WEBSERVICE INTEGRATION GUIDE FOR DATA CONSUMERS

Vers 1.5
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Retrieving data using Web services

Introduction

Data consumers can use the “Transparency Platform Web Service” to retrieve data.

This web service is based on the standard IEC 61968-100 (referred as [STAN]) and the AF_284 specification (referred as [SPEC]).

The signature needs to use the algorithm SHA-1. At the moment the TP is only expecting that version.

Data consumers should use the verb “get” and noun “EnergyAccountReport” See [SPEC], Chapter 5.2 Get Message for more information.

Parameters are passed as a series of key/value pairs as shown in “Table 1 – Query parameters”

The description of each business dimension with list of possible values can be found in “Table 2 – Business dimensions types”

Detailed description of data items and parameters for retrieval can be found in “Table 3 – Data items and parameters”

Service URLs

The WSDL and endpoints are available at¹:

<table>
<thead>
<tr>
<th>Environment</th>
<th>Endpoint URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td><a href="https://62.209.222.27/data-receiver-ws/endpoints/DataService">https://62.209.222.27/data-receiver-ws/endpoints/DataService</a></td>
</tr>
<tr>
<td>Production</td>
<td><a href="https://62.209.222.22/data-receiver-ws/endpoints/DataService">https://62.209.222.22/data-receiver-ws/endpoints/DataService</a></td>
</tr>
</tbody>
</table>

You can add .wsdl if needed, e.g.: https://62.209.222.27/data-receiver-ws/endpoints/DataService.wsdl

WITH URL

<table>
<thead>
<tr>
<th>Environment</th>
<th>Endpoint URL</th>
</tr>
</thead>
</table>

You can continue accessing web services using DNS record https://transparency-ws.entsoe.eu/ or using IP address 62.209.222.22. Test environment is only accessing by the IP.

¹ Subject to change.
Query

“Figure 1 - Sample data query” shows a sample data query built the following way:

1. Specifying the requested data item using the name/value pair DataItem/Value
2. Specifying the time interval using the name/value TimeInterval/Value
3. Specifying the in and out area (as described more in details in “Table 3 – Data items and parameters”)

```
  <soap:Header/>
  <soap:Body>
    <msg:RequestMessage>
      <msg:Header>
        <msg:Verb>get</msg:Verb>
        <msg:Noun>EnergyAccountReport</msg:Noun>
        <msg:Context>PRODUCTION</msg:Context>
        <msg:Property>
          <msg:Name>DataItem</msg:Name>
          <msg:Value>CB_BALANCING_VOLUMES_OF_EXCHANGED</msg:Value>
        </msg:Property>
        <msg:Property>
          <msg:Name>TimeInterval</msg:Name>
          <msg:Value>2015-03-08 00:00:00/2015-03-09 00:00:00</msg:Value>
        </msg:Property>
        <msg:Property>
          <msg:Name>AREA|MBA</msg:Name>
          <msg:Value>10YFR-RTE------C</msg:Value>
        </msg:Property>
        <msg:Property>
          <msg:Name>AREA|MBA</msg:Name>
          <msg:Value>10YES-REE------0</msg:Value>
        </msg:Property>
      </msg:Header>
    </msg:RequestMessage>
  </soap:Body>
</soap:Envelope>
```

Figure 1 - Sample data query

Response

Retrieved XML data are wrapped in the QueryData element. See [SPEC], ANNEX I 4.1.2 Response. Binary data items data are base64 encoded and transmitted in the “Compressed” element. See [SPEC], ANNEX I 3.2 Example with binary data. In case of binary data QueryData element is omitted. “Figure 2 - Sample data response” included below shows a typical response message.
As you can see responses are signed by the transparency platform, and the calling client can verify the data authenticity by verifying the signature. For more information about this signature, please refer to [SPEC], “Chapter 10 Security” with example in “Annex A. 6 Digital Signature.”
Requesting access:

The platform contains a trust store of clients that are allowed to retrieve data. As a new data consumer you first have to deliver to the platform administrator the X509 client certificate that will be use to establish the two-way SSL connection.

For this, send an email to transparency@entsoe.eu titled “X509 certificate for Data Consumer access”, with an attachment containing the client certificate (in PEM format) to be trusted.

If you want to use different certificates for the test and the production environments, attach both certificates and specify in the email body, which certificate has to be trusted on which environment.

The platform administrator might contact you to request additional information if necessary. In any case, you will eventually receive a feedback telling you when your access has been granted.

The platform accepts both certificates delivered by a known CAs and self-signed certificates.

A self-signed certificate can be generated with OpenSSL using the following command:

1) Generate the certificate:

```
openssl req -x509 -newkey rsa:2048 -outkey dataconsumer_key.pem -out dataconsumer_cert.pem -days 1825
```

-> Please be sure to provide all details otherwise the certificate won’t be accepted by the platform.

In this case the file “dataconsumer_cert.pem” is the one that should be sent to the platform administrator when requesting access.

