How to use Elsevier SUSHI

A brief explanation of harvesting Usage Reports from Elsevier with SUSHI

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1. Introduction

The current document serves to give all the details about Elsevier’s SUSHI web service. Customers or integrators who are new to Elsevier’s SUSHI support are requested to fill out the application request form which can be found https://www.elsevier.com/__data/assets/word_doc/0003/184791/Elsevier-SUSHI-application-form.docx. For more information on establishing Elsevier SUSHI support, please refer to section 2.1.


SUSHI follows the Simple Object Access Protocol (SOAP). In order to be able to communicate with the Elsevier endpoint you need a compliant SUSHI client, which needs to be authorized by Elsevier.

1.1 About COUNTER

COUNTER (Counting Online Usage of Networked Electronic Resources) is an international initiative setting standards for controlled and compatible facilitation of recording and reporting of online usage statistics.

The COUNTER Code of Practice (COP) has been accepted by librarians, publishers and service providers as the leading standard and resulted in a set of usage metrics (reports) that can be trusted as a reliable and consistent source of usage statistics information.

“COUNTER serves librarians, vendors, intermediaries and others by facilitating the recording and exchange of online usage statistics. The COUNTER Code of Practice provides guidance on data elements to be measured, definitions of these data elements, output report content and format, as well as on data processing and auditing. To have their usage statistics and reports designated COUNTER compliant, vendors must provide usage statistics that conform to the Code of Practice”

Source: http://www.projectcounter.org/code-of-practice-sections/general-information/
1.2 About SUSHI

SUSHI (ANSI/NISO Z39.93.2014) has been introduced as a standard communication protocol for automated harvesting of COUNTER reports by information systems. For more information about the protocol and the SUSHI schemas, please go to: http://www.niso.org/workrooms/sushi

The communication protocol currently consists of 1 GetReport method and 2 messages: A ReportRequest and ReportResponse. The protocol is extensible and capable to support COUNTER and non-COUNTER reports.

“WHAT IT IS …

• An ANSI/NISO Standard
• Defines automated request and response model for harvesting e-resource usage data
• Designed to work with COUNTER, the most frequently retrieved usage reports

WHY YOU SHOULD USE IT …

• It replaces the time-consuming user-mediated collection of usage data reports
• The protocol is generalized and extensible, meaning it can be used to retrieve a variety of usage reports”

Source: http://www.niso.org/workrooms/sushi/

“About SUSHI Schemas

The SUSHI standard has three supporting XML schemas posted on the NISO website.

The core schema (sushi[version].xsd) can be used with any conforming usage statistics reports.

If COUNTER reports are desired, the base schema calls up a second schema, the COUNTER-SUSHI schema (counter_sushi[version].xsd), which is also used. This schema references the COUNTER reports schema (counter[version].xsd), which creates an XML-formatted version of the requested COUNTER reports.

The two schemas with “sushi” in their name are basically retrieval envelopes for the XML-formatted COUNTER reports. The COUNTER XML schemas can be used separately from SUSHI by anyone who wants the reports in XML formats.”

Source: http://www.niso.org/schemas/sushi
2. Elsevier SUSHI

2.1 How to establish Elsevier SUSHI support

You will need a SUSHI client to be able to communicate with the Elsevier SUSHI Service. This can be an open source client, an in-house developed client, a client of a commercial product or a client of a tool like SOAPUI or other similar tool.

Your client and the IP address it operates from must be authorized to harvest usage statistics as a trusted Requestor ID on behalf of particular Elsevier customer account numbers. Authorization is done by the Elsevier Customer Service helpdesk. Information on how to contact the regional Customer Service helpdesks can be found on the Elsevier support pages: https://www.elsevier.com/solutions/sciencedirect/support

The Elsevier SUSHI service checks whether the combination of Requestor ID, Customer Reference ID and IP address in the request match the information in the SUSHI back end. If the validation fails, exception code 2010 is generated.

SUSHI backend authentication support can be requested by sending a completed SUSHI application form to the Elsevier Customer Helpdesk of your region. The application form can be downloaded from the Librarians Usage reports page.

