Regional Nomination Platform

Engineering Project

WebService Interface

[Komentáře]

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Jankovcova 1037/49, CZ – 170 00 Prague 7

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Author:	Jaroslav Drencak, Ondrej Koller, Ladislav Velek
Contact:	E-mail: info@unicorn.com Tel.: (+420) 221 400 111

1. Objective and Scope

This document is specification for general approach that must be taken when accessing Damas RNP Web Service interface by an RNP user who wishes to Nominate. Web services are built on industry standard technologies. They are available on the Internet and ensure the same level of the privacy and security as RNP Damas web site.

This document covers the following topics:

- **Web Service Description**
- **Web Service Interface**
- **Web Service Security**
- **Data Flows**
- **XSD Schemas**
- **Examples**

2. Content

3. Revision History

Version	Date	Author	Description
09.00	17/10/2018	Jaroslav Drencak	Final Version for Interconnector Customers
09.01	18/06/2019	Ladislav Velek	IFA2 Interconnector added: • **Error! Reference source not found.**RNP • 7.3.13 Domains / Interconnectors • 7.3.14 Market Participant • 7.3.15 Resolution
10.00	25/06/2019	Ladislav Velek	Final version with IFA2 interconnector

4. Web Services Interface

RNP can be accessed via the RNP website or web services interfaces. This document provides an overview and explanation of the major properties of Damas web services implementation to access RNP.

4.1 Business Terms and Definitions

Term	Description
Balance Responsible Party (BRP)	A party that has a contract proving financial security and identifying balance responsibility with the Imbalance Settlement Responsible of the Market Balance Area entitling the party to operate in the market. This is the only role allowing a party to nominate energy on a wholesale level
DAMAS	The Regional Nomination Platform solution is based on Unicorn System´s Damas platform – version 5.1
(ENTSO-E) EDI	(ENTSO-E) Electronic Data Interchange (EDI) standards https://www.entsoe.eu/publications/electronic-data-interchangeedi-library/Pages/default.aspx
ENTSO-E	The European Network of Transmission System Operators, as established by Regulation (EC) n°714/2009, which currently represents 42 electricity transmission system operators (TSOs) from 35 countries
ITR	Interconnector Trade Responsible
Nominator	The Nominator can nominate the capacity up to the level of the allocated Transmission Rights of the considered Rights Holder
RNP	Regional Nomination Platform (this System)
SOAP	Simple Object Access Protocol. Messaging protocol specification for exchanging structured information in the implementation of web services in computer networks. Its purpose is to induce extensibility, neutrality and independence. It uses XML Information Set for its message format, and relies on application layer protocols, most often Hypertext Transfer Protocol (HTTP) or Simple Mail Transfer Protocol (SMTP), for message negotiation and transmission
SSL	Secures Sockets Layer : Cryptographic protocol that provide communications security over a computer network
WS	Web services are applications whose logic and functions are accessible using the standard Internet protocols and data formats, such as Hypertext Transfer Protocol (HTTP) and Extensible Markup Language (XML).
WSDL	Web Services Description is an XML-based interface definition language that is used for describing the functionality offered by a web service
WSS	Web Services Security (WS-Security, WSS) is an extension to SOAP to apply security to Web services
XML	Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable

XSD	XML Schema Definition, a recommendation of the World Wide Web Consortium (W3C), specifies how to formally describe the elements in an Extensible Markup Language (XML) document

4.2 RNP

The RNP aims to reflect the market set-up and conditions of of HVDC cross-border Interconnectors. This is especially regarding the centralization of allocation function towards the Single Allocation Platform (SAP), accompanied by a similarly centralized RNP. The following illustration depicts this set-up with a focus at the RNP:

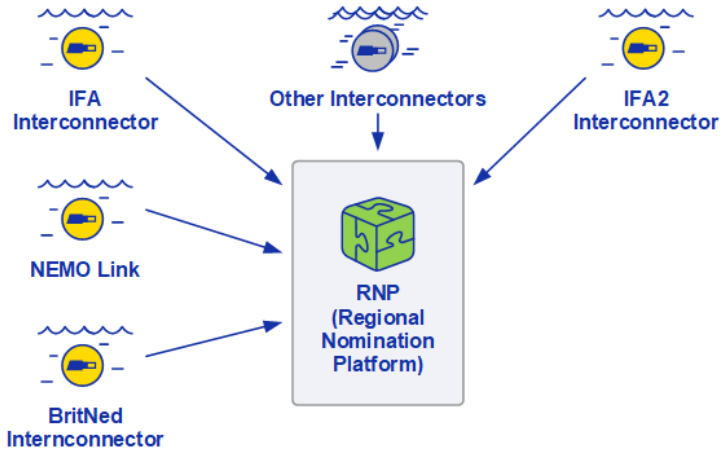

FIGURE 1 - RNP

Practically, this involves the considered HVDC Interconnectors – IFA, IFA2, BritNed, and Nemo Link – with a prospect and flexibility to include further Interconnectors in the future. The RNP enables Interconnector Customers nomination of the capacity allocated by SAP.

4.3 Transfer Technology

Web services in Damas can be used for automated data exchange or for machine-controlled data exchange. Use of this technology significantly simplifies communication between Damas and Interconnector Users.

The main transfer unit is a text file containing the SOAP XML message and the format of the SOAP message in Damas was designed according to the SOAP 1.2 specification recommended by W3C (https://www.w3.org/TR/soap12-part1/).

The supported communication protocol is HTTPS via TLS 1.2. A common authentication process, containing login name and password, is defined. Login and password details must be sent with each SOAP message so that message could be processed. All actions performed using web services are executed in Damas with permissions of the user whose credentials are provided in the SOAP message.

Credentials must be provided in form of the Username token in accordance with Web Services Security specification. For details of the Web Services Security, see http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wss.

4.4 Data Format

Every web service message used in Damas consists of two parts:

> Header of the web service message

> Body of the web service message.

For all data flows designed for sending data to Damas, the XML file containing business data to be transferred is included in body of the web service message. Structure of the XML file is defined by XSD charts, which make it possible to validate semantics of the XML message. The XML files used in Damas are implemented according to the *CIM - Schedule Market Document v5r1* and *ENTSO-E code lists v54* (http://www.ENTSO-E.eu/re-sources/edi/). All XSD definitions specifying formats of the XML files to be exchanged are listed in attachment of this document in APPENDIX A – EXAMPLES OF UPLOADING XMLS and APPENDIX C – EXAMPLES OF DOWNLOAD XMLS.

For successful data exchange, it is necessary to synchronize mechanism of the entity identification (Market Participant – *Nominator / ITR*) in order to match scheduling charts. Damas uses EIC codes standardized by ENTSO-E to identify entities and their partners abroad – please see the chapter 7.3 Code List.

4.5 Interface of Damas Web Services

Damas web services are accessible at the following addresses:

Environment	Address	Protocol	Port
Production	https://rnp.unicorn.com/DamasService2.svc	https	443
Test	https://rnp-test.unicorn.com/DamasService2.svc NOTE: this environment is internal test environment for Interconnector Operators	https	443
Train	https://rnp-train.unicorn.com/DamasService2.svc NOTE: this environment is intended for Interconnector Customers for integration testing	https	443

NOTE: RNP_HOST is used in the samples instead of the real host

The following web service interfaces are implemented in Damas to provide communication with neighbouring systems:

Name	SOAP request	SOAP response	Description
Synchronous Request	RunSynchrous or RunSynchronous	RunSynchrous Response Or RunSynchronous Response	Provides synchronous exchange of the commercial data with Damas.
Asynchronous Request	RunAsynchrous or RunAsynchronous	RunAsynchrous Response Or	Provides asynchronous exchange of the commercial data with Damas.

		RunAsynchronous Response	
Asynchronous Request Status	CheckRQResult	CheckRQResult Response	Returns the status of the asynchronous request that is being processed by Damas.
Current Date and Time	GetActualDateTime	GetActualDateTime Response	Returns the current system date and time that is important for automatic operations carried out by the system.

Damas web services can be used in either synchronous or asynchronous mode:

> **Synchronous call of the web service -** Data are passed to web service via the RunSynchrous method. By performing this step, a synchronous request is established within Damas and processed, and result is returned back to client application. Output parameter of this web service is XML with structure varying for individual data streams.

> **Asynchronous call of the web service -** Data are passed to web service via the RunAsynchrous method. The request is established within Damas as asynchronous. Output of the web service does not include processing of the established request but rather it contains only the ID of the request. This ID is used to request result of such request later on.

4.6 Client Application Development Guideline

This chapter explains the client application implementation based on information available in the description of Damas web service interfaces.

The following two options are available for client applications to communicate with Damas Web Service interface:

> to use the SOAP standard by means of the HTTP/HTTPS protocol

To create a request in XML in compliance with the SOAP standard and to build client application capable of sending this XML as HTTPS request to web server. In addition, it is necessary to implement functionality capable of web service reply processing. Description of the web service interface also includes description of the SOAP requests and replies.

> to create proxy class based on the WSDL interface description

Description of Damas web service interface also includes description of the WSDL interface. The WSDL is XML standard that is designed to describe arbitrary web service. Current development platforms can generate source code based on the WSDL document. Result is usually class, which allows handling of the web service as object. There is no need to implement actual communication protocol as development environment does this for you. Examples of such platforms supporting this kind of functionality include Visual Studio .NET and J2EE.

Communication with Damas web service interface takes place via secured SSL channel; client authenticates itself using valid login and password identical to those used for accessing Damas web platform. If the WS client

applies a method for automatic source code generation based on the WSDL document, then this code must be extended to include such functions.

4.6.1 Development prerequisites

The Training Environment is intended for integration tests with support of both ways of the authentification:

- Username and password over HTTP (only for initial setup)
- Username, password and client certificate (X509) over HTTPS

Access using HTTP is recommended at the start of the implementation as the exchanged data (e.g. SOAP messages) can be caught and further analysed. The logon using HTTPS is recommended to test once the communication via HTTP is verified.

<u>The following prerequisites must be fullfiled prior to the starting of integtation tests on the Train Environment:</u>

- User accounts
  - User accounts for Train Environment will be issued by the Helpdesk as part of the standard procedure of the creating new Damas user. Results of the procedure will be one account for basic logon using HTTP with username and password and one account for target authentication using HTTPS, username, password (and client certificate, if applicable).
- User Rights for WS functionalities
  - The WS functionalities must be allowed by the Helpdesk for the newly created user accounts.
- Simulation of the business stage
  - The business stage relevant for the data exchange must be prepared. E.g.: upload of Transmission Rights, Opening and Closure of the relevant Nomination gate etc. The Helpdesk will assist with such support.

4.6.2 Production prerequisites

<u>The following prerequisites must be fullfiled prior to using the WS Interface on the Production Environment:</u>

- User Accounts
  - The User accounts for the Production Environment will be issued by the Helpdesk as part of standard procedure of the creating new Damas user. Production Environment requires authentication using username, password and client certificate (X509) (if applicable) over HTTPS
- User Rights for WS functionalities
  - The WS functionalities must be allowed by the Helpdesk for the newly created user accounts.

4.6.3 Best practices of the client implementation

As the first step, it is best to implement a synchronous call for action - Current Date and Time (this functionality serves as simple check of the general functionality of the WS). It is also the easiest implementation of the interface to Damas Web services. It is not connected to any business, but helps solving initial technical issues, authentication problems, etc.

Recommended list of the development steps:

1) Obtain example request of SOAP message from APPENDIX A – EXAMPLES OF UPLOADING XMLS. Replace sample username and password according to chapter **Error! Reference source not found.**
2) Modify value in tag <wsu:Expires> to be in the future, otherwise message would be rejected by server
3) Before any implementation, try to send a message using a tool e.g. SoapUI. This will ensure you have the valid SOAP message.

Once the initial step ensuring validity of the request message is completed successfully, the implementation can start with the web service client providing the same type of the message as created manually before.

