Communication Guidelines for Balance Settlement System

Interfaces and Basse Specific Communication

10.5.2016

Table of contents

1 Revision history

1.1 History

Table 1 Version history

Version	Date	Author	Description
0.90	1.7.2015	eSett	General publication version for commenting
1.00	29.1.2016	eSett	Document updated based on received feedback.
1.10	8.2.2016	eSett	Added examples of Information Service responses, illustrations revised (terminology adjusted), revision address and example references.
1.11	25.2.2016	eSett	Added Messaging Service data flow codes, corrected outbound (from eSett to market participant) file naming convention.
1.12	18.3.2016	eSett	Added list of sender roles/codes in Information Service and description of password requirements for communication towards Basse. Minor correction to outbound file name convention.
1.13	10.5.2016	eSett	Amended password requirements, revised Introduction chapter and PX Market trade BRP element is mandatory.

1.2 Terms and Definitions

Table 2 Terms and definitions

Term	Definition
Basse	Refers to the Basse System in terms of technical communication.
BRS	Business Requirement Specification available at https://www.ediel.org
BSS	Balance Settlement Solution
MPS	Market Participant System – Market Participant's information system communicating with Balance Settlement System
Message	Any business data sent between MPS and Balance Settlement System. The data must conform to one of the supported data flows.
NBS Handbook	Overview to the Nordic Imbalance Settlement Model from market participant's perspective available at http://www.esett.com/handbook/
Inbound	Message sent from MPS to Balance Settlement System.
Outbound	Message sent from Balance Settlement System to MPS.

2 Introduction

This document is intended as a primary source of information to support process of technical integration between Balance Settlement System solution and systems of Market Participants.

Document describes different aspects of technical integration between Balance Settlement System and Market Participants Systems. The goal of this integration is to enable data exchange (in form of Messages) between both sides to support the Settlement process.

Main goal is to describe the whole process of integration, starting from setup of communication channels, preparing clients, understanding interfaces to Balance Settlement System and format of exchanged messages.