A short description of the procedure to follow can also be found in the Elsevier server registry entries for ScienceDirect and Scopus on http://www.niso.org/workrooms/sushi/registry_server/

2.2 Elsevier SUSHI WSDL and Service Endpoint

For endpoint developers, the WSDL can be retrieved from: https://services.elsevier.com/SushiWebSvc/services/SushiService?wsdl

To learn about WSDL: https://en.wikipedia.org/wiki/Web_Services_Description_Language

The address of the service endpoint is: https://services.elsevier.com/SushiWebSvc/services/SushiService.SushiServicePort/
3. Elsevier SUSHI Authentication

For successful communication with Elsevier’s SUSHI Web service, the following credentials are needed:

1. IP address
2. Unique requestor ID
3. Customer (reference) ID

The Elsevier endpoint will verify these components against the SUSHI authentication details as set up in the SUSHI back end system based on the information that has been provided in the SUSHI application request form (see section 2.1).

Exception Response
- If the verification fails during the processing of the ReportRequest, the service returns an exception ReportResponse to indicate the reason of failure.

3.1 IP Address

For SUSHI requestors the IP address from where the request will be submitted needs to be registered in the Elsevier back end system in conjunction with Requestor ID and Customer (reference) ID number.

This IP address needs to be the IP address of the SUSHI client endpoint from where the communication with the Elsevier service endpoint happens. The IP address depends on the type of endpoint: for commercial ERM products from service providers (e.g. Intota, Alma, WCS) this will in general be an IP address of the service provider. For service endpoints set up in-house by institutions, it usually is an address within the customer IP range.

Customers who do not know the IP address while requesting support for remote endpoints will be requested to identify for which service provider or product Elsevier SUSHI support needs to be set up.

Exception Response
- If the Elsevier endpoint is not able to verify the IP address from the ReportRequest, it will respond with exception 2010 ReportResponse.

3.2 Requestor ID

The Requestor ID uniquely identifies the requesting SUSHI endpoint client and is generated by Elsevier upon registration of each new service endpoint.

If the service provider or product is not supported, they need to be added to the list of supported service providers. For this, contact needs to be established between Elsevier and a service provider representative who will be able to provide Company, Product and IP address details. Upon receipt of these details, a new Requestor ID will be issued by Elsevier.

Exception Response
- If the Elsevier endpoint is not able to verify the Requestor ID from a ReportRequest, it will return an exception 2000 ReportResponse.
3.3 Customer Reference ID

The customer reference ID consists of two parts:

1. A customer identifier, which indicates for which customer the report is requested
2. A platform identifier, which indicates for which product the report is requested

The required basic format for the Customer Reference ID element in an Elsevier Report Request is XX/Y999999999, where XX is the platform identifier, ‘/’ a separator and Y999999999 the Customer Account ID.

3.3.1 Customer Account ID

The Customer ID identifies for which customer account numbers (institution or consortium account numbers) usage statistics are requested.

The Elsevier account number used by SUSHI is a 10-digit number of the format Y999999999, where Y is either ‘C’ or ‘S’. ‘C’ is an indication for an institutional account and ‘S’ for a consortium account, for example: ‘C000001234’ or ‘S123456789’.

Customers approaching the helpdesk with requests for SUSHI support will be requested to provide the Elsevier account number(s) for which SUSHI support needs to be set up.

**Exception Response**

- If the Elsevier endpoint is not able to verify the Customer Account ID component from the CustomerReference ID from a ReportRequest, it will return an exception 2010 ReportResponse.
3.3.2 Platform identifier

Since Elsevier provides SUSHI support for COUNTER usage reports for several platforms and the standard COUNTER report definitions don’t support for awareness of platform, the first 2 digits of the CustomerReference ID in the ReportRequest have been reserved for a platform identifier.

Elsevier supports the following platform (channels):

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Platform/Channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>ScienceDirect</td>
</tr>
<tr>
<td>SC</td>
<td>Scopus</td>
</tr>
</tbody>
</table>

Example: ‘SD/C000001234’ for a ScienceDirect report, ‘SC/C000001234’ for a Scopus report.