If this all has been done successfully, authentication may be extended with client certificate – see Chapter Web Service Security. Then the HTTPS access using SSL is required.

The next step is the implementation of additional necessary actions (i.e. sending nominations, etc.).

The asynchronous call using the RunAsychrous actions and the CheckRQResult actions can be implemented if needed.

4.7 SOAP

The structure of the SOAP message is implemented according to the SOAP 1.2 specification recommended by W3C (https://www.w3.org/TR/soap12-part1/).

4.8 SOAP Message

The SOAP message implemented in Damas consists of the SOAP header and body.

UTF-8 encoding is required for all SOAP messages passed into Damas. All outgoing messages are UTF-8 encoded as well.

The SOAP header contains information that is essential for user authorization, such as the user's login name and password.

```
<soap:Header>
  <!-- WSS Security Header -->
</soap:Header>
```

The WSS Header contains security tokens necessary to authenticate sender and check message integrity. These tokens are user credentials. For details of the WSS see Chapter Web Service Security.

The SOAP Body message includes element, which contains input/output parameter class. Element name is derived from name of the web service that is used.

```
<soap:Body>
  <WebServiceName xmlns="http://RNP_HOST/wse">
     Input/Output Parameters
  </WebServiceName>
</soap:Body>
```

For details of the WSS Header, see Chapter Web Service Security.

4.8.1 Input Parameters

The parameter class defined for input parameters is given below:

```
<Input>
  <FID>FID</FID>
  <Parameters>
    <XXXParam Name="param_name1">param_val1</XXXParam>
    <XXXParam Name="param_name2">param_val2</XXXParam>
    …
    <XXXParam Name="param_nameN">param_valN</XXXParam>
  </Parameters>
</Input>
```

The highlighted parameter shall be replaced by values according to following rules:

Parameter	Type	Description	Note
FID	String	Identification of the dataflow. See chapter 6. DATA FLOWS.	Unique for each data flow.
XXXParam		Element name of the parameter represents its data type. For overview of the supported data types see table below.	Depends on the data flow.
param_nameX	String	Name of data flow input parameter	Depends on the data flow.
param_valX	String, Number, Date	Value of data flow input parameter	Depends on the data flow.

List of the input parameter data types:

Data type element name	Corresponding XSD type	Example
BooleanParam	xs:Boolean	True
DateParam	xs:date	2018-04-24
DateTimeParam	xs:dateTime	2018-04-24T09:30:10Z
DecimalParam	xs:decimal	999.50

IntParam	xs:int	999
StringParam	xs:string	TEXT
XmlParam	Any XML node tree (corresponds to <xs:any> XSD element).	Any XML node

Elements with data flow input parameters (XXXParam) must be alphabetically ordered by their type names (that is `<BooleanParam>` elements come first, `<DateParam>` elements come second etc.).

4.8.2 Output Parameters

The parameter class defined for output parameters is given below:

```
<Output>
  <RQID>RQID</RQID>
  <Result>resultXML</Result>
  <RQState>
    <Code>RQState_Code</Code>
    <Description>RQState_Description</Description>
  </RQState>
</Output>
```

The highlighted parameter shall be replaced by values according to following rules:

Parameter	Type	Description	Note
RQID	Number	Unique identification of the asynchronous request in Damas	
resultXML	String	Contains result of the request	Depends on the data flow; see data flows description
RQState_Code,	String	Code of the state of the request. (For list of the possible codes see Chapter SOAP CheckRQResultResponse).	For synchronous requests the RQState_Code value is always “COMPLETED”
RQState_Description	String	Description of the state the request.	

4.8.3 Error Handling

Errors returned by Damas web services interface are divided into two basic groups:

- Business errors – These errors originate in business control algorithms and it express that imported business data violates business rules. This applies only to input data flows (see Chapter Data Flows for Data Upload). These errors are returned in form of the Acknowledgement as a standard output of the data flow (see Chapter Output Parameters) and therefore are not subject of this chapter.
- System errors – These errors represent non-business faults. This includes user authentication errors, bad format of the SOAP xml, input parameters etc. These errors should be handled by client applications. System errors are listed below.

Errors are distributed to the client by using <soap:Fault> element, as defined in SOAP/1.2 specification (see https://www.w3.org/TR/soap12-part1/#soapfault).

Detailed information about the error is carried in the <Error> element (see example of the SOAP fault below):

```
<soap:Fault>
  <faultcode>faultcode</faultcode>
  <faultstring>faultstring</faultstring>
  <detail>
    <e:Error xmlns:e="http://RNP_URL/xsd/errors.xsd">
      <ErrID>errID</ErrID>
      <ErrDescr>errDescr</ErrDescr>
      <ErrXML>errXML</ErrXML>
    </e:Error>
  </detail>
</soap:Fault>
```

The highlighted parameter shall be replaced by values according to following rules:

Parameter	Type	Description	Note
faultcode	String	Code of the error as specified in SOAP/1.2.	
faultstring	String	Description of the error as specified in SOAP/1.2.	
ErrID	Number	Identification number of the error.	See List of Standard Errors for more information.
ErrDescr	String	Short description of the error.	See List of Standard Errors for more information.
ErrXML	XML	Additional debug information are not intended to be processed by client applications.	

The <e:Error> element doesn't have to be present in the Fault message. It is present only for errors with faultcode of the "soap:Client" value or "soap:Server" value (see link https://www.w3.org/TR/soap12-part1/#soap-fault for details on faultcode).

Errors resulting from sender's identity and message integrity checks are returned to client application according to the WSS standard (see http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf, Chapter Error Handling).

The list of the Standard Errors is as follows:

Error ID	Error Description	Fault Code
-500	User is not authorized for the requested data stream.	soap:Client
-501	Date is invalid.	soap:Client
-510	Data flow with requested FID does not exist.	soap:Client
-513	Invalid data flow input parameters Note: The message will be accompanied by the list tof "<parameter_name> - <validation problem description>" for every invalid input parameter.	soap:Client
-514	Internal server error	soap:Server
-517	Asynchronous request does not exist	soap:Client
-518	Requested operation is not permitted for this data flow	soap:Client
-520	User is not authorized to access data of the another entity.	soap:Client

4.9 WSDL

This part of the document contains description of all web services provided by Damas as interface for automatic communication with other system.

4.9.1 Synchronous Request

This web service ensures synchronous exchange of the commercial data with Damas.

4.9.1.1 SOAP RunSynchrous

The SOAP request format for establishing the synchronous request in Damas

```
POST /DamasService2.svc HTTP/1.1
Accept-Encoding: gzip,deflate
Host: host:port
Content-Type: text/xml; charset=utf-8; action:
"http://RNP_HOST/wse/RunSynchrous"
```

```
Content-Length: length

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wse="http://RNP_HOST/wse">
  <soap:Header>
    <!-- WSS Security Header -->
  </soap:Header>
  <soap:Body>
    <wse:RunSynchrous>
      <wse:Input>
        <wse:Parameters>
          <wse:XXXParam Name="param_name1">param_val1</wse:XXXParam>
          <wse:XXXParam Name="param_name2">param_val2</wse:XXXParam>
          …
          <wse:XXXParam Name="param_nameN">param_valN</wse:XXXParam>
        </wse:Parameters>
        <wse:FID>FID</wse:FID>
      </wse:Input>
    </wse:RunSynchrous>
  </soap:Body>
</soap:Envelope>
```

4.9.1.2 SOAP RunSynchrous Response

The SOAP response format with result of the synchronous request returned from Damas:

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <RunSynchrousResponse xmlns="http://RNP_HOST/wse">
      <Output>
        <RQID>-1</RQID>
        <Result>resultXML</Result>
        <RQState>
```

```
            <Code>COMPLETED</Code>
            <Description>The request is completed.</Description>
          </RQState>
        </Output>
      </RunSynchrousResponse>
    </s:Body>
</s:Envelope>
```

For details of the WSS Header, see Chapter *Web Service Security*. Note that <RQID> element in this case contains -1 (ID of the request is not returned for synchronous requests).

4.9.2 Asynchronous Request

This Web service ensures the asynchronous exchange of commercial data with Damas. The RunSynchrous and RunAsynchrous methods use almost identical formats of the SOAP request and response. Asynchrounous call is used for uploading larger XML files (more than 2 timeseries).

4.9.2.1 SOAP RunAsynchrous

The SOAP request format for establishing the asynchronous request in Damas

```
POST /DamasService2.svc HTTP/1.1
Host: host:port
Content-Type: text/xml; charset=utf-8; ac-
tion="http://RNP_HOST/wse/RunAsynchrous"
Content-Length: length

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wse="http://RNP_HOST/wse">
  <soap:Header>
    <!-- WSS Security Header -->
  </soap:Header>
  <soap:Body>
    <wse:RunAsynchrous>
      <wse:Input>
        <wse:FID>FID</wse:FID>
        <wse:Parameters>
          <wse:XXXParam Name="param_name1">param_val1</wse:XXXParam>
          <wse:XXXParam Name="param_name2">param_val2</wse:XXXParam>
          …
          <wse:XXXParam Name="param_nameN">param_valN</wse:XXXParam>
```

```
        </wse:Parameters>
      </wse:Input>
    </wse:RunAsynchrous>
  </soap:Body>
</soap:Envelope>
```

4.9.2.2 SOAP RunAsynchrous Response

The SOAP response format with result of the asynchronous request returned from Damas

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
              <RunAsynchronousResponse xmlns="http://RNP_HOST/wse">
    <RunAsynchrousResponse xmlns="http://RNP_HOST/wse">
      <Output>
        <RQID>RQID</RQID>
        <RQState>
           <Code>REGISTERED</Code>
           <Description>The request is registered for execution.
</Description>
        </RQState>
      </Output>
    </RunAsynchrousResponse>
  </soap:Body>
</soap:Envelope>
```

For details of the WSS Header, see Chapter *Web Service Security*. Note that <Result> element is in this case empty (or missing); result is not available at this moment, only ID of the asynchronous request is returned (RQID). You can check request result later by calling CheckRQResult method (see Chapter *Asynchronous Request State* for details).

4.9.3 Asynchronous Request State

This web service returns the status of the asynchronous request that is being processed in Damas. The asynchronous request is identified by request ID which can be obtained by calling RunAsynchrous method (see Chapter *Asynchronous Request*).

4.9.3.1 SOAP CheckRQResult

The SOAP request format for downloading a status of the asynchronous request from Damas

```
POST /DamasService2.svc HTTP/1.1
Host: host:port
Content-Type: text/xml; charset=utf-8; action="
http://RNP_HOST/wse/CheckRQResult"
Content-Length: length

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wse="http://RNP_HOST/wse">
  <soap:Header>
    <!-- WSS Security Header -->
  </soap:Header>
  <soap:Body>
    <wse:CheckRQResult>
      <wse:RQID>RQID</wse:RQID>
    </wse:CheckRQResult>
  </soap:Body>
</soap:Envelope>
```

For details of the WSS Header, see Chapter *Web Service Security*. Please note, the highlighted item RQID must be replaced with the ID of the existing asynchronous request.

