can be searched or sorted can also be expanded if necessary.

List of all endpoints available via Cbonds web-site - https://cbonds.com/api/catalog/folders/#catalog

#### Bonds

Issues static data - get\_emissions Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_emissions/</u> <u>https://ws.cbonds.info/services/wsdl/get\_emissions/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_emissions/?lang=eng</u>

Issues default data - get\_emission\_default

Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_emission\_default/</u> <u>https://ws.cbonds.info/services/wsdl/get\_emission\_default/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_emission\_default/?lang=eng</u>

Issues listing data - get\_emission\_quote\_listings

Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_emission\_quote\_listings/</u> <u>https://ws.cbonds.info/services/wsdl/get\_emission\_quote\_listings/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_emission\_quote\_listings/?lang=eng</u>

Tap issues data - get\_emission\_tap\_issues

Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_emission\_tap\_issues/</u> <u>https://ws.cbonds.info/services/wsdl/get\_emission\_tap\_issues/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_emission\_tap\_issues/?lang=eng</u>

Coupon payment schedule - get\_flow\_new Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_flow\_new/</u> <u>https://ws.cbonds.info/services/wsdl/get\_flow\_new/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_flow\_new/?lang=eng</u>

Guarantors data - get\_emission\_guarantors Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_emission\_guarantors/</u> https://ws.cbonds.info/services/wsdl/get\_emission\_guarantors/?lang=eng https://ws.cbonds.info/services/json/get\_emission\_guarantors/?lang=eng

Data on out/call options - get\_offert Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_offert/</u> <u>https://ws.cbonds.info/services/wsdl/get\_offert/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_offert/?lang=eng</u>

Participation of investment banks in the placement - get\_participation Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_participation/</u> <u>https://ws.cbonds.info/services/wsdl/get\_participation/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_participation/?lang=eng</u>

Bonds quotes from stock exchanges - get\_tradings\_new (40 days snapshot) Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_tradings\_new/</u> <u>https://ws.cbonds.info/services/wsdl/get\_tradings\_new/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_tradings\_new/?lang=eng</u>

Intraday quotes on bonds - get\_tradings\_realtime Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_tradings\_realtime/</u> <u>https://ws.cbonds.info/services/wsdl/get\_tradings\_realtime/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_tradings\_realtime/?lang=eng</u>

OTC quotes on bonds - get\_mpquotes Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_mpquotes/</u> <u>https://ws.cbonds.info/services/wsdl/get\_mpquotes/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_mpquotes/?lang=eng</u>

ACI data as of the date (without quotes) - get\_aci Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_aci/</u> <u>https://ws.cbonds.info/services/wsdl/get\_aci/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_aci/?lang=eng</u>

Data on issues covenants - get\_covenants\_emissions Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_covenants\_emissions/</u> <u>https://ws.cbonds.info/services/wsdl/get\_covenants\_emissions/?lang=eng</u>

#### https://ws.cbonds.info/services/json/get\_covenants\_emissions/?lang=eng

Goverment bonds auctions - get\_auctions Fields description - <u>https://cbonds.com/api/catalog/API\_Emissions/get\_auctions/</u> <u>https://ws.cbonds.info/services/wsdl/get\_auctions/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_auctions/?lang=eng</u>

Information on basic assets for structured products - get\_emission\_underlying\_assets Fields description https://cbonds.com/api/catalog/API\_Emissions/get\_emission\_underlying\_assets/ https://ws.cbonds.info/services/wsdl/get\_emission\_underlying\_assets/?lang=eng| https://ws.cbonds.info/services/json/get\_emission\_underlying\_assets/?lang=eng|

Use of proceeds for bonds - get\_use\_of\_proceeds Fields description - <u>https://cbonds.com/api/catalog/dictionaries/get\_use\_of\_proceeds/</u> <u>https://ws.cbonds.info/services/wsdl/get\_use\_of\_proceeds/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_use\_of\_proceeds/?lang=eng</u>

#### Issuers

Issuers static data - get\_emitents Fields description - <u>https://cbonds.com/api/catalog/API\_FinancialReports/get\_emitents/</u> <u>https://ws.cbonds.info/services/wsdl/get\_emitents/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_emitents/?lang=eng</u>

IFRS indicators (financial sector, provided by Cbonds) - get\_report\_msfo\_finance Fields description - <u>https://cbonds.com/api/catalog/API\_FinancialReports/get\_report\_msfo\_finance/</u> <u>https://ws.cbonds.info/services/wsdl/get\_report\_msfo\_finance/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_report\_msfo\_finance/?lang=eng</u>

IFRS indicators (real sector, provided by Cbonds) - get\_report\_msfo\_real Fields description - <u>https://cbonds.com/api/catalog/API\_FinancialReports/get\_report\_msfo\_real/</u> <u>https://ws.cbonds.info/services/wsdl/get\_report\_msfo\_real/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_report\_msfo\_real/?lang=eng</u>