2) In order to get the correct keystoq to be used in SoapUI you can use the following command:

```
openssl pkcs12 -export -name entsoe -in dataconsumer_cert.pem -inkey dataconsumer_key.pem -out keystore.p12
```

If you want to use java keystore to import the keytool:

```
keytool -importkeystore -destkeystore keystore.jks -srckeystore keystore.p12 -srcstoretype pkcs12 -alias entsoe
```

3) Then you have to add the dataconsumer.p12 file to the SSL option of SoapUI.

---

2 OpenSSL is available for most platforms at: https://www.openssl.org/

3 http://docs.oracle.com/javase/8/docs/technotes/tools/windows/keytool.html
Testing

Once the registration phase has been completed we recommend to send some data query using the provided SOAPUI project that demonstration how to retrieve data.

First, you need to configure the SSL Settings to include your certificate in the web service call.

Configure SOAPUI has shown on “Figure 3 - SSL Settings configuration”.

In this case you have to use file: keystore.p12 and the password provided during the generation.

Figure 3 - SSL Settings configuration

Once this is done, you can open the project and proceed with sending a request:

1. To do so, Import the file EMFIP-data-consumer-soapui-project.xml
2. Open the provided project, select a request as described in “Figure 4 - Calling the service”
3. Execute the request
4. Check the response is valid
5. If there is an error, send the contents of “http log” and “error log” to transparency@entsoe.eu
Figure 4 - Calling the service
Subscribing to a data feed

Data consumer can subscribe to data feed: the platform will them push updates.

Note: You web service needs to use SOAP 12 standard and not 11.

The first step is to create an account on the web portal. Then send an email to transparency@entsoe.eu titled “Data Consumer subscription rights request” containing the user mane for the previously created account.

Once the access rights have been granted you'll then be able to see on the data items portal a "Subscribe" link as shown below.
Before being able to actually subscribe to a data item update, you first have to go to the subscription configuration menu "your@email.com->"My Subscriptions channels" and define a Web service channel or an ECP channel.

You can see the details by clicking on “My subscriptions”: 
The platform will then be able to push the data to your endpoint using a web service call to the URL previously configured. Below a sample web service call:

```xml
<env:Body>
  <msg:Request/>
  <msg:Payload/>
</env:Body>
```

```xml
<env:Body>
  <msg:RequestMessage>
    <env:Header/>
    <msg:Payload>
      <msg:Request/>
    </msg:Payload>
  </msg:RequestMessage>
</env:Body>
```
**XSD file**

A correct answer is mandatory otherwise the channel is disabled.

The XSD file for the response can be found here:


Since the web service pushes a put request, put response should follow, as for example in the REE WS standard (attached).

One of the following elements is expected, ResponseMessage should be used.

```xml
<http://iec.ch/TC57/2011/schema/message>EventMessage>,
<http://iec.ch/TC57/2011/schema/message>FaultMessage>,
<http://iec.ch/TC57/2011/schema/message>Message>,
```
Note for PRODUCTION_TYPE / GENERATION_UNIT

The actual specification is not correct and a different request parameter should be used in case of this data item.

Currently, 3 parameters are used.

<msg:Name>TimeInterval</msg:Name>
<msg:Name>AREA|CTA</msg:Name>
<msg:Name>PRODUCTION_TYPE</msg:Name>

This means however, that should there be several generation units of the same production type (lets say "Wind Offshore"), on the same CTA, then some of them will remain unreachable. The reason is that query data retrieves only one document per call, which needs to be identifiable.

A fix exists and resolves this, however parameters have changed.

Instead of PRODUCTION_TYPE, we would use GENERATION_UNIT. Value of this tag would be the EIC code the generation unit in question.

Example of the new parameters.

<msg:Property>
<msg:Name>TimeInterval</msg:Name>
<msg:Value>2015-10-25 00:00:00/2015-10-27 00:00:00</msg:Value>
</msg:Property>

<msg:Property>
<msg:Name>AREA|CTA</msg:Name>
<msg:Value>10YES-REE------0</msg:Value>
</msg:Property>

<msg:Property>
<msg:Name>GENERATION_UNIT</msg:Name>
<msg:Value>18WABO1-12345-D7</msg:Value>
</msg:Property>

This way every unit could be pinpointed and easily extracted, it would also eliminate the case when multiple documents would be discovered.
References

**SPEC**

AF_284

Electronic data interchanges on the Internal Electricity Market

(To be superseded by IEC TS 62325-504 when published)

**STAND**

IEC 61968-100

Application integration at electric utilities – System interfaces for distribution management –Part 100: Implementation Profiles
Annexes

Query parameters

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Parameter value</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Item</td>
<td>Code of the data item.</td>
<td>ACTUAL_TOTAL_LOAD</td>
</tr>
<tr>
<td>Time Interval</td>
<td>Data item instance time interval.</td>
<td>2013-12-19 00:00:00/2013-12-20 00:00:00</td>
</tr>
<tr>
<td>Business Dimensions</td>
<td>Up to 3 business dimensions (depends on the data type). For each dimension user has to specify it’s type and it’s value.</td>
<td>Type: AREA</td>
</tr>
</tbody>
</table>