4.9.3.2 SOAP CheckRQResultResponse

The SOAP response format with status of the asynchronous request returned from Damas

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body>
    <CheckRQResultResponse xmlns="http://RNP_HOST/wse">
      <Output>
```

```
        <RQID>RQID</RQID>
        <Result>resultXML</Result>
        <RQState>
          <Code>RQState_Code</Code>
          <Description>RQState_Description</Description>
        </RQState>
      </Output>
    </CheckRQResultResponse>
  </s:Body>
</soap:Envelope>
```

For details of the WSS Header, see Chapter *Web Service Security*. Element <RQState> contains information about state of the asynchronous request. The following table contains an overview of the possible request states:

Code	Description	Note
REGISTERED	Asynchronous request is registered for execution.	<Result> element is empty; you should check request state later.
COMPLETED	Asynchronous request is completed.	<Result> element is filled with result of asynchronous request.
RUNNING	Asynchronous request is not completed.	<Result> element is empty; you should check request state later.
ERROR	Error occurred while running asynchronous request.	Internal server error occurred; in this case you should contact the system administrator.

4.9.4 Current Date and Time

This web service returns current system date and time that is important for automatic operations carried out by system. This service is also accessible via the RunSynchrous web service as data flow with ID “GET-DATETIME”.

4.9.4.1 SOAP GetActualDateTime

The SOAP request format for downloading current date and time from Damas

```
POST /DamasService2.svc HTTP/1.1
Host: host:port
Content-Type: text/xml; charset=utf-8; action=”
http://RNP_HOST/wse/GetActualDateTime”
```

```
Content-Length: length

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wse="http://RNP_HOST/wse">
  <soap:Header>
    <!-- WSS Security Header -->
  </soap:Header>
  <soap:Body>
    <wse:GetActualDateTime/>
  </soap:Body>
</soap:Envelope>
```

4.9.4.2 SOAP GetActualDateTime Response

The SOAP response format with current date and time returned from Damas

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body>
    <GetActualDateTimeResponse xmlns="http://RNP_HOST/wse">
      <Output>
        <RQID>-1</RQID>
        <Result>
          <GetDateTime xmlns="http://RNP_HOST/xsd/getdatetime.xsd">
              <DateTime>DatetimeValue</DateTime>
          </GetDateTime>
        </Result>
        <RQState>
           <Code>COMPLETED</Code>
           <Description>The request is completed.</Description>
        </RQState>
      </Output>
    </GetActualDateTimeResponse>
  </s:Body>
</soap:Envelope>
```

5. Web Service Security

5.1 Damas Security Model

A Damas user account is necessary to access Damas GUI or to use the Web Service Interface. The user account must have following security elements assigned:

1. Username and password;
2. X509 certificate required for establishing the SSL communication.

Certificate for establishing the SSL communication can (but does not have to) be the same as the certificate used to sign outgoing messages. These certificates are issued for each individual user account.

All data sent to Damas must be electronically signed using a certificate assigned to a user account in case digital signing is switched on in Damas.

The Damas web service interface security is implemented in accordance with the Web Services Security standard (see http://www.oasis-open.org/committees/tc_home .php?wg_abbrev=wss).

Based on this standard, the following security issues are addressed:

1. Signing the SOAP requirements/responses;
2. Transferring credentials (username and password) in the SOAP requirements;
3. Encrypted communication is ensured by the HTTPS (HTTP over SSL) protocol. Because of this fact, the SOAP requirements/responses are not encrypted further, using procedures described in the WSS specification.

5.2 SOAP Request Preparation

In addition to web service input parameters, the SOAP request also includes authentication data of Damas user account and digital signature of the sent data.

5.2.1 SOAP Request Description

The SOAP request format with user authentication information without digital signature:

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wse="http://RNP_HOST/wse">
  <soap:Header>
    <wsse:Security soap:mustUnderstand="true"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="username_token_id">
        <wsse:Username>username</wsse:Username>
        <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">password_hash</wsse:Password>
      </wsse:UsernameToken>
      <wsu:Timestamp wsu:Id="timestamp_id">
```

```
            <wsu:Created>creation_time</wsu:Created>
            <wsu:Expires>expiration_time</wsu:Expires>
        </wsu:Timestamp>
    </wsse:Security>
  </soap:Header>
  <soap:Body wsu:Id="soap_body_id">
    <wse:RunSynchrous>
       <!-- Input parameters comes here -->
    </wse:RunSynchrous>
  </soap:Body>
</soap:Envelope>
```

The SOAP request format with user authentication information including digital signature:

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wse="http://RNP_HOST/wse">
  <soap:Header>
    <wsse:Security soap:mustUnderstand="true"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
      <wsse:BinarySecurityToken EncodingType="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-soap-message-security-
1.0#Base64Binary" ValueType="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-1.0#X509v3"
wsu:Id="pk_token_id">public_key</wsse:BinarySecurityToken>
      <ds:Signature Id="signature_id"
xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
        <ds:SignedInfo>
          <ds:CanonicalizationMethod Algo-
rithm="http://www.w3.org/2001/10/xml-exc-c14n#">
            <ec:InclusiveNamespaces PrefixList="soap wse"
xmlns:ec="http://www.w3.org/2001/10/xml-exc-c14n#"/>
          </ds:CanonicalizationMethod>
          <ds:SignatureMethod Algo-
rithm="http://www.w3.org/2001/04/xmldsig-more#rsa-sha256"/>
          <ds:Reference URI="#soap_body_id">
            <ds:Transforms>
              <ds:Transform Algorithm="http://www.w3.org/2001/10/xml-
exc-c14n#">
                <ec:InclusiveNamespaces PrefixList="wse"
xmlns:ec="http://www.w3.org/2001/10/xml-exc-c14n#"/>
```

```
              </ds:Transform>
            </ds:Transforms>
            <ds:DigestMethod Algo-
rithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
            <ds:DigestValue>digest_value</ds:DigestValue>
          </ds:Reference>
          <ds:Reference URI="#username_token_id">
            <ds:Transforms>
              <ds:Transform Algorithm="http://www.w3.org/2001/10/xml-
exc-c14n#">
                <ec:InclusiveNamespaces PrefixList="soap wse"
xmlns:ec="http://www.w3.org/2001/10/xml-exc-c14n#"/>
              </ds:Transform>
            </ds:Transforms>
            <ds:DigestMethod Algo-
rithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
            <ds:DigestValue>digest_value</ds:DigestValue>
          </ds:Reference>
          <ds:Reference URI="#timestamp_id">
            <ds:Transforms>
              <ds:Transform Algorithm="http://www.w3.org/2001/10/xml-
exc-c14n#">
                <ec:InclusiveNamespaces PrefixList="wsse soap wse"
xmlns:ec="http://www.w3.org/2001/10/xml-exc-c14n#"/>
              </ds:Transform>
            </ds:Transforms>
            <ds:DigestMethod Algo-
rithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
            <ds:DigestValue>digest_value</ds:DigestValue>
          </ds:Reference>
        </ds:SignedInfo>
        <ds:SignatureValue>signature_hash</ds:SignatureValue>
        <ds:KeyInfo Id="key_id">
          <wsse:SecurityTokenReference wsu:Id="#signature_id">
            <wsse:Reference URI="#pk_token_id" Valu-
eType="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-
token-profile-1.0#X509v3"/>
          </wsse:SecurityTokenReference>
        </ds:KeyInfo>
```

```
      </ds:Signature>
      <wsse:UsernameToken wsu:Id="username_token_id">
        <wsse:Username>username</wsse:Username>
        <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#Pass-
wordText">password_hash</wsse:Password>
      </wsse:UsernameToken>
      <wsu:Timestamp wsu:Id="timestamp_id">
        <wsu:Created>creation_time</wsu:Created>
        <wsu:Expires>expiration_time</wsu:Expires>
      </wsu:Timestamp>
    </wsse:Security>
  </soap:Header>
  <soap:Body wsu:Id="soap_body_id">
    <RunSynchrous xmlns="http://RNP_HOST/wse">
       <!-- Input parameters comes here -->
    </RunSynchrous>
  </soap:Body>
</soap:Envelope>
```

Description of `<wsse:Security>` element

According to the WSS all security tokens are included in the wsse:Security element. This element is part of the SOAP header and consists of the following items

1. Digital signature of the message
2. User authentication information (username and password); and
3. Timestamp of the soap request creation and its expiration

Description of `<wsse:UsernameToken>` element

This element contains the username and password assigned to the relevant Damas user account.

XML Element	Description
Username	Login name for Damas user account
Password	Password for Damas user account. Password is not transferred directly, but rather its MD5 hash is transferred encoded in BASE64 format.
Password/@Type	Type of used UsernameToken; must be always "http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#Pass-wordText”.

Description of `<Signature>` element

This element contains the message electronic signature.

Signing is implemented according to XML Signature Syntax and Processing Version 1.1 (http://www.w3.org/TR/xmldsig-core/). Requirements for signature are given below:

Content of the following elements is required to electronically sign:

1. <wsse:UsernameToken>
2. <wsu:Timestamp>
3. <soap:Body>
4. Detached signature is used, i. e. signature is not part of the signed data.
5. Before signing, signed data must be canonicalized according to Exclusive XML Canonicalization Version 1.0 (http://www.w3.org/2001/10/xml-exc-c14n), i.e. exclusive canonicalization without comments.
6. Signature must be implemented using the SHA256 algorithm (see http://www.w3.org/2000/09/xmldsig#sha256)
7. The public key of the certificate used to sign message must be included to message by use of the `BinarySecurityToken` element (for details see `<wsse:BinarySecurityToken>` on next page)

XML Element	Description
CanonicalizationMethod/@Algorithm	Algorithm used for canonicalization of the <SignedInfo> element. Must be always "http://www.w3.org/2001/10/xml-exc-c14n#".
SignatureMethod/@Algorithm	Algorithm used for signing/verifying XML. Must be always “http://www.w3.org/2001/04/xmldsig-more#rsa-sha256".
Reference/@URI	URI used as link to signed element. Signed element is marked with identifier in wsu:Id attribute (for signed request, this identifier corresponds with value soap_body_id and username_token_id). URI is recorded in form “#soap_body_id” and “#username_token_id”.
Transform/@Algorithm	Specifies transformations, which should be performed on signed data before signing. Must be always "http://www.w3.org/2001/10/xml-exc-c14n#".
DigestMethod/@Algorithm	Algorithm used to create digest of the signed element. Must be always "http://www.w3.org/2001/04/xmlenc#sha256".

DigestValue	Digest of the signed element. Must be BASE64-encoded.
SignatureValue	Actual value of the digital signature; it is always BASE64-encoded.
KeyInfo/SecurityTokenReference/Reference	Used to identify security token holding the public key of the certificate used to sign message (For details see <wsse:BinarySecurityToken> element section).
KeyInfo/SecurityTokenReference/Reference/@URI	Value used to identify corresponding <wsse:BinarySecurityToken> element.
KeyInfo/SecurityTokenReference/Reference/@ValueType	Must be “http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-1.0#X509v3“.

Description of `<wsse:BinarySecurityToken>` element

This element must be filled with the public key of the X509 v3 certificate used to sign message.

XML Element	Description
BinarySecurityToken	The public key of the certificate used to sign message. This value must be BASE64 encoded.
BinarySecurityToken/@ValueType	Determines type of the binary security token. Must be “http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-1.0#X509v3”
BinarySecurityToken/@EncodingType	Encoding of the public key value. Must be “http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0#Base64Binary”.

5.3 SOAP Response Parsing

The server SOAP response is not signed using digital certificate. Unlike in the SOAP request, no authentication data of Damas user account are transferred in this case.