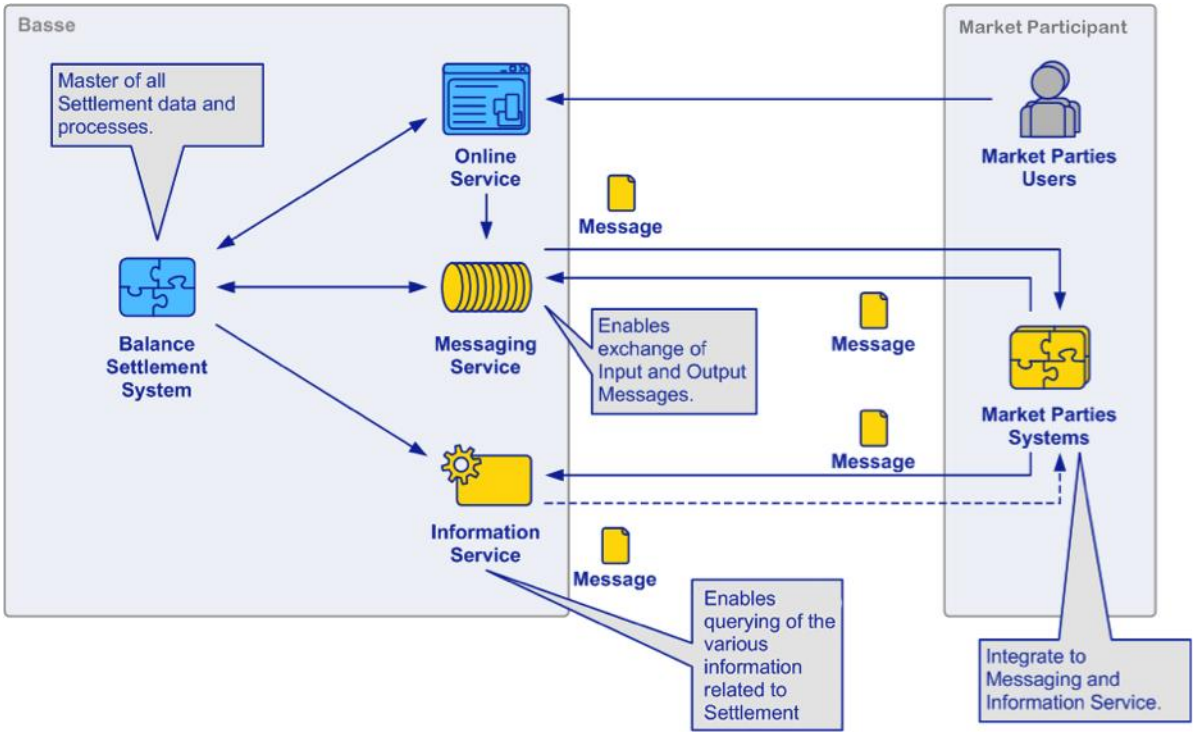

Figure 1: MPS Integration Context

The figure above depicts the main context of the integration. Balance Settlement System implements two subsystems, which realize the integration – Messaging Service and Information Service. Both subsystems expose interfaces and channels defined below and interact with the Balance Settlement System (BSS) in order to store/retrieve data. Market Participant Systems (MPS) integrate to the defined interfaces in order to realize the physical data exchange (logically represented by Messages). Market Participant users can also use Online Service to configure some aspects of the integration (like Security) and inspect the messages flowing between MPS and Balance Settlement System.

Messaging Service enables Balance Settlement System and MPS to exchange Messages necessary for the Settlement process – Inbound Messages (e.g. Bilateral Trades) and Outbound Messages (e.g. Settlement Results). See Handbook, Chapter 10.1. for more information.

Information Service enables Market Participants to retrieve information related to the Settlement process (e.g. Settlement Structure). See Handbook, Chapter 10.2. for more information.

Supported data formats are defined in the Business Requirement Specification documentation, except Information Service data flows, which are described in Chapter 5. Each of these chapters describes Interfaces (logical model of communication), Channels (technical model of communication) and Supported Data flows along with Integration Procedures and Examples.

3 eSett address information and credentials to services

3.1 Technical interface addresses

Information to establish connectivity between market participants' information systems and eSett's services (IP addresses, e-mail addresses and such), as described below, are informed to each market participant separately upon registration to eSett.

3.2 Credentials to services

Market participant's main contact person receives required credentials to eSett's services after registration to eSett. Main contact person has administrative user rights and is able to create new users for Online Service and adjust channel of electronic communication.

All communication towards eSett (Online Service and technical interfaces towards eSett) requires strong passwords that meet predefined requirements:

- Minimum 8 characters
- At least one capital letter
- At least one number
- At least one special character

Table 3 List of special characters

Character	Name	Character	Name	Character	Name
!	Exclamation	.	Full stop	|	Vertical bar
@	At sign	,	Comma	<	Less than
#	Number sign (hash)	;	Semicolon	>	Greater than
$	Dollar sign	:	Colon	'	Single quote
%	Percent	?	Question mark	{	Left brace
^	Caret	~	Tilde	}	Right brace
&	Ampersand	-	Minus	[	Left bracket
*	Asterisk	(	Left parenthesis	]	Right bracket
_	Underscore	)	Right parenthesis		
+	Plus	/	Slash		

4 Messaging Service Integration

4.1 Interfaces

Logical Interface allows uploading a generic Message between Messaging Service and Market Participant System.

The Message is represented by a data file, which conforms to one of formats defined in the Business Requirement Specification documentation.

The Message is self-contained – only the Message is sent without attaching any special metadata along (described below in section 4.2). The physical delivery of the Message is performed using one of the channels defined below. Based on the particular channel, the Message can be wrapped in envelope specific to that particular technology (e.g. file for FTP, attachment for e-mail or SOAP envelope for Web Services).

Every regular Message is asynchronously acknowledged by additional Acknowledgement Message (which is sent back to sender of the Message using channel that was set up by sender as default in his configuration). This is valid for all channels including Web Service.

Regarding data packages (report sent to subscribers), they are sent in predefined intervals in similar way. Subscription is done only via Online Service, in section Reports / Data Packages. Delivery is done via Messaging Service.