Exception Response

- If the Elsevier endpoint is not able to verify the Platform ID component of the CustomerReference ID from a ReportRequest, it will return an exception 3000 ReportResponse.

3.3.3 Filtering for Consortium statistics

Elsevier provides COUNTER usage statistics support for consortia at different organizational administration levels (consortium super account or member account). This capability is supported by different CustomerReference ID parameter combinations, which are outlined in the table below.

<table>
<thead>
<tr>
<th>CustomerReference ID</th>
<th>Usage statistics returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD/S123456789</td>
<td>Consortium usage statistics ScienceDirect for all member accounts</td>
</tr>
<tr>
<td>SD/S123456789/C123456789</td>
<td>Consortium usage statistics ScienceDirect for member account C123456789 only</td>
</tr>
<tr>
<td>SD/C123456789</td>
<td>Account usage statistics ScienceDirect for account C123456789. All usage: own account</td>
</tr>
</tbody>
</table>

Table 1 shows which parameter combinations are available for Elsevier supported COUNTER reports and platforms. The filtering parameters are not mandatory; however, when they are used, they need to be used in the specified format.
<table>
<thead>
<tr>
<th>Report</th>
<th>CustomerReference ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JR1</td>
<td>‘SD/S123456789’</td>
<td>Number of Successful Full-text Article Requests by subscribed journal per period and consortium (SuperAccount), consortium member (SuperAccount/Account) or Account</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>JR1GOA</td>
<td>‘SD/S123456789’</td>
<td>Number of successful Full-text Gold Open Access Article requests by journal per period and consortium (SuperAccount), consortium member (SuperAccount/Account) or Account</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>JR2</td>
<td>‘SD/S123456789’</td>
<td>Access Denied to Full-text Articles by journal per period and consortium, consortium member or individual account (Super account, Account and SuperAccount/Account)</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>JR5</td>
<td>‘SD/S123456789’</td>
<td>Number of Successful Full-Text Article Requests by Year-of-Publication (YOP) and Journal per period and consortium (SuperAccount), consortium member (SuperAccount/Account) or Account</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>BR2</td>
<td>‘SD/S123456789’</td>
<td>Number of successful section request by Book per period and consortium (SuperAccount), consortium member (SuperAccount/Account) or Account</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>BR3</td>
<td>‘SD/S123456789’</td>
<td>Access denied to Book content items by Book per period and consortium (SuperAccount), consortium member (SuperAccount/Account) or Account</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>PR1 only for Scopus</td>
<td>‘SC/S123456789’</td>
<td>Total Searches, Result clicks and record Views by period and consortium (SuperAccount), consortium member (SuperAccount/Account) or Account</td>
</tr>
<tr>
<td></td>
<td>‘SC/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SC/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>CR1</td>
<td>‘SD/S123456789’</td>
<td>Number of successful Full-Text Journal Article and Book Chapter requests by period and consortium (SuperAccount), consortium member (SuperAccount/Account)</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
<tr>
<td>JR1TDM</td>
<td>‘SD/S123456789’</td>
<td>Number of Successful Full-Text Article Requests related to TDM activity. (TDM is Text- and Data Mining)</td>
</tr>
<tr>
<td></td>
<td>‘SD/C123456789’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘SD/S123456789/C123456789’</td>
<td></td>
</tr>
</tbody>
</table>
4. Elsevier SUSHI URLs and message samples

This section provides URLs for the Service endpoint and for the WSDL. It also contains the Elsevier ReportRequest and ReportResponse message schemas and samples for these.

4.1 URLs

<table>
<thead>
<tr>
<th>URL Endpoint</th>
<th><a href="https://services.elsevier.com/SushiWebSvc/services/SushiService">https://services.elsevier.com/SushiWebSvc/services/SushiService</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>URL WSDL</td>
<td><a href="https://services.elsevier.com/SushiWebSvc/services/SushiService?wsdl">https://services.elsevier.com/SushiWebSvc/services/SushiService?wsdl</a></td>
</tr>
</tbody>
</table>