Table 1 – Query parameters

Business dimension types

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREA</td>
<td>CTA</td>
<td>Control Area</td>
</tr>
<tr>
<td>AREA</td>
<td>BZN</td>
<td>Bidding Zone</td>
</tr>
<tr>
<td>AREA</td>
<td>CTY</td>
<td>Country</td>
</tr>
<tr>
<td>AREA</td>
<td>MBA</td>
<td>Market Balance Area</td>
</tr>
<tr>
<td>CONTRACT_TYPE_TOTAL_</td>
<td>Contract Type</td>
<td>Values of ContractTypeList in ENTSO-E Code List document (e.g. yearly=A04)</td>
</tr>
<tr>
<td>CAPACITY_NOMINATED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRODUCTION_TYPE</td>
<td>Production Type</td>
<td>Values starting with letter “B” of AssetTypeList in ENTSO-E Code List document (e.g. Solar=B16)</td>
</tr>
<tr>
<td>PRODUCTION_TYPE</td>
<td>Production Type</td>
<td>Subset of values starting with letter “B” of AssetTypeList in ENTSO-E Code List document (e.g. Solar=B16)</td>
</tr>
<tr>
<td>WIND_AND_SOLAR</td>
<td>Type (for wind and solar)</td>
<td></td>
</tr>
<tr>
<td>RESERVE_TYPE_R2</td>
<td>Reserve Type</td>
<td>Values of BusinessTypeList in ENTSO-E Code List document</td>
</tr>
</tbody>
</table>

Table 2 – Business dimensions types
## Data items and parameters

<table>
<thead>
<tr>
<th>Domain</th>
<th>Data Item</th>
<th>Interval</th>
<th>Data Item Code</th>
<th>BD1 Code</th>
<th>BD1 Eligible Values</th>
<th>BD2 Code</th>
<th>BD2 Eligible Values</th>
<th>BD3 Code</th>
<th>BD3 Eligible Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load</td>
<td>Actual Total Load [6.1.A]</td>
<td>DAY</td>
<td>ACTUAL_TOTAL_LOAD</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
<td>Area EIC</td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td>Day-ahead Total Load Forecast [6.1.B]</td>
<td>DAY</td>
<td>DAY_AHEAD_TOTAL_LOAD_FORECAST</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
<td>Area EIC</td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td>Week-ahead Total Load Forecast [6.1.C]</td>
<td>WEEK</td>
<td>WEEK_AHEAD_TOTAL_LOAD_FORECAST</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
<td>Area EIC</td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td>Month-ahead Total Load Forecast [6.1.D]</td>
<td>WEEK-BASED MONTH</td>
<td>MONTH_AHEAD_TOTAL_LOAD_FORECAST</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
<td>Area EIC</td>
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<tr>
<td>Load</td>
<td>Year-ahead Total Load Forecast [6.1.E]</td>
<td>WEEK-BASED YEAR</td>
<td>YEAR_AHEAD_TOTAL_LOAD_FORECAST</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
<td>Area EIC</td>
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<td>Load</td>
<td>Year-ahead Forecast Margin [8.1]</td>
<td>YEAR</td>
<td>YEAR_AHEAD_FORECAST_MARGIN</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
<td>Area EIC</td>
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</tr>
<tr>
<td>Generation</td>
<td>Aggregated Generation per Type [16.1.B&amp;C]</td>
<td>DAY</td>
<td>AGGREGATED_GENERATION_PER_TYPE</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
<td>Area EIC</td>
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<td>Generation</td>
<td>Actual Generation Output per Generation Unit [16.1.A]</td>
<td>DAY</td>
<td>ACTUAL_GENERATION_OUTPUT_PER_UNIT</td>
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<td>BZN, AREA</td>
<td>CTA</td>
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<td>Generation</td>
<td>Aggregate Filling Rate of Water Reservoirs and Hydro Storage Plants [16.1.A]</td>
<td>WEEK-BASED YEAR</td>
<td>AGGREGATE_FILLING_RATE_OF_WATER_RESERVOIRS</td>
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<td>MBA</td>
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<td>MBA</td>
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<td>- Energy Activated [17.1.J]</td>
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<td>MBA</td>
<td>Area EIC</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA, AREA</td>
<td>CTY</td>
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<tr>
<td>Transmission</td>
<td>Forecasted Day-ahead</td>
<td>DAY</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA</td>
<td>Area EIC</td>
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<tr>
<td>Transfer Capacities [11.1]</td>
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<td></td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA</td>
<td>Area EIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmission</td>
<td>Forecasted Week-ahead</td>
<td>WEEK</td>
<td>AREA</td>
<td>BZN, AREA</td>
<td>CTA</td>
<td>Area EIC</td>
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</tr>
<tr>
<td>Transfer Capacities [11.1]</td>
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<td>BZN, AREA</td>
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Table 3 – Data items and parameters

4 Only A05 displayed on DV