Example: Market Participant System uses Mail to send file with Bilateral Trade data (Bilateral Trade data flow) to Messaging Service. Only the content of the file is processed – no other metadata is provided by MPS. Messaging Service processes the Message, creates file with Acknowledgement data and sends it to MPS using Mail. *Note: Market Participant users can inspect both message flows using Message Monitoring use-cases in Online Service.*

4.2 Sender/Receiver Representation

The correct identification of Sender and Receiver of the Message is necessary to properly route the Message and deliver it to correct recipient. In Balance Settlement System, the Messages contain these identifications directly in the Message body (XML) – there are no additional metadata (on channel-specific level, e.g. filename encoded information or http headers), which describe either Sender or Receiver. The identifications representation differs based on the format of the particular Message. There are currently two format families used in Balance Settlement System – ENTSO-e and ebIX. Both of these formats utilize codes and coding schemes in order to identify Sender/Receiver. Following examples describe usage of these in both of the format families (the identification related is highlighted in yellow).

Basse's sender/receiver code in machine-to-machine communication is EIC code: **44X-00000000004B**

ENTSO-E example:

```
<ScheduleDocument
xsi:schemaLocation="urn:entsoe.eu:wgedi:ess:scheduledocument:4:1 urn-entsoe-eu-wgedi-ess-scheduledocument-4-1.xsd"
xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
    <DocumentIdentification v="ESS schedule for bilateral trade"/>
    <DocumentVersion v="1"/>
    <DocumentType v="A01"/>
    <ProcessType v="Z05"/>
```

```
    <ScheduleClassificationType v="A02"/>
    <SenderIdentification v="67800" codingScheme="NSE"/>
    <SenderRole v="A08"/>
    <ReceiverIdentification v="44X-00000000004B" codingScheme="A01"/>
    <ReceiverRole v="A05"/>
    <CreationDateTime v="2014-08-22T09:30:47Z"/>
```

…

ebiX example:

```
<rsm:AggregatedDataPerMGAForSettlementForSettlementResponsible
xsi:schemaLocation="un:unece:260:data:EEM-
AggregatedDataPerMGAForSettlementForSettlementResponsible
ebIX_AggregatedDataPerMGAForSettlementForSettlementResponsible_2013pA.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:rsm="un:unece:260:data:EEM-
AggregatedDataPerMGAForSettlementForSettlementResponsible">
    <rsm:Header>
        <rsm:Identification>Aggregated data for consumption -
01</rsm:Identification>
        <rsm:DocumentType listAgencyIdentifier="260">E31</rsm:DocumentType>
        <rsm:Creation>2014-08-22T10:10:15Z</rsm:Creation>
        <rsm:SenderEnergyParty>
            <rsm:Identification schemeIdentifier="TEST1"
schemeAgencyIdentifier="260">93245</rsm:Identification>
        </rsm:SenderEnergyParty>
        <rsm:RecipientEnergyParty>
            <rsm:Identification schemeAgencyIdentifier="305">44X-
00000000004B</rsm:Identification>
        </rsm:RecipientEnergyParty>
    </rsm:Header>
    <rsm:ProcessEnergyContext>
```

…

Identification is done using Code (assigned to each Market Participant) and Coding Scheme (preselected by Market Participant). More on Coding Schemes and their usage is available in NBS Handbook. In ENTSO-E messages Role is also part of identification process, it defines whether identified subject acts as BRP, TSO, DSO or Balance Settlement responsible. In ebiX messages, role is automatically recognized based on message type itself.

The usage of Code and Identifier schemes is documented in chapter “4.4 Code and Identifier schemes” in “NEG Common XML rules and recommendations”, see **https://www.ediel.org**, “NEG Common Documents”.

4.3 Channels

Messaging Service offers three channels to physically realize the logical message transfer. These are FTP, Mail and Web Services. Each of the interfaces is described in detail in subsequent sections of this chapter.

MPS chooses and implements one of them to exchange Messages with Messaging Service. The Online Service provides visual use-case to manually upload a Message – this serves as a fall back option for cases when the channel doesn't work for some reason.

Country specific limitations on communication channels from the NBS handbook available at www.esett.com.