5.3.1 SOAP Response Description

The SOAP response format:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body wsu:Id="soap_body_id">
    <RunSynchrousResponse xmlns="http://RNP_HOST/wse">
      <!-- Output parameters come here -->
    </RunSynchrousResponse>
  </s:Body>
```

```
</s:Envelope>
```

Provided example is similar to request example from Chapter SOAP Request Description. For detailed description of each element, see Chapter SOAP Request Description.

The SOAP response differs from the SOAP request in following points:

Credentials are not sent back to client – element `<wsse:UsernameToken>` or the whole `<soap:Header>` element is missing.

5.4 Error Handling

Errors resulting from sender's identity and message integrity checks are returned to client application according to the WSS standard (see http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf, Chapter Error Handling).

6. DATA FLOWS

This chapter provides description of all data flows for downloading and uploading data from/to Damas. The summary overview of the input and output data flows is presented in the chapter *6.1 List of Data Flows*. The following chapters deal with detailed definition of the uploading/downloading data flows:

> 6.2 Data Flows for Data Upload

> 6.3 Data Flows for Data Download

Each data flow is described in detail, with input and output parameters explained.

6.1 List of Data Flows

The following table shows the data flow that is available for uploading data into Damas. User types allowed to use data flows are indicated in “User” column.

Uploading data to Damas			
Data Flows	**FID**	**Description**	**User**
Submit/Modify Nominations	DMSWS_NOM_IN	Enables uploading Long-term, Daily or Intraday nominations by an Interconnector Customer for a specific Interconnector and Interconnector Direction. XML – *CIM - Schedule Market Document v5r1* RNP provides an Acknowledgement Document as a response – please see *7.2.2 Acknowledgement Document*	Interconnector Customer Nominator

The following table shows various data flows available for downloading data from Damas. User types allowed to use data flows are indicated in “User” column.

Downloading data from Damas			
Data Flows	**FID**	**Description**	**User**
Download Actual Date and Time	GETDATETIME	Downloading the current date and time from Damas. No particular XML – system data flow.	Interconnector Customer Nominator, Interconnector Customer Reporter

		NOTE: No Acknowledgement Document is exchanged.	
Download Detailed Nominations	DMSWS_NOMD_OUT	Enables downloading of nominations for Business Day, Interconnector, nomination type and Interconnector User. Data is not aggregated. <u>Input parameters:</u> Business Day OutArea InArea Interconnector Nomination Type Interconnector User (used for identification of Nominator / Market Participant) XML – *CIM - Schedule Market Document v5r1* NOTE: No Acknowledgement Document is exchanged.	Interconnector Customer Nominator, Interconnector Customer Reporter
Download Aggregated Nominations	DMSWS_NOMAGG_OUT	Enables downloading of nominations for Business Day, Interconnector and Interconnector User. Data is not aggregated. <u>Input parameters:</u> Business Day OutArea InArea Interconnector Interconnector User (used for identification of Nominator / Market Participant) XML – *CIM - Schedule Market Document v5r1*	Interconnector Customer Nominator, Interconnector Customer Reporter

		NOTE: No Acknowledgement Document is exchanged.	

6.2 Data Flows for Data Upload

Delivery of the values to Damas is automatically confirmed and sender is immediately informed about processing result by an Acknowledgement Document - please see the chapter *7.2.2 - Acknowedgment Document* for further information. Processing results are delivered as a single response message which includes acknowledgement to the request and results from processing the request.

6.2.1 Submit/modify Nominations

This service enables submitting/modifying explicit nominations in Damas for all Market Participants registered as Nominator on behalf of Rights Holder and BRP

NOTE: the Nominator, BRP as well as the Rights Holder can be the same party

6.2.1.1 Description

This data flow enables uploading nomination Timeseries in the XML format. The standard *CIM - Schedule Market Document v5r1* is used. The Nomination Timeseries are declared for the Business Day, Interconnector, Interconnector direction, Nomination Type and Agreement Identification. The XML file contains Timeseries with 24 (23 for Short Clock and 25 for Long Clock Change Day) values in PT60M resolution. The file is sent for single Business Day, single Nomination Interval (applicable to Intraday timescale), Interconnector, Interconnector direction and nomination Type of Long-Term, Daily, or Intraday.

Interconnector Customers are allowed to submit nominations between the gate opening and the gate closure for the given timescale, Business Day and also Nomination Interval in case of Intraday.

In case of nomination update, the Nominator can revise the Nominated Capacity values. It is not allowed to change any of the nominations attributes such as the Interconnector, Interconnector Direction, Parties, Agreement Type, Agreement Identification and Business Day for the already stored nominations. The user must set the wrong nomination to 0 and a new nomination is expected.

Example

In case of submission for the wrong Interconnector direction, the user must provide higher version of the original XML document setting the nomination values to 0. Then the user submits a new document with the data for the correct business day. Please see the attached example in the chapter *8. APPENDIX A – EXAMPLES OF UPLOADING XMLS.*

6.2.1.2 Input Parameters

List of the input parameters is as follows:

Name	Type	Description	Note
FID		DMSWS_NOM_IN	

XML	XmlParam	XML *CIM - Schedule Market Document v5r1* with schedule time series.	See *CIM - Schedule Market Document v5r1* definition. The XML file is for one interconnector, one direction, one Business Day, one Timescale and one intraday nomination interval (if applicable) Please see the chapter 8. APPENDIX A – EXAMPLES OF UPLOADING XMLS and the chapter *Upload of Nominations* for further information regarding the file.

6.2.1.3 Output Parameters

Users receive anacknowledgement message as response confirming data delivery and describing processing results. Please see the chapter *7.2.2 – Acknowledgment Document* for further information.

6.2.1.4 Business Validations

The following business validations are performed when uploading Nominations. An Acknowledgement contains information related to Acceptance/Rejection by the means of Reason Codes. The main Reason Code is either A01 for Acceptance, or A02 for Rejection. Supportive Reason Codes are followed in case of Rejection. Please see the table below.

Validation	Description	Supportive Acknowledgement Reason code
Authorization check	The user under which the Web service request is sent must: > be registered in Damas > have appropriate user rights > have assignment to the Interconnector for which the user is submitting the data > be assigned in the Damas role *Interconnector Customer Nominator* > be registered in Damas under the same Market Participant as listed in the XML in sender_MarketParticipant.mRID (EIC code)	A05

XSD check	The XML file must be valid according to the respective XSD (see the chapter 7.2.1 CIM - Schedule Market Document v5r1)	A94
Receiver Identification against Domain check	The EIC code of the Domain (Interconnector) must be consistent with the receiver_MarketParticipant.mRID	A53
Message Version check	> mRID must be unique for the combination of the Sender/Nominator, Business Day, Interconnector, Interconnector Direction, timescale (process.processType) and the *Agreement Identification*. > revisionNumber must be higher than the previously submitted revisionNumber for the given document / mRID Note: Operations via form are not taken into consideration within this validation. The value of the mRID that has been already used is displayed on the *Nominations Overview* screen as the *Nomination ID*.	A51
Process Type against Agreement Type check	Process Type (process.processType) must be assigned with the correct code according to the given timescale (see the chapter 6.2.1.1 Description) marketAgreement.type must correspond with the process.processType as follows: > Long-term: A06 > Daily: A01 > Intraday: A07	A79
Sender, Receiver and Role check	> The Market Participant as listed in the sender_MarketParticipant.mRID must be registered in Damas > sender_MarketParticipant.marketRole.type must be A30 > The Market Participant as listed in the receiver_MarketParticipant.mRID must be registered in Damas > receiver_MarketParticipant.marketRole.type must be A04	A78

Schedule Time Interval check	Specified schedule_Time_Period.timeInterval must cover the whole business day NOTE: the timeinterval is listed in the UTC time zone covering the business day in CET/CEST. Long day and short day are considered	A04
Domain check	domain.mRID must correspond with the existing Interconnector EIC code. NOTE: please see the chapter 7.3.13 Domains / Interconnectors.	A80
Matching Time Interval check	> matching_Time_Period.timeInterval must correspond with the open nomination time interval > Long-term and Daily timescale: equal to the schedule_Time_Period.timeInterval > Intraday: must cover the open Nomination Time Interval NOTE: the timeinterval is listed in the UTC time zone covering the business day in CET/CEST. Long day and short day are considered	A81
Time Series version check	In case of a new nomination, any TimeSeries/mRID can be used, provided it is unique In case of an update, the mRID submitted in the previous version must be used. Version must be equal to the revisionNumber	A50
Control Area check	out_Domain.mRID must contain the EIC code of the Source Control Area in_Domain.mRID must contain the EIC code of the Target Control Area Please see the enumeration of possible values as defined in the chapter 7.3.12 Control Areas	A23
Control Area and assignment to Interconnector check	out_Domain.mRID and in_Domain.mRID must be an existing Interconnector Direction registered Damas and must be assigned to the respective Interconnector (domain.mRID)	A82

BRP against Nominator Check	> in_MarketParticipant.mRID must correspond with the BRP EIC code registered for the given Nominator (sender_MarketParticipant.mRID) in the Target Control Area EIC code > out_MarketParticipant.mRID must correspond with the BRP EIC code registered for the given Nominator (sender_MarketParticipant.mRID) in the Source Control Area EIC code NOTE: sender_MarketParticipant.mRID, in_MarketParticipant.mRID as well as out_MarketParticipant.mRID can refer to the same party	A22
Markey Agreement Type against Market Agreement.mRID	marketAgreement.mRID must correspond with the Agreement Identification as stored in Damas for the respective Nominator and Agreement Type Please see the enumeration of possible values as defined in the chapter *7.3.3 marketAgreement.type.*	A76
Resolution check	Resolution must correspond with the resolution as assigned to the Interconnector and stored in the Damas register (please see the chapter 6.2.1.1 Description)	A41
Position check	Position must : > be an integer > be in ascending order > cover the whole matching_Time_Period.timeInterval Number of the positions must correspond with specified matching_Time_Period.timeInterval and resolution of the day (E.g.: four positions in case of 60 minutes resolution and the Open Nomination Interval covering four hours)	A49
Quantity check	Quantity (Nomination values) must be: > a non-negative integer > by a Nominating user must have enough capacity to nominate. The Quantity must be lower or equal to the	A27

	transmission rights with corresponding marketAgreement.mRID for the given Business Day and Nominator	
Nomination Gate open check	System must be in state of the entering or modifying nominations for the respective Market Agreement Type. In case of Intraday, the Matching Time Period is checked against the open Intraday Nomination Window NOTE: please see the list of possible Market Agreement Type in the chapter *7.3.3 marketAgreement.type*	A57
Curtailment check	It is not allowed to submit or modify nominations during curtailment process. The Nomination file will be rejected.	A70
Business Type check	businessType must be equal to A03	A62
Timeseries check	One timeseries must be present in the document	B01
Values check	> type must be A01 > process.classificationType must be A01 > product must be equal to 8716867000016 > objectAggregation must be A04 > measurement_Unit.name must be MAW > curveType must be A01	999, Reason Text is equal to the text described in the validation – E.g.: „type must be A01“

6.3 Data Flows for Data Download

6.3.1 Download Detailed Nominations

This data flow is used for downloading detailed nominations for the given Business Day, Interconnector direction and respective Agreement Type (Nomination Type – LT, D, ID) by an Interconnector Customer. The Interconnector Customer can download only their own data.

6.3.1.1 Description

The data flow is intended for downloading the nominations in detailed form. The format of the XML file is based on the *CIM - Schedule Market Document v5r1*. The file contains detailed nominations for the given Business Day, Interconnector, Interconnector Direction and respective Agreement Type (Long-Term, Daily, or Intraday). The

same Resolution is used as for the data submission. Please see the chapter *7.3.15 Resolution* for further information.

6.3.1.2 Input Parameters

List of the input parameters is as follows:

Name	Type	Description	Note
FID		DMSWS_NOMD_OUT	Mandatory parameter
Date	DateParam	Business Day for which the data should be downloaded in format YYYY-MM-DD	Mandatory parameter
Interconnector	StringParam	EIC code of an Interconnector for which the data should be downloaded	Mandatory parameter See List of Domains / Interconnector.
InArea	StringParam	Target Control Area defining the Interconnector in combination with out_Domain.mRID.	Mandatory parameter See List of Control Areas.
OutArea	StringParam	Source Control Area defining the Interconnector Direction in combination with in_Domain.mRID.	Mandatory parameter See List of Control Areas.
AgreementType	StringParam	Market Agreement Type (Nomination Type) for which the time series should be downloaded. Possible values: Long-term: A06 Daily: A01 Intraday:A07	

Example of the input parameters:

```
<Input>
  <FID>DMSWS_NOMD_OUT</FID>
  <Parameters>
    <DateParam Name="Date">2018-04-24</DateParam>
   <StringParam Name="Interconnector">10Y1001C--000247</StringParam>
   <StringParam Name="OutArea">10YNL----------L</StringParam>
   <StringParam Name="InArea">10YGB----------A</StringParam>
   <StringParam Name="AgreementType">A06</StringParam>
```