Financial statements globally (annual) - get\_report\_msfo\_global\_annual

Fields description https://cbonds.com/api/catalog/API\_FinancialReports/get\_report\_msfo\_global\_annual/ https://ws.cbonds.info/services/wsdl/get\_report\_msfo\_global\_annual/?lang=eng https://ws.cbonds.info/services/json/get\_report\_msfo\_global\_annual/?lang=eng

Financial statements globally (quarter) - get\_report\_msfo\_global\_quarter Fields description -<u>https://cbonds.com/api/catalog/API\_FinancialReports/get\_report\_msfo\_global\_quarter/</u> <u>https://ws.cbonds.info/services/wsdl/get\_report\_msfo\_global\_quarter/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_report\_msfo\_global\_quarter/?lang=eng</u>

#### Indices

Index portfolio structure - get\_index\_content Fields description - <u>https://cbonds.com/api/catalog/API\_Indexes/get\_index\_content/</u> <u>https://ws.cbonds.info/services/wsdl/get\_index\_content/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_index\_content/?lang=eng</u>

Index values - get\_index\_value\_new Fields description - <u>https://cbonds.com/api/catalog/API\_Indexes/get\_index\_value\_new/</u> <u>https://ws.cbonds.info/services/wsdl/get\_index\_value\_new/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_index\_value\_new/?lang=eng</u>

#### Stocks

Stock parameters - get stocks\_full Fields description - <u>https://cbonds.com/api/catalog/API\_Stocks/get\_stocks\_full/</u> <u>https://ws.cbonds.info/services/wsdl/get\_stocks\_full/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_stocks\_full/?lang=eng</u>

Stocks dividends - get\_stocks\_dividends\_v2 Fields description - <u>https://cbonds.com/api/catalog/API\_Stocks/get\_stocks\_dividends\_v2/</u> <u>https://ws.cbonds.info/services/wsdl/get\_stocks\_dividends\_v2/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_stocks\_dividends\_v2/?lang=eng</u>

Stocks quotes from stock exchanges - get\_tradings\_stocks\_full\_new (40 days snapshot) Fields description - <u>https://cbonds.com/api/catalog/API\_Stocks/get\_tradings\_stocks\_full\_new/</u> https://ws.cbonds.info/services/wsdl/get\_tradings\_stocks\_full\_new/?lang=eng https://ws.cbonds.info/services/json/get\_tradings\_stocks\_full\_new/?lang=eng

Stocks listing data - get\_stocks\_trading\_grounds Fields description - <u>https://cbonds.com/api/catalog/API\_Stocks/get\_stocks\_trading\_grounds/</u> <u>https://ws.cbonds.info/services/wsdl/get\_stocks\_trading\_grounds/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_stocks\_trading\_grounds/?lang=eng</u>

Capitalization of stocks - get\_stocks\_capitalization Fields description - <u>https://cbonds.com/api/catalog/API\_Stocks/get\_stocks\_capitalization/</u> <u>https://ws.cbonds.info/services/wsdl/get\_stocks\_capitalization/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_stocks\_capitalization/?lang=eng</u>

#### **ETF and Mutual Funds**

ETF share classes and Mutual Funds quotes from stock exchanges get\_etf\_share\_classes\_quotes Fields description - <u>https://cbonds.com/api/catalog/API\_Funds/get\_etf\_share\_classes\_quotes/</u>

https://ws.cbonds.info/services/wsdl/get\_etf\_share\_classes\_quotes/?lang=eng https://ws.cbonds.info/services/json/get\_etf\_share\_classes\_quotes/?lang=eng

ETF funds and Mutual Funds static data - get\_etf\_funds

Fields description - <u>https://cbonds.com/api/catalog/API\_Funds/get\_etf\_funds/</u>

https://ws.cbonds.info/services/wsdl/get\_etf\_funds/?lang=eng https://ws.cbonds.info/services/json/get\_etf\_funds/?lang=eng

ETF share classes and Mutual Funds listing data - get\_etf\_share\_classes\_trading\_grounds Fields description -

https://cbonds.com/api/catalog/dictionaries/get\_etf\_share\_classes\_trading\_grounds/ https://ws.cbonds.info/services/wsdl/get\_etf\_share\_classes\_trading\_grounds/?lang=eng https://ws.cbonds.info/services/json/get\_etf\_share\_classes\_trading\_grounds/?lang=eng

ETF share classes NAV data - get\_etf\_share\_classes\_nav Fields description - <u>https://cbonds.com/api/catalog/dictionaries/get\_etf\_share\_classes\_nav/</u> <u>https://ws.cbonds.info/services/wsdl/get\_etf\_share\_classes\_nav/?lang=eng</u> <u>https://ws.cbonds.info/services/json/get\_etf\_share\_classes\_nav/?lang=eng</u>