4.2 ReportRequest

4.2.1 ReportRequest Schema
4.2.2 ReportRequest XML example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header/>
  <soapenv:Body>
    <coun:ReportRequest>
      <Created>2016-05-12T14:52:06.788Z</Created>
      <ID>1</ID>
      <sus:Requestor>
        <ID>SUSHI-XXXX</ID>
        <Name/></Name>
        <Email/></Email>
      </sus:Requestor>
      <CustomerReference>
        <ID>SD/C123456789</ID>
        <Name/></Name>
      </CustomerReference>
      <ReportDefinition Name="JR1" Release="4">
        <Filters>
          <UsageDateRange>
            <Begin>2015-08-01</Begin>
            <End>2015-08-31</End>
          </UsageDateRange>
        </Filters>
      </ReportDefinition>
    </coun:ReportRequest>
  </soapenv:Body>
</soapenv:Envelope>
```
4.2.3 ReportRequest Parameters descriptions

Elsevier-specific information about usage of specific parameter values for different purposes can be found in columns Description and Values of Table 2.

Table 1: Description of ReportRequest Parameters

<table>
<thead>
<tr>
<th>Parent Element</th>
<th>Child Element</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ReportRequest</td>
<td>ID</td>
<td>Text Identifier</td>
<td>Any</td>
</tr>
<tr>
<td></td>
<td>Created</td>
<td>Date time stamp of request</td>
<td>Required Any</td>
</tr>
<tr>
<td>Requestor</td>
<td>ID</td>
<td>Required field ID is the ‘integrator ID’ of the organization submitting the Request</td>
<td>Any ID issued by Elsevier, provided the Requestor ID has been associated by Elsevier with CustomerReference ID.</td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>Requestor Name</td>
<td>Any</td>
</tr>
<tr>
<td></td>
<td>Email</td>
<td>Requestor e-mail address</td>
<td>Any</td>
</tr>
<tr>
<td></td>
<td>Required Account ID</td>
<td>“C123456789” for Account or “S123456789” for Super account Unsupported Requestor ID – CustomerReference ID combination generates 2010 exception.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Optional account parameter for consortium member statistics</td>
<td>“S123456789/C123456789” this parameter limits member usage statistics to selected consortium related only.</td>
<td></td>
</tr>
<tr>
<td>ReportDefinition</td>
<td>Name</td>
<td>Required Name and Release representing report ID and version of requested COUNTER report Names as assigned by COUNTER COUNTER report IDs: JR1, JR1GOA, JR2, JR5, BR2, BR3, CR1, PR1 (Scopus only)</td>
<td></td>
</tr>
<tr>
<td>Release</td>
<td>Required SUSHI Release</td>
<td>Release numbers currently supported by SUSHI Elsevier: 3 and 4</td>
<td></td>
</tr>
<tr>
<td>UsageDateRange</td>
<td>Begin</td>
<td>Start date</td>
<td>2016-08-01</td>
</tr>
<tr>
<td></td>
<td>End</td>
<td>End date</td>
<td>2016-08-31</td>
</tr>
</tbody>
</table>
4.3 ReportResponse

4.3.1 ReportResponse Schema
4.3.2 ReportResponse example

The example below shows the (exception) response for above ReportRequest; in this case a 2000 exception indicating that the endpoint was not able to verify the Requestor ID.

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Body>
      <ns2:Exception Created="0001-02-05T10:12:13">
        <ns2:Number>2000</ns2:Number>
        <ns2:Severity>Error</ns2:Severity>
        <ns2:Message>Requestor ID is not recognized or not authorized by the service</ns2:Message>
      </ns2:Exception>
      <ns2:Requestor>
        <ns2:ID>SUSHI-XXXX</ns2:ID>
        <ns2:Name>?</ns2:Name>
        <ns2:Email>?</ns2:Email>
      </ns2:Requestor>
      <ns2:CustomerReference>
        <ns2:ID>SD/C123456789</ns2:ID>
        <ns2:Name>?</ns2:Name>
      </ns2:CustomerReference>
      <ns2:ReportDefinition Release="4" Name="JR1">
        <ns2:Filters>
          <ns2:UsageDateRange>
            <ns2:Begin>2015-08-01</ns2:Begin>
            <ns2:End>2015-08-31</ns2:End>
          </ns2:UsageDateRange>
        </ns2:Filters>
      </ns2:ReportDefinition>
    </ns3:ReportResponse>
  </soapenv:Body>
</soapenv:Envelope>
```
4.3.3 Exception codes

Table 3 below shows supported exceptions. Flagged exceptions are included in the ReportResponse and reported back to the requestor to provide an indication of what went wrong.