```
    </Parameters>
  </Input>
```

6.3.1.3 Input Validations

The following validations are being performed for input parameters:

Validation	Error ID
The parameter Date must be in format YYYY-MM-DD	-513
OutArea must contain valid EIC code from list of the Control Areas	-513
InArea must contain valid EIC code from list of the Control Areas	-513
Combination of the OutArea and InArea must be valid Damas Interconnector Direction	-513
The Interconnector Direction must be assigned to the given Domain / Interconnector	-513
Interconnector must contain valid EIC code from list of the Domains / Interconnectors	-513
The single AgreementType must be valid code – please see marketAgreement.type	-513

6.3.1.4 Output Parameters

Detailed Nominations are received in the XML file. Please see the chapter 10. APPENDIX C – EXAMPLES OF DOWNLOAD XMLS. and the chapter Download of Detailed Nominations for further information regarding the description of the file.

6.3.2 Download Aggregated Nominations

This data flow is intended for downloading aggregated nominations for the given Business Day, an Interconnector and all Agreement Types (Nomination Types) by an Interconnector Customer. The Interconnector Customer can download only their own data.

6.3.2.1 Description

The data flow is intended for downloading the nominations in aggregated form. The format of the XML file is based on the *CIM - Schedule Market Document v5r1*. The file contains aggregated nominations for the given Business Day, Interconnector, and all Agreement Types (Long-Term, Daily, Intraday). The same Resolution is used as for the data submission Please see the chapter *7.3.15 Resolution* for further information.

The Market Participant is entitled to download any nominations in which such Market Participant is listed as the Nominator. BRP assignment is not considered.

6.3.2.2 Input Parameters

List of the input parameters:

Name	Type	Description	Note
FID		DMSWS_NOMAGG_OUT	Mandatory parameter
Date	DateParam	Business Day for which the data should be downloaded in format YYYY-MM-DD	Mandatory parameter
Intercon-nector	StringParam	EIC code of an Interconnector for which the data should be submitted	Mandatory parameter See List of Domains / Intercon-nector.

Example of the input parameters:

```
<Input>
  <FID>DMSWS_NOMAGG_OUT</FID>
  <Parameters>
    <DateParam Name="Date">2018-04-24</DateParam>
   <StringParam Name="Interconnector">10Y1001C--000247</StringParam>
  </Parameters>
</Input>
```

6.3.2.3 Input Validations

The following validations are being performed for input parameters:

Validation	Error ID
The parameter Date must be in format YYYY-MM-DD	-513
Interconnector must contain valid EIC code from list of the Do-mains / Interconnectors	-513

Output Parameters

Aggregated Nominations are received in the XML file. Please see chapter the *10. APPENDIX C – EXAMPLES OF DOWNLOAD XMLS* and the chapter *Download of Aggregated Nominations* for further information regarding the description of the file.

6.3.3 Download Current Date and Time

6.3.3.1 Description

Downloading current date and time from Damas; this web service is accessible to all users.

6.3.3.2 Input Parameters

List of the input parameters:

Name	Type	Description	Note
FID		GETDATETIME	Mandatory parameter

Example of the input parameters:

```
<Input>
  <FID>GETDATETIME</FID>
  <Parameters/>
</Input>
```

6.3.3.3 Output Parameters

Current date and time in Damas is received. Time is in form of the Coordinated Universal Time (UTC). Please see the SOAP Response referred in the chapter 4.9.4.2 SOAP GetActualDateTime Response.

7. XSD SCHEMAS

This part of the document provides detailed technical description of Nomination XSD schemas used in Damas. Each XSD description contains model of the XSD schema structure, detailed description of the schema and explanation of the meaning of all XSD elements. Examples of the XML files are attached in the Appendix.

7.1 List of the XSD Schemas

7.1.1 ENTSO-E XSD Schemas

Web Service ID	Description	Name of XSD Schema
DMSWS_NOM_IN	CIM - Schedule Market Document v5r1is used for uploading Nominations.	iec62325-451-2-schedule-v5-1
DMSWS_NOMD_OUT	CIM - Schedule Market Document v5r1is used for downloading Nominations.	iec62325-451-2-schedule-v5-1
DMSWS_NOMAGG_OUT	CIM - Schedule Market Document v5r1is used for downloading Nominations.	iec62325-451-2-schedule-v5-1
Result of Input WS	Acknowledgement document is used for acknowledging receptions of the nominations – see FID DMSWS_NOM_IN.	iec62325-451-1-acknowledgement_v8_0

7.2 Description of ENTSO-E XSD Schemas

All XSD Schemas described below are based on the ENTSO-E standards.

7.2.1 CIM - Schedule Market Document v5r1

7.2.1.1 Schedule Market Document Description

The Schedule Market Document is used for submitting, modifying and downloading nominations to/from Damas.

All tags in the XML file are populated with data in accordance with ENTSO-E rules.

Primary information about messages, such as message identification and version, or identification of its sender and recipient, are stored in the message header. Each nomination is represented by the ScheduleTimeSeries element that contains all necessary information about nomination, such as its unique identification number, version number, identification of the source and destination Control Areas, identification of the parties, and nomination type.

The Period element defines the Business Day for which nomination is entered and its time resolution. Values for each hour of the Business Day are listed in the Interval element. The XML file with the PT60M resolution contains schedules with 24 values (23 when switching from winter time to summer time, 25 when switching from summer time to winter time). In case of the 25 values, an additional hour is inserted inside time series and remaining hourly values are shifted up.

Example – 23 hours day

Position in the XML	Time Interval in CET/CEST	Time Interval in UTC
1	00:00-01:00	D-1 23:00-24:00
2	01:00-03:00 (clock change hour)	00:00-01:00
3	03:00-04:00	01:00-02:00
	…	
23	23:00-24:00	21:00-22:00

Example – 24 hours day in Winter Time

Position in the XML	Time Interval in CET/CEST	Time Interval in UTC
1	00:00-01:00	D-1 23:00-24:00
2	01:00-02:00	00:00-01:00
3	02:00-03:00	01:00-02:00
	…	
24	23:00-24:00	22:00-23:00

Example – 24 hours day in Summer Time

Position in the XML	Time Interval in CET/CEST	Time Interval in UTC
1	00:00-01:00	D-1 22:00 – D-1 23:00
2	01:00-02:00	23:00-24:00
3	02:00-03:00	00:00-01:00
	…	
24	23:00-24:00	21:00-22:00

Example – 25 hours day

Position in the XML	Time Interval in CET/CEST	Time Interval in UTC
1	00:00-01:00	D-1 22:00 – D-1 23:00
2	01:00-02:00	D-1 23:00 - 24:00
3	02:00-03:00 (clock change hour)	00:00-01:00
4	02:00-03:00 (clock change hour)	01:00-02:00
5	03:00-04:00	02:00-03:00
…		
25	23:00-24:00	22:00-23:00

7.2.1.2 Specifications of Schedule Market Document Elements

Upload of Nominations

A list of the XML elements included in the Schedule_MarketDocument element are as follows:

Element	Description	Values	Applicability
mRID	Identification of the message.	Unique string up to 35 characters for the combination of *Business Day*, *Nominator*, *Importing* and *Exporting BRP*, *timescale* and *Agreement Identification*. NOTE: This value is displayed on the *Nominations Overview* screen as the *Nomination ID*.	Mandatory
revisionNumber	Senders unique version (incremented with each transmission of the same document)	Non-signed integer value starting from 1	Mandatory
type	Coded type of the message being sent.	A01 - Balance Responsible Schedule	Mandatory
process.processType	Nature of the process the message is directed at.	Long Term, Daily or Intraday : A12, A01 or A19	Mandatory
process.classificationType	Type that is used to classify schedule by aggregation or classification.	A01 (Detail type)	Mandatory
sender_MarketParticipant.mRID	Identification of the party sending the message.	EIC Party Code of the sender - Nominator. A01 coding scheme Please see the chapter *7.3.14 Market Participant*	Mandatory
sender_MarketParticipant.marketRole.type	Identification of the role played by the sender.	Role code of the Sender A30 - ITR	Mandatory

receiver_MarketParticipant.mRID	Identification of the party receiving the message.	EIC Party Code of the receiver - Interconnector. A01 coding scheme Please see the chapter *7.3.14 Market Participant*	Mandatory
receiver_MarketParticipant.marketRole.type	Identification of the role played by the receiver.	Role code of the Receiver A04 - System Operator	Mandatory
createdDateTime	Date and time of the of the message generation.	Creation date/time of the document (in ISO 8601 UTC format) YYYY-MM-DDTHH:MM:00Z	Mandatory
schedule_Time_Period.timeInterval	Beginning and the ending date and time of the period covered by message. UTC coding. Format: YYYY-MM-DDTHH:MMZ	The interval contains one Business Day. Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This should cover the complete period <u>In relation to a CET time zone:</u> In winter the time spread is from 23:00 UTC to 23:00 UTC The change from winter to summer time spread is from 23:00 UTC to 22:00 UTC The summer time spread is from 22:00 UTC to 22:00 UTC The change from summer to winter time spread is from 22:00 UTC to 23:00 UTC	Mandatory
domain.mRID	Identification of an Interconnector for which the data is submitted	EIC Area code of the Interconnector Please see the chapter *7.3.13 Domains / Interconnectors.*	
subject_MarketParticipant.mRID	NOT USED		
subject_MarketParticipant.marketRole.type	NOT USED		

match-ing_Time_Pe-riod.timeInterval	Nomination Interval for which the gate is open.	CET/CEST time zone is used. Period covered (in ISO 8601 UTC format) <u>This period is described with two different tags</u> <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This should cover the whole Business Day in case of upload of Long-term, or Daily Nominations. In case of Intraday Nominations, this should cover the relevant time interval for which the nomination gate is open. <u>In case of Nomination Interval covering the whole business day (Long-term, Daily):</u> In winter the time spread is from 23:00 UTC to 23:00 UTC in relation to the CET/CEST time zone. The change from winter to summer time spread is from 23:00 UTC to 22:00 UTC in relation to the CET/CEST time zone. The summer time spread is from 22:00 UTC to 22:00 UTC in relation to the CET/CEST time zone. The change from summer to winter time spread is from 22:00 UTC to 23:00 UTC in relation to the CET/CEST time zone. <u>In case of Intraday Nomination interval, only the period which covers the Nominations Interval is used.</u> E.g.: nomination interval 00:00-14:00 CET/CEST In winter the time spread is from 23:00 UTC to 13:00 UTC in relation to the CET/CEST time zone. The change from winter to summer time spread is from 23:00 UTC to 12:00 UTC in relation to the CET/CEST time zone. The summer time spread is from 22:00 UTC to 12:00 UTC in relation to the CET/CEST time zone. The change from summer to winter time spread is from 22:00 UTC to 13:00 UTC in relation to the CET/CEST time zone.	
TimeSeries	Timeseries containing schedule.		Man-datory

A list of the XML elements included in the TimeSeries element are as follows:

Element	Description	Values	Applicability
mRID	Unique identification of the document timeseries for which the data is being supplied.	String. It is recommended to use non-negative integer values.	Mandatory
version	Senders unique version (incremented with each transmission of the same document)	Non-signed integer value. Always the same version as the revisionNumber.	Mandatory
businessType	Identifies the types of the data exchanged.	A03 (External trade explicit capacity).	Mandatory
product	Identification of the energy product.	8716867000016 (Active power).	Mandatory
objectAggregation	Identifies how the object is aggregated.	A04 (Agreement Identification)	Mandatory
in_Domain.mRID	Identification of the target control area of the Interconnector direction.	EIC code of the target area. A01 coding scheme. Please see the chapter *7.3.12 Control Areas*.	Mandatory
out_Domain.mRID	Identification of the source area of the Interconnector direction.	EIC code of the source area. A01 coding scheme. Please see the chapter *7.3.12 Control Areas*.	Mandatory
marketEvaluationPoint.mRID	NOT USED		

in_MarketParticipant.mRID	Identification of the importing BRP. NOTE: sender_MarketParticipant.mRID, in_MarketParticipant.mRID as well as out_MarketParticipant.mRID can refer to the same party	EIC Party Code of the importing BRP. A01 coding scheme.	Mandatory
out_MarketParticipant.mRID	Identification of the exporting BRP. NOTE: sender_MarketParticipant.mRID, in_MarketParticipant.mRID as well as out_MarketParticipant.mRID can refer to the same party	EIC Party Code of the exporting BRP. A01 coding scheme.	Mandatory
marketAgreement.type	Agreement Type / Nomination Type: defines the timescale under which capacity was allocated and handled.	A01-Daily, A06-Long Term, A07-Intra Day	Mandatory
marketAgreement.mRID	The identification of an agreement for the allocation of capacity to a party.	String. This provides the identification of the allocated capacity by SAP.	Mandatory

measure-ment_Unit.name	The unit of measurement used for the quantities expressed within the time series.	MAW (Mega watt).	Mandatory
curveType	The type of curve being defined in the time series.	A01 (Sequential fixed sized blocks)	Mandatory
Period	Element including list of the time intervals		Mandatory

A list of the XML elements included in the Period element are as follows:

Element	Description	Values	Applicability
TimeInterval	Start and end date and time of the time interval of the period. UTC coding. Format: YYYY-MM-DDTHH:MMZ	Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This shall be equal to matching_Time_Period.timeInterval	Mandatory
Resolution	Resolution defining number of the positions that time interval is divided into.	Please see the chapter *7.3.15 Resolution*	Mandatory
Point	Element including list of the positions and quantity nominated		Mandatory

A list of the XML elements included in the Point element are as follows:

Element	Description	Values	Applicability
position	Relative position of the period within the timeInterval of the Period.	Non-signed integer value. Sequential value beginning with 1	Mandatory
quantity	Nomination values at the Operational Reference Point.	Non-signed integer value. Quantity being reported At Operational reference point	Mandatory

Download of Detailed Nominations

A list of the XML elements included in the Schedule_MarketDocument element are as follows:

Element	Description	Values	Applicability
mRID	Identification of the message.	The Naming convention is: <BusinessDay><ProcessType><NominatorEIC><InterconnectorCode><SourceCACode><TargetCACode> Business Day – the day for which schedule is submitted in format YYYYMMDD ProcessType – as the process.processType in the document Nominator's EIC code – EIC code of the Market participant submitting the document (see https://www.entsoe.eu/data/energy-identification-codes-eic/eic-approved-codes/) Interconnector Code – Please see the table in the chapter *7.3.13 Domains / Interconnectors*, column Interconnector Code. E.g.: BDL for BritNed the table in the chapter Domains / Interconnector, SourceCACode and TargetCACode – short code of the given combination of Control Areas for which the schedule is submitted. Please see the table in the chapter *7.3.12 Control Areas*, column Country Code. E.g.: BE for Belgium Example: 20180713A1710X--TRADER01---BDLNLGB > 20180713 - Business Day in format YYYYDDMM	Mandatory

		> A17 – Schedule Day > 10X--TRADER01--- – EIC Party Code > BDL – the Interconnector Code identifying Brit-Ned > NLGB – Country Codes NL and GB identifying the Interconnector Direction NLGB	
revisionNumber	Senders unique version (incremented with each transmission of the same document)	Non-signed integer value starting from 1	Mandatory
type	Coded type of the message being sent.	A01 - Balance Responsible Schedule	Mandatory
process.processType	Nature of the process the message is directed at.	Schedule day – A17	Mandatory
process.classificationType	Type that is used to classify schedule by aggregation or classification.	A01 (Detail type)	Mandatory
sender_MarketParticipant.mRID	Identification of the party sending the message.	EIC Party Code of the Interconnector Please see the chapter *7.3.14 Market Participant*	Mandatory
sender_MarketParticipant.marketRole.type	Identification of the role played by the sender.	A04 - System Operator	Mandatory
receiver_MarketParticipant.mRID	Identification of the party receiving the message.	EIC Party Code of the receiver - Nominator. A01 coding scheme Please see the chapter *7.3.14 Market Participant*	Mandatory

receiver_MarketParticipant.marketRole.type	Identification of the role played by the receiver.	Role code of the Receiver A30 - ITR	Mandatory
createdDateTime	Date and time of the of the message generation.	Creation date/time of the document (in ISO 8601 UTC format) YYYY-MM-DDTHH:MM:00Z	Mandatory
schedule_Time_Period.timeInterval	Beginning and the ending date and time of the period covered by message. UTC coding. Format: YYYY-MM-DDTHH:MMZ	The interval contains one Business Day. Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This should cover the complete period In relation to a CET time zone: In winter the time spread is from 23:00 UTC to 23:00 UTC The change from winter to summer time spread is from 23:00 UTC to 22:00 UTC The summer time spread is from 22:00 UTC to 22:00 UTC The change from summer to winter time spread is from 22:00 UTC to 23:00 UTC	Mandatory
domain.mRID	Identification of an Interconnector for which the data is submitted	EIC Area code of the Interconnector Please see the chapter *7.3.13 Domains / Interconnectors.*	
subject_MarketParticipant.mRID	NOT USED		
subject_MarketParticipant.marketRole.type	NOT USED		
matching_Time_Period.timeInterval	Nomination Interval for which the gate is open.	CET/CEST time zone is used. Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start>	

		<end>YYYY-MM-DDTHH:MMZ</end> This is equal to the schedule_Time_Period.timeInterval	
TimeSeries	Time series containing schedule.		Mandatory

A list of the XML elements included in the Timeseries element are as follows:

Element	Description	Values	Applicability
mRID	Unique identification of the document for which the time series data is being supplied.	Non-negative integer value.	Mandatory
version	Senders unique version (incremented with each transmission of the same document)	Non-signed integer value. Always the same version as the revisionNumber.	Mandatory
businessType	Identifies the types of the data exchanged.	A03 (External trade explicit capacity)	Mandatory
product	Identification of the energy product.	8716867000016 (Active power).	Mandatory
objectAggregation	Identifies how the object is aggregated.	A04 (Agreement Identification)	Mandatory
in_Domain.mRID	Identification of the target control area of the Interconnector direction.	EIC code of the target area. A01 coding scheme. Please see the chapter *7.3.12 Control Areas*.	Mandatory
out_Domain.mRID	Identification of the source area of the Interconnector direction.	EIC code of the source area. A01 coding scheme. Please see the chapter *7.3.12 Control Areas*.	Mandatory
marketEvaluationPoint.mRID	NOT USED		

in_MarketParticipant.mRID	Identification of the importing BRP. NOTE: receiver_MarketParticipant.mRID, in_MarketParticipant.mRID as well as out_MarketParticipant.mRID can refer to the same party	EIC Party Code of the importing BRP. A01 coding scheme.	Mandatory
out_MarketParticipant.mRID	Identification of the exporting BRP. NOTE: receiver_MarketParticipant.mRID, in_MarketParticipant.mRID as well as out_MarketParticipant.mRID can refer to the same party	EIC Party Code of the exporting BRP. A01 coding scheme.	Mandatory
marketAgreement.type	Agreement Type / Nomination Type: defines the timescale under which capacity was allocated and handled.	A01-Daily, A06-Long Term, A07-Intra Day	Mandatory
marketAgreement.mRID	The identification of an agreement for the allocation of capacity to a party.	String. This provides the identification of the allocated capacity by SAP.	Mandatory
measurement_Unit.name	The unit of measurement used for the quantities expressed within the time series.	MAW (Megawatt).	Mandatory
curveType	The type of curve being defined in the time series.	A01 (Sequential fixed sized blocks)	Mandatory
Period	Element including list of the time intervals		Mandatory

A list of the XML elements included in the Period element are as follows:

Element	Description	Values	Applicability

TimeInterval	Start and end date and time of the time interval of the period. UTC coding. Format: YYYY-MM-DDTHH:MMZ	Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This shall be equal to matching_Time_Period.timeInterval	Mandatory
Resolution	Resolution defining number of the positions that time interval is divided into.	Please see the chapter *7.3.15 Resolution*	Mandatory
Point	Element encapsulating list of the positions and quantity nominated		Mandatory

List of the XML elements included in the Point element:

Element	Description	Values	Applicability
position	Relative position of the period within the timeInterval of the Period.	Non-signed integer value. Sequential value beginning with 1	Mandatory
quantity	Nomination values at the Operational Reference Point.	Non-signed integer value. Quantity being reported At Operational Reference Point	Mandatory

Download of Aggregated Nominations

A list of the XML elements included in the Schedule_MarketDocument element are as follows:

Element	Description	Values	Applicability
mRID	Identification of the message.	The Naming convention is: <BusinessDay><ProcessType><NominatorEIC><InterconnectorCode><SourceCACode><TargetCACode>	Mandatory

		Business Day – the day for which schedule is submitted in format YYYYMMDD ProcessType – as the process.processType in the document Nominator's EIC code – EIC code of the Market participant submitting the document (see https://www.entsoe.eu/data/energy-identification-codes-eic/eic-approved-codes/) Interconnector Code – Please see the table in the chapter *7.3.13 Domains / Interconnectors*, column Interconnector Code. E.g.: BDL for BritNed the table in the chapter Domains / Interconnector, SourceCACode and TargetCACode – short code of the given combination of Control Areas for which the schedule is submitted. Please see the table in the chapter *7.3.12 Control Areas*, column Country Code. E.g.: BE for Belgium Example: 20180713A1710X--TRADER01---BDLNLGB > 20180713 - Business Day in format YYYYDDMM > A17 – Schedule Day > 10X--TRADER01--- – EIC Party Code > BDL – the Interconnector Code identifying BritNed > NLGB – Country Codes NL and GB identifying the Interconnector Direction NLGB	
revisionNumber	Senders unique version (incremented with each transmission of the same document)	Non-signed integer value starting from 1	Mandatory
type	Coded type of the message being sent.	A01 - Balance Responsible Schedule	Mandatory
process.processType	Nature of the process the	A17 (Schedule Day)	Mandatory

	message is directed at.		
process.classificationType	Type that is used to classify schedule by aggregation or classification.	A02 (Summary type)	Mandatory
sender_MarketParticipant.mRID	Identification of the party sending the message.	EIC Party Code of the sender - Interconnector. A01 coding scheme Please see the chapter *7.3.14 Market Participant*	Mandatory
sender_MarketParticipant.marketRole.type	Identification of the role played by the sender.	A04 - System Operator	Mandatory
receiver_MarketParticipant.mRID	Identification of the party receiving the message.	EIC Party Code of the receiver - Nominator. A01 coding scheme Please see the chapter *7.3.14 Market Participant*	Mandatory
receiver_MarketParticipant.marketRole.type	Identification of the role played by the receiver.	A30 - ITR	Mandatory
createdDateTime	Date and time of the of the message generation.	Creation date/time of the document (in ISO 8601 UTC format) YYYY-MM-DDTHH:MM:00Z	Mandatory
schedule_Time_Period.timeInterval	Beginning and the ending date and time of the period covered by message. UTC coding. Format: YYYY-MM-DDTHH:MMZ	The interval contains one Business Day. Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This should cover the complete period <u>In relation to a CET time zone:</u> In winter the time spread is from 23:00 UTC to 23:00 UTC The change from winter to summer time spread is from 23:00 UTC to 22:00 UTC	Mandatory

		The summer time spread is from 22:00 UTC to 22:00 UTC The change from summer to winter time spread is from 22:00 UTC to 23:00 UTC	
domain.mRID	Identification of an Inter-connector for which the data is sub-mitted	EIC Area code of the Interconnector Please see the chapter *7.3.13 Domains / Interconnectors.*	
subject_MarketPartic-ipant.mRID	NOT USED		
subject_MarketPartic-ipant.marketRole.type	NOT USED		
matching_Time_Pe-riod.timeInterval	Nomination Interval for which the gate is open.	CET/CEST time zone is used. Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This is equal to the schedule_Time_Period.timeInterval	
TimeSeries	Time series containing schedule.		Man-da-tory

A list of the XML elements included in the TimeSeries element are as follows:

Element	Description	Values	Applicabil-ity
mRID	Unique identification of the doc-ument for which the time series data is being supplied.	Non-negative integer values.	Mandatory
version	Senders unique version (incremented with each trans-mission of the same docu-ment)	Non-signed integer value. Always the same version as the revisionNumber.	Mandatory

businessType	Identifies the types of the data exchanged.	A05 (External trade total)	Mandatory
product	Identification of the energy product.	8716867000016 (Active power).	Mandatory
objectAggregation	Identifies how the object is aggregated.	A03 (Party)	Mandatory
in_Domain.mRID	Identification of the target control area of the Interconnector direction.	EIC code of the target area. A01 coding scheme. Please see the chapter *7.3.12 Control Areas*.	Mandatory
out_Domain.mRID	Identification of the source area of the Interconnector direction.	EIC code of the source area. A01 coding scheme. Please see the chapter *7.3.12 Control Areas*.	Mandatory
marketEvaluationPoint.mRID	NOT USED		
in_MarketParticipant.mRID	NOT USED		
out_MarketParticipant.mRID	NOT USED		
marketAgreement.type	Agreement Type / Nomination Type: defines the timescale under which capacity was allocated and handled.	A05 - Total	Mandatory
marketAgreement.mRID	NOT USED		
measurement_Unit.name	The unit of measurement used for the quantities expressed within the time series.	MAW (Megawatt).	Mandatory
curveType	The type of curve being defined in the time series.	A01 (Sequential fixed sized blocks)	Mandatory
Period	Element including list of the time intervals		Mandatory

A list of the XML elements included in the Period element are as follows:

Element	Description	Values	Applicability
TimeInterval	Start and end date and time of the time interval of the period. UTC coding. Format: YYYY-MM-DDTHH:MMZ	Period covered (in ISO 8601 UTC format) This period is described with two different tags <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> This shall be equal to matching_Time_Period.timeInterval	Mandatory
Resolution	Resolution defining number of the positions that time interval is divided into.	Please see the chapter *7.3.15 Resolution*	Mandatory
Point	Element encapsulating list of the positions and quantity nominated		Mandatory

A list of the XML elements included in the Point element are as follows:

Element	Description	Values	Applicability
position	Relative position of the period within the timeInterval of the Period.	Non-signed integer value. Sequential value beginning with 1	Mandatory
quantity	Nomination values at the Operational Reference Point.	Non-signed integer value. Quantity being reported At Operational reference point	Mandatory

Schedule Market Document - Example

Please see the chapter 8. APPENDIX A – EXAMPLES OF UPLOADING XMLS and the chapter 10. APPENDIX C – EXAMPLES OF DOWNLOAD XMLS for the complete list.

The following example captures the Schedule Market Document for Long-term nomination submitted by an Interconnector Customer for 13.7.2018 and for the Interconnector BritNed and Interconnector Direction NL-GB:


```xml
<?xml version="1.0" encoding="UTF-8"?>
<Schedule_MarketDocument
xsi:schemaLocation="urn:iec62325.351:tc57wg16:451-2:scheduledocument:5:1
iec62325-451-2-schedule_v5_1.xsd" xmlns="urn:iec62325.351:tc57wg16:451-
2:scheduledocument:5:1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance">
        <mRID>20180713A1210X--TRADER01---BDLNLGB</mRID>
        <revisionNumber>1</revisionNumber>
        <type>A01</type>
        <process.processType>A12</process.processType>
        <process.classificationType>A01</process.classificationType>
        <sender_MarketParticipant.mRID codingScheme="A01">10X--TRADER01---
</sender_MarketParticipant.mRID>
        <sender_MarketParticipant.marketRole.type>A30</sender_MarketParticipan
t.marketRole.type>
        <receiver_MarketParticipant.mRID
codingScheme="A01">10X1001A1001A58S</receiver_MarketParticipant.mRID>
        <receiver_MarketParticipant.marketRole.type>A04</receiver_MarketPartic
ipant.marketRole.type>
        <createdDateTime>2018-07-12T12:15:00Z</createdDateTime>
        <schedule_Time_Period.timeInterval>
                <start>2018-07-12T22:00Z</start>
                <end>2018-07-13T22:00Z</end>
        </schedule_Time_Period.timeInterval>
        <domain.mRID codingScheme="A01">10Y1001C--000247</domain.mRID>
        <matching_Time_Period.timeInterval>
                <start>2018-07-12T22:00Z</start>
                <end>2018-07-13T22:00Z</end>
        </matching_Time_Period.timeInterval>
        <TimeSeries>
                <mRID>1104477</mRID>
```

```
                <version>1</version>
                <businessType>A03</businessType>
                <product>8716867000016</product>
                <objectAggregation>A04</objectAggregation>
                <in_Domain.mRID codingScheme="A01">10YGB----------
A</in_Domain.mRID>
                <out_Domain.mRID codingScheme="A01">10YNL----------
L</out_Domain.mRID>
                <in_MarketParticipant.mRID codingScheme="A01">10X--TRADER01---
</in_MarketParticipant.mRID>
                <out_MarketParticipant.mRID codingScheme="A01">10X--TRADER01--
</out_MarketParticipant.mRID>
                <marketAgreement.type>A06</marketAgreement.type>
                <marketAgreement.mRID>10X--TRADER01---
_BDL_20170713</marketAgreement.mRID>
                <measurement_Unit.name>MAW</measurement_Unit.name>
                <curveType>A01</curveType>
                <Period>
                        <timeInterval>
                                <start>2018-07-12T22:00Z</start>
                                <end>2018-07-13T22:00Z</end>
                        </timeInterval>
                        <resolution>PT60M</resolution>
                        <Point>
                                <position>1</position>
                                <quantity>0</quantity>
                        </Point>
                        <Point>
                                <position>2</position>
                                <quantity>10</quantity>
                        </Point>
                        ...
                        <Point>
                                <position>23</position>
                                <quantity>35</quantity>
                        </Point>
                        <Point>
                                <position>24</position>
```

```
                                <quantity>55</quantity>
                        </Point>
                </Period>
        </TimeSeries>
</Schedule_MarketDocument>
```

7.2.2 Acknowledgement Document

7.2.2.1 Acknowledgement Document Description

The Acknowledgement document is sent as a feedback to the sender. The Acknowledgment document confirms reception of the submitted document and provide information about status of processing. In case of rejection, the Acknowledgement document notifies recipient of errors identified during processing of the document. Acknowledgement message is generated according to the ENTSO-E Acknowledgement Document v8r0.

The Acknowledgement document header contains document identification, current date and time, identification of the document sender and recipient, type and process type of the original document. Except for this, received document identification and version are included in the received_MarketDocument.mRID and received_Market-Document.revisionNumber elements.

An Acknowledgement contains information related to Acceptance/Rejection by the means of Reason Codes (element code). The main Reason Code is either A01 for Acceptance, or A02 for Rejection. Supportive Reason Codes are followed in case of Rejection. Such Reason Code specifies the validation rule that is not passed.

7.2.2.2 Specification of AcknowledgementMarketDocument Elements

A list of the XML elements included in the AcknowledgementMarketDocument element are as follows:

Element	Description	Values	Applicability
mRID	Unique identification of the acknowledgement of the document that has been received.	The naming convention is: ACK_<FID>_<DAMAS_RE-QUEST_ID> NOTE: if needed, the string is trimmed according to the XSD specification	Mandatory
created-DateTime	Date and time of the transmission of the acknowledgement.	The time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ.	Mandatory
sender_Market-Partici-pant.mRID	Identification of the party that is originator of the acknowledgement.	EIC Party Code of an Intercon-nector. A01 coding scheme.	Mandatory
sender_Market-Partici-pant.market-Role.type	Identification of the role that is played by sender.	A04 (System Operator)	Mandatory
receiver_Mar-ketPartici-pant.mRID	Identification of the party who is re-cipient of the acknowledgement.	EIC Party Code of the Nomi-nator. A01 coding scheme.	Mandatory

receiver_MarketParticipant.marketRole.type	Identification of the role played by receiver.	A30 (ITR)	Mandatory
received_MarketDocument.mRID	mRID of the document that is acknowledged.	String	Mandatory
received_MarketDocument.revisionNumber	Version of the document received.	Number equal or greater than 1.	Mandatory
received_MarketDocument.type	Type of the document received.	A01	Mandatory
received_MarketDocument.process.processType	Process Type of the original document.	Long Term, Daily or Intraday : A12, A01 or A19	Mandatory
received_MarketDocument.title	NOT USED		
received_MarketDocument.createdDateTime	Creation Date and Time of the document received.	In format YYYY-MM-DDTHH:MM:SSZ	Mandatory
Reason	Description of the errors discovered in received document.		Mandatory

A list of the XML elements included in the Reason element are as follows:

Element	Description	Values	Applicability
code	Code providing the acknowledgement status.	Please see the Reason Code list in the chapter 7.3.11 Reason Codes	Mandatory
text	Textual description of the rejection.	Please see the Reason Code list in the chapter 7.3.11 Reason Codes	Optional

An Acknowledgement contains information related to Acceptance/Rejection by the means of Reason Codes (element code). The main Reason Code is either A01 for Acceptance, or A02 for Rejection. Supportive Reason Codes are followed in case of Rejection. Such Reason Code specifies the validation rule that is not passed.

7.2.2.3 Acknowledgement Document - Example

The following example represents an Acknowledgement Document generated after submission of the data flow DMSWS_NOM_IN (Upload of Nominations). The Nomination File is rejected by Damas (Reason Code A02). The rejection is caused by submission of non-existing Interconnector Direction (Reason Code A82).