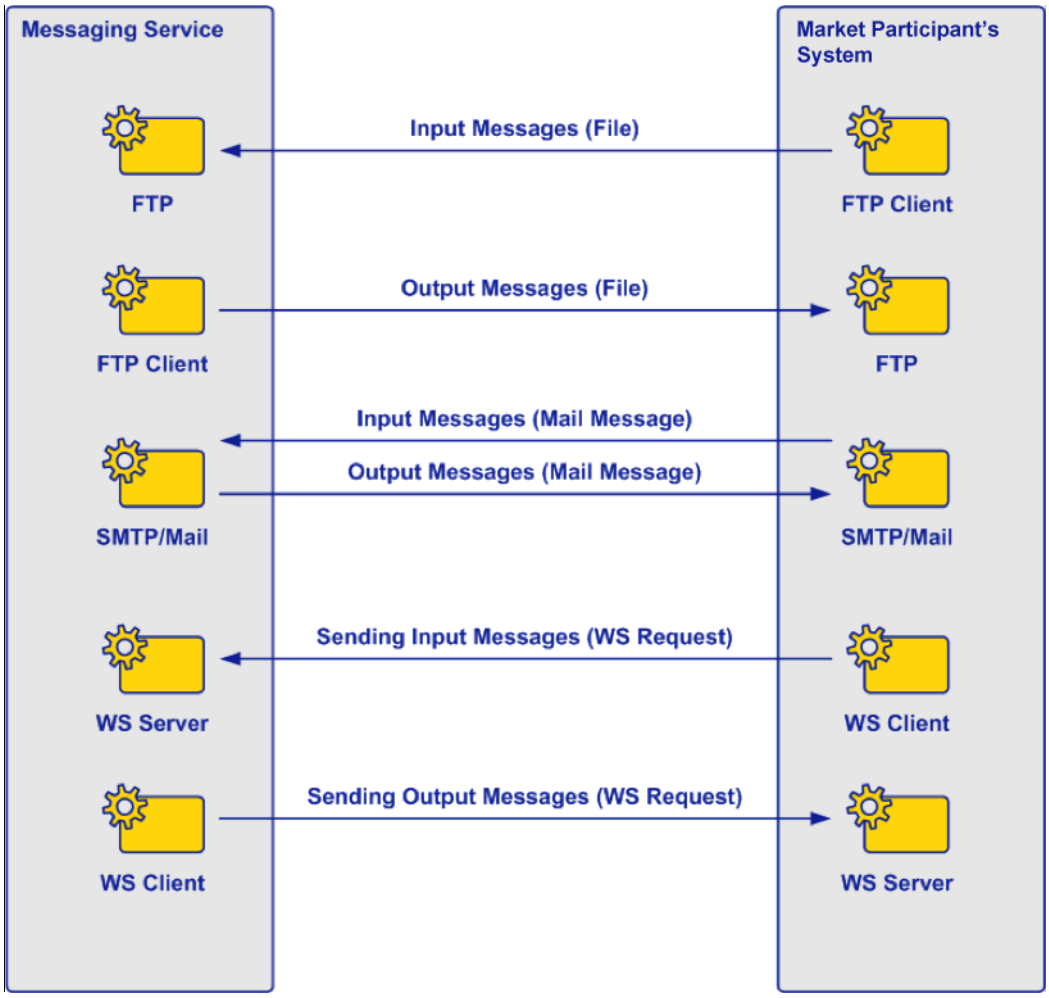

Figure 2: Messaging Service Channels

4.3.1 FTP

Following figure depicts the main consideration regarding the FTP Channel.

The Messaging Service uses dedicated FTP Server (located in eSett premises) to receive inbound messages from MPS. External FTPs (located/maintained in Market Participant's premises) are supported for outbound flows from Balance Settlement System to Market Participants.

External Systems use FTP clients (secured with SFTP – SSH File Transfer Protocol) to push messages to Inbound folders of Messaging Service FTP.

Messaging Service uses FTP clients (plain FTP or secured with SSH FTP) to push messages to MPS FTP server. For plain FTP, the client doesn't support any sort of explicit security (like TLS) – MPS should either use SSH FTP or FTP without any explicit encryption applied (which is discouraged as the data is then transferred unprotected).

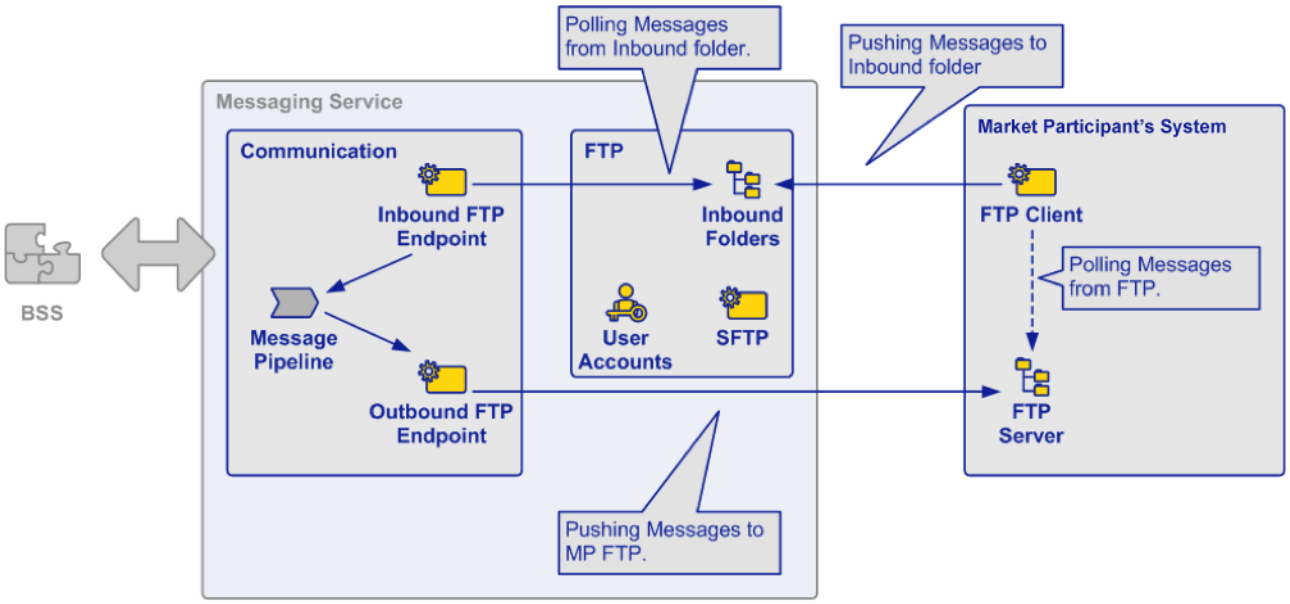

Figure 3: FTP Channel

4.3.1.1 Folder Structure

The folder structure of the Messaging Service FTP (used for Inbound flows) is defined by following example. The structure of Market Participant's FTP (used for Outbound flows) is the responsibility of the Market Participant – it is possible to configure a folder where Outbound messages will be placed in MPS FTP. Each Market Participant has its own folder with the Inbound folder. The Market Participant folder is defined during Market Participant creation and cannot be changed further. The folder name is unique within Messaging Service. Messaging Service places received messages (files) to the Processed subfolder.

Folder structure:

1. Messaging_Service_FTP *(the root folder)*
    a. MARKET_PARTICIPANT_A *(fixed folder name for each Market Participant)*
        i. INBOUND *(External Systems places messages to be send to Messaging Service here)*
            1. PROCESSED *(Messaging Service moves received messages here)*
    b. MARKET_PARTICIPANT_B
        i. INBOUND
            1. PROCESSED
    c. MARKET_PARTICIPANT_X
        i. INBOUND
            1. PROCESSED

4.3.1.2 FTP User Accounts

Each Market Participant can define its FTP account (username and password) using Online Service. Each Market Participant FTP account can only access its folder (and subfolders); e.g. MARKET_PARTY_A.

4.3.1.3 Inbound FTP

Inbound FTP Interface periodically checks (polls) all INBOUND subfolders and attempts to download the files placed there. Inbound files, that are processed are then moved to subfolder Processed.

4.3.1.4 Outbound FTP

Outbound FTP Interface is used to deliver the Message using FTP. The Interface creates file (using naming convention specified below) and uses Message as the file content. The file is then uploaded to folder in Market Participant FTP Server.

The convention to create the filename is following:

YYYYMMDD_<Data flow code>_<Sender>_<Recipient>_<DocumentId>.xml

4.3.1.5 Security

As stated above, Market Participants are authenticated using username/password (no other authentication method is supported). The data transport is automatically protected by SSH encryption mechanism (encryption algorithm is diffie-hellman-group14-sha1) – there is no need to setup any certificates.

Market participant's FTP server static IP address or predefined IP range behind domain must be communicated to eSett or firewall rules.

4.3.2 Mail

Following figure depicts the main consideration regarding the Mail Channel.

The Messaging Service uses dedicated SMTP Server (located in eSett premises) to transfer messages with MPS.

MPS use their SMTP servers to push messages to INBOX of the local SMTP. Outbound Messages are sent as emails to external SMTP server.

Messaging Service Mail Channel polls messages from INBOX using IMAP client or sends messages using SMTP client.

There is no Message level or Transport level authentication performed with Messages sent (in both directions) using Mail. The Mail communication is protected on infrastructure level (using firewall).

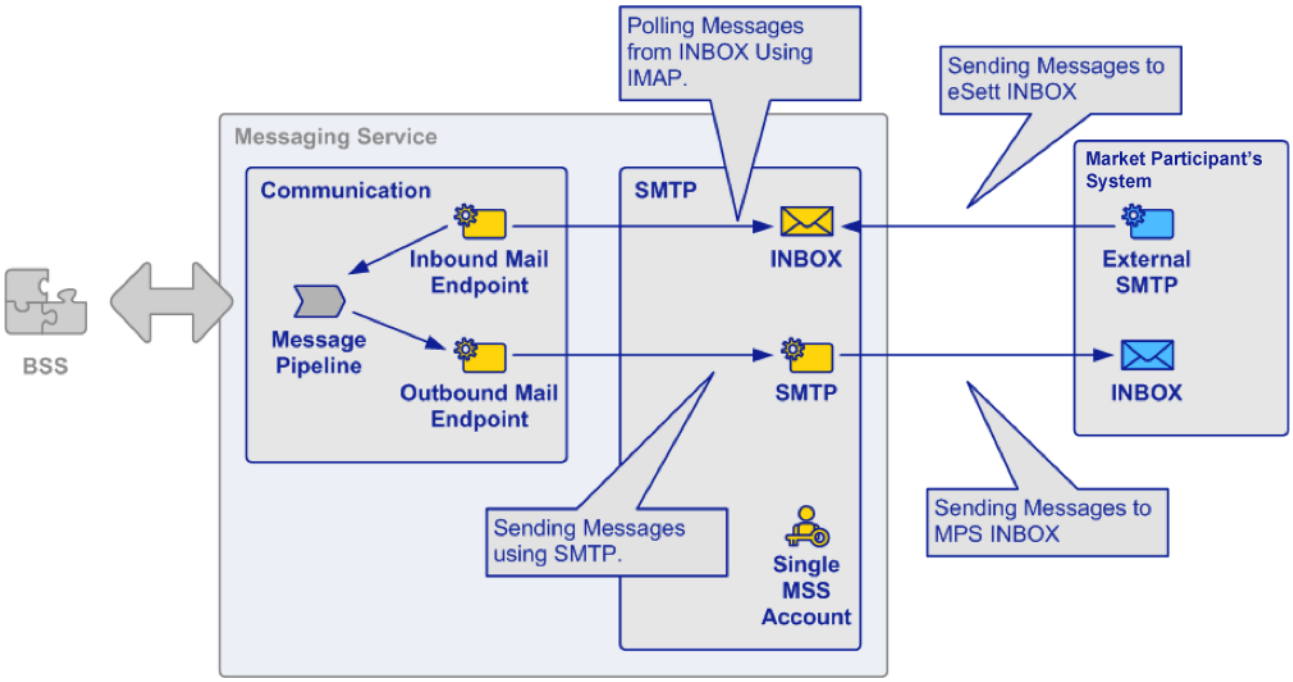

Figure 4: Mail Channel

4.3.2.1 Inbound Mail

Inbound e-mail means messages delivered by Market Participant to NBS Settlement System.

The email message is expected to have single file attachment. Content of the attachment is treated as Message in Messaging Service. The email subject and body don't have any business semantics.

The sending SMTP server (located in Market Participant's premises) can optionally use STARTTLS to secure the SMTP-to-SMTP communication. TLS versions 1.0, 1.1 and 1.2 are supported.

4.3.2.2 Outbound Mail

Outbound Mail Channel is used by Messaging Service to deliver the Message from NBS Settlement System to Market Participants using SMTP.

The Channel creates file (using the naming convention: YYYYMMDD_<