In case the issue needs to be reported to the Elsevier Customer service helpdesk, it is advised to provide the XML of the exception ReportResponse response; this will considerably speed up the resolution process.

Table 3: Return codes for SUSHI client requests

<table>
<thead>
<tr>
<th>Exception Severity</th>
<th>Level</th>
<th>Exception</th>
<th>Number</th>
<th>Invocation Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info or Debug</td>
<td>Info Debug</td>
<td>0</td>
<td></td>
<td>Any. These messages will never be standardized and service providers can design them as they see fit.</td>
</tr>
<tr>
<td>Warnings</td>
<td>Warning</td>
<td>1-999</td>
<td></td>
<td>Any. This range is reserved for the use of service providers to supply their own custom warnings.</td>
</tr>
<tr>
<td>Service Not Available</td>
<td>Fatal</td>
<td>1000</td>
<td></td>
<td>Service is executing a request, but due to internal errors cannot complete the request. Service must return ReportResponse and no payload.</td>
</tr>
<tr>
<td>Service Busy</td>
<td>Fatal</td>
<td>1010</td>
<td></td>
<td>Service is too busy to execute the incoming request. Service must return ReportResponse with this exception and no payload. Client should retry the request after some reasonable time.</td>
</tr>
<tr>
<td>Requestor Not Authorized to Access Service</td>
<td>Error</td>
<td>2000</td>
<td></td>
<td>If Requestor ID is not recognized or not authorized by the service.</td>
</tr>
<tr>
<td>Requestor is Not Authorized to Access Usage for Institution</td>
<td>Error</td>
<td>2010</td>
<td></td>
<td>If Requestor has not been authorized to harvest usage for the institution identified by the CustomerReference ID, or if the CustomerReference ID is not recognized.</td>
</tr>
<tr>
<td>Report Not Supported</td>
<td>Error</td>
<td>3000</td>
<td></td>
<td>The requested report name, version, or other means of identifying a report that the service can process is not matched against the supported reports.</td>
</tr>
<tr>
<td>Report Version Not Supported</td>
<td>Error</td>
<td>3010</td>
<td></td>
<td>Requested version of the data is not supported by the service.</td>
</tr>
<tr>
<td>Invalid Date Arguments</td>
<td>Error</td>
<td>3020</td>
<td></td>
<td>Any format or logic errors involving date computations, e.g., end date.</td>
</tr>
<tr>
<td>No Usage Available for Requested Dates</td>
<td>Error</td>
<td>3030</td>
<td></td>
<td>Service did not find any data for the date range specified.</td>
</tr>
</tbody>
</table>
5. Recommendations in case of poor performance

The performance of the Reporting service can be impacted in two different ways: the number of simultaneous requests (traffic), or the volume of usage data being requested.

In particular, CR1 report requests for large consortia can be quite bulky and may take a long time to complete. If the processing time for such a request exceeds the response timeout threshold, exception 1010 responses may be returned indicating that the service is not able to complete within time.

The following best practice use cases may help resolve the issue:

1. Report requests per member account return less data and are more likely to be successful than a single consortium request for all member accounts.
2. Report requests for a single month run faster and return less data than year requests.
3. Directly after the release of new month reports the reporting service will be much busier than 2-3 days later.
6. Contact information

Learn & Support with Elsevier Customer service contact information
https://www.elsevier.com/solutions/sciencedirect/support

Usage Reports page providing information about supported reports and SUSHI
https://www.elsevier.com/librarians/usage-reports

The SUSHI section on this page with downloadable SUSHI application form and this document
https://www.elsevier.com/librarians/usage-reports#sushi

SUSHI server registry in NISO SUSHI workroom providing information for service endpoint users how to establish Requestor ID support by SUSHI Elsevier
http://www.niso.org/workrooms/sushi/registry_server/