```xml
<?xml version="1.0" encoding="UTF-8"?>
<Acknowledgement_MarketDocument xmlns="urn:iec62325.351:tc57wg16:451-1:acknowledgementdocument:8:0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:iec62325.351:tc57wg16:451-1:acknowledgementdocument:8:0 iec62325-451-1-acknowledgement_v8_0.xsd">
        <mRID>ACK_DMSWS_NOM_IN_3242344</mRID>
        <createdDateTime>2018-07-13T14:10:02Z</createdDateTime>
        <sender_MarketParticipant.mRID codingScheme="A01">10X1001A1001A58S</sender_MarketParticipant.mRID>
        <sender_MarketParticipant.marketRole.type>A04</sender_MarketParticipant.marketRole.type>
        <receiver_MarketParticipant.mRID codingScheme="A01">10X--TRADER01---</receiver_MarketParticipant.mRID>
        <receiver_MarketParticipant.marketRole.type>A30</receiver_MarketParticipant.marketRole.type>
        <received_MarketDocument.mRID>20180713_A19_10X--TBDL_NLGB</received_MarketDocument.mRID>
        <received_MarketDocument.revisionNumber>1</received_MarketDocument.revisionNumber>
        <received_MarketDocument.process.processType>A19</received_MarketDocument.process.processType>
        <received_MarketDocument.createdDateTime>2018-07-13T14:05:02Z</received_MarketDocument.createdDateTime>
        <Reason>
                <code>A02</code>
                <text>Message fully rejected</text>
        </Reason>
        <Reason>
                <code>A82</code>
                <text>out_Domain.mRID and in_Domain.mRID must be an existing Interconnector Direction registered Damas and must be assigned to the respective Interconnector (domain.mRID)</text>
        </Reason>
</Acknowledgement_MarketDocument>
```

7.3 Code List

The Code Lists listed below are either original ENTSO-E standard lists (or an extract from it), or Damas specific. The detailed information about type of the Code List and the contents is described in in the following subchapter. The ENTSO-E specification can be found on *https://www.entsoe.eu/publications/electronic-data-interchange-edi-library/.*

7.3.1 Role

Code list for role element is defined according to the ENTSO-E code list. Following codes are used in Damas:

Code	Role Name	Description
A04	System operator	This code should be used by the RNP.. A party that is responsible for a stable power system operation (including the organisation of physical balance) through a transmission grid in a geographical area. The System Operator will also determine and be responsible for cross border capacity and exchanges. If necessary he may reduce allocated capacity to ensure operational stability. NOTE: please see the chapter *7.2.1 CIM - Schedule Market Document v5r1* for further information how to use the Role codes.
A30	Interconnection Trade Responsible	This code should be used by an Interconnector Customer. Is a Balance Responsible Party or depends on one. ITR is recognised by the Nomination Validator for the nomination of already allocated capacity. NOTE: please see the chapter *7.2.1 CIM - Schedule Market Document v5r1* for further information how to use the Role codes.

7.3.2 Product

Code list for product element is defined according to the ENTSO-E code list. The following codes are used in Damas:

Code	**Product Name**	**Description**
8716867000016	Active power	This code is used for schedules. The product of voltage and the in-phase component of alternating current measured in units of watts and standard multiples thereof.

7.3.3 marketAgreement.type

Code list for marketAgreement.type element is based on the ENTSO-E code list. Following codes are used in Damas:

Code	Market Agreement Type Name	Description
A01	Daily	The condition under which capacity is allocated and handled is by daily auction or a daily transmission allocation procedure.
A05	Total	The sum of all explicit capacity contract types for the period covered (Long-term, Daily, Intraday).
A06	Long-term	The condition under which capacity is allocated and handled is by long term trade agreements according to European regulations (EU Directive 1228/2003).
A07	Intraday	The condition under which the capacity is allocated and handled is through an intraday auction and allocation process.

NOTE: the marketAgreement.type refers to the Nomination Type. E.g.: this element is called in the GUI Nomination Type.

7.3.4 measurement_Unit.name

Code list for measurement_Unit.name element is based on the ENTSO-E code list. The following codes are used in Damas:

Code	Measurement Unit Name	Description
MAW	Mega watt	Unit of the bulk power flow, which can be defined as rate of the energy transfer/consumption where current of the 1000 amperes flows due to potential of the 1000 volts at unity power factor expressed in millions of the watt.

7.3.5 type

Code list for message type is an extension of the ENTSO-E code list. The following codes are used in Damas:

Code	Message Type Name	Description

A01	Balance responsible schedule	Used in data flows where the data are not aggregated A schedule which has been prepared by a Balance Responsible Party providing planned schedule information.

7.3.6 Process Type

Code list for process type is defined according to the ENTSO-E code list. The following codes are used in Damas:

Code	Process Type Name	Description
A01	Daily	The information provided concerns the daily schedules
A12	Long-term	The process concerns scheduling all schedules except daily and intraday contracts.
A17	Schedule Day	The aggregated or detailed positions of Long-term, Daily and Intraday Nominations per Interconnector Directions are included in such document. The netting is not applied.
A19	Intraday accumulated	This process concerns a single intraday schedule process where only intraday evolutions occur through version changes.

7.3.7 process.classificationType

Code list for process type is defined according to the ENTSO-E code list. The following codes are used in Damas:

Code	Process Classification Type Name	Description
A01	Detail Type	The Time Series content provides detailed information. It is used in data flows DMSWS_NOM_IN and DMSWS_NOMD_OUT.
A02	Summary Type	The Time Series content provides aggregated information. It is used in data flows DMSWS_NOMAGG_OUT

7.3.8 Coding Scheme

Code list for coding scheme is extension of the ENTSO-E code list. The following codes are used in Damas:

Code	Coding Scheme Name	Description
A01	EIC	The coding scheme is the Energy Identification Coding Scheme (EIC), maintained by ENTSO-E.

7.3.9 Business Type

Code list for business type is extension of the ENTSO-E code list. The following codes are used in Damas:

Code	Business Type	Description
A03	External trade explicit capacity	The nature of the business being described is external trade details between two areas with limit capacity requiring allocation information - used for DMSWS_NOM_IN and DMSWS_NOMD_OUT.
A05	External trade total	The nature of the business being described is external trade total – used for DMSWS_NOMAGG_OUT

7.3.10 Object Aggregation

Code list for object aggregation is extension of the ENTSO-E code list. The following codes are used in Damas:

Code	Role Name	Description
A03	Party	The object being described concerns a party– used for DMSWS_NOMAGG_OUT
A04	Agreement Identification	The object being described concerns an agreement identification - used for DMSWS_NOM_IN and DMSWS_NOMD_OUT

7.3.11 Reason Codes

Code list for Reason codes is defined according to the ENTSO-E code list. The following codes are used in Damas:

Code	Reason Code Name	Reason Text provided by Damas
A01	Message fully accepted	The message has been fully accepted.
A02	Message fully rejected	The message has been fully rejected.
A04	Time interval incorrect	Specified schedule_Time_Period.timeInterval must cover the whole business day
A05	Sender without valid contract	User is not authorized for data submission
A22	In party / Out party invalid	Nominator and BRP assignment does not correspond

		NOTE: Nominator, In party and Out Party can be the same
A23	Area invalid	Invalid EIC code of a Control Area
A27	Cross border capacity exceeded	Insufficient Transmission Rights for Nominations
A41	Resolution inconsistency	Resolution must correspond with the resolution as assigned to the Interconnector
A49	Position inconsistency	The position is missing or too many.
A50	Senders time series version conflict	The version must be consistent with the revisionNumber.
A51	Message identification or version conflict	The revisionNumber must be higher than the previously submitted one.
A53	Receiving party incorrect	The EIC code of the Domain (Interconnector) must be consistent with the receiver_MarketParticipant.mRID and must exist in Damas
A57	Deadline limit exceeded / Gate not open	The Nomination Gate for the provided parameters is not open.
A62	Invalid business type	businessType must be equal to A03
A70	Curtailment Check	It is not allowed to submit or modify nominations during curtailment process.
A76	Agreement identification inconsistency	marketAgreement.mRID must correspond to the Agreement Identification as stored in Damas for the respective Nominator and Agreement Type / Nomination Type
A78	Sender identification and/or role invalid	The identification of the sender or the sender/role combination is invalid.
A79	Process type invalid	Incorrect Process Type code, or inconsistency with the Market Agreement Type
A80	Domain invalid	domain.mRID must correspond to the existing Interconnector EIC code
A81	Matching period invalid	matching_Time_Period.timeInterval must correspond to the open nomination time interval

A82	In/Out area inconsistent with domain	out_Domain.mRID and in_Domain.mRID must be an existing Interconnector Direction registered in Damas and assigned to the respective Interconnector (domain.mRID)
A94	Document cannot be processed by receiving system	The provided XML document is not valid according to its XSD.
B01	Incomplete document	The document must contain one Timeseries.
999	Errors not specifically identified	This code is used to identify errors that have not been specifically addressed in the Reason Code list. It can be used at any level and refers to level for which it has been identified. Please see the chapter Users receive anacknowledgement message as response confirming data delivery and describing processing results. Please see the chapter 7.2.2 – Acknowledgment Document for further information. Business Validations for further information about texts in the Reason Text element. The system exception message is provided as the Reason Text (if available).

7.3.12 Control Areas

Code list for supported control areas defined in Damas Register Control Area:

Code	Name	EIC Code	Country Code
BE_AREA	BELGIUM	10YBE----------2	BE
FR_AREA	FRANCE	10YFR-RTE------C	FR
GB_AREA	GREAT BRITAIN	10YGB----------A	GB
NL_AREA	NETHERLANDS	10YNL----------L	NL

Note:

When the Control Area is used in the XML documents, value must be always EIC Code, otherwise the Control Area is not recognized by Damas.

Example for definition of the Interconnector direction GB-NL using pair of the control areas:

out_Domain.mRID = “10YGB----------A”

in_Domain.mRID = “10YNL----------L”

7.3.13 Domains / Interconnectors

The Interconnector is used for straightforward identification of an Interconnector for which the data request is intended for. The code list for Interconnectors defined in Damas Register Interconnector are as follows:

Interconnector Code	Interconnector Name	EIC Code
BDL	BritNed	10Y1001C--000247
IF1	IFA	10Y1001C--000255
NLL	Nemo Link	10Y1001C--000271
IF2	IFA2	10Y1001C--000263

Note:

The Interconnector is identified in the XML documents in the tag domain.mRID When the Interconnector is used in the XML documents for identification of an Interconnector, the value must be always EIC Code, otherwise the Domain is not recognized by Damas. The domain is always used in combination with an Interconnector Direction.

Example for definition of the Interconnector direction GB-NL and the Interconnector BritNed:

domain.mRID = “10Y1001C--000247”

out_Domain.mRID = “10YGB----------A”

in_Domain.mRID = “10YNL----------L”

7.3.14 Market Participant

The EIC Party Code of Market Participants are used in XML files are as follows:

Tag	DMSWS_NOM_IN	DMSWS_NOMD_OUT	DMSWS_NOMAGG_OUT
sender_MarketParticipant.mRID	EIC Party Code of the Nominator	EIC Party Code of the Interconnector	EIC Party Code of the Interconnector
receiver_MarketParticipant.mRID	EIC Party Code of the Interconnector	EIC Party Code of the Nominator	EIC Party Code of the Nominator

RNP EIC code listed as Sender / Receiver:

Interconnector Code	Interconnector	EIC Code
BDL	BritNed	10X1001A1001A58S
IF1	IFA	10V1001C--000195
NLL	Nemo Link	10X1001C--00004R

IF2	IFA2	10V1001C--000195

7.3.15 Resolution

The following table captures the Market Time Unit resolution as supported by the respective Interconnector:

Interconnector Name	Resolution	NOTE	Number of positions
BritNed	PT60M	Hourly resolution	24 / 23 / 25
IFA	PT60M	Hourly resolution	24 / 23 / 25
Nemo Link	PT60M	Hourly resolution	24 / 23 / 25
IFA2	PT60M	Hourly resolution	24 / 23 / 25

8. APPENDIX A – EXAMPLES OF UPLOADING XMLS

Data Flows	FID	XML Message
Submit/Modify Nominations	DMSWS_NOM_IN	**For Long-term:** LT_NOM_submission.docx **For Daily:** D_NOM_submission.docx **For Intraday:** Only the Market Time Units fitting the Nomination Interval should be provided in the XML. The Nomination Interval is reflected in the extent of the Matching Time Period and in the number of the positions provided. Schedule Time Period fits the whole Business Day. Example: Nomination gate 00:00-14:00 ID_NOM_submission.docx Example: Nomination gate: 10:00-14:00 ID_NOM_2_submission.docx The following example captures correction. An Interconnector Customer submitted nominations for the wrong interconnector direction. Then the nominations in the wrong interconnector direction was set to “0” and finally the nominations were submitted for the intended direction. Correction Of Nominations.docx

9. APPENDIX B – EXAMPLES OF REQUEST MESSAGES

Below are examples on Request web-service messages from user (sample username X).

Upload message

Data Flows	FID	SOAP Message
Submit/Modify Nominations	DMSWS_NOM_IN	A Nomination of Daily capacity DMSWS_NOM_IN.docx

Download message

Download Detailed Nominations	DMSWS_NOMD_OUT	DMSWS_NOMD_OUT.docx
Download Aggre-gated Nominations	DMSWS_NOMAGG_OUT	DMSWS_NOMAGG_OUT.docx
Download Actual Date and Time	GETDATETIME	DMSWS_GETDATETIME.docx

10. APPENDIX C – EXAMPLES OF DOWNLOAD XMLS

Download Detailed Nominations	DMSWS_NOMD_OUT	Detailed Nom - LT.docx Detailed Nom - D.docx Detailed Nom - ID.docx
Download Aggregated Nominations	DMSWS_NOMAGG_OUT	Aggregated Nominations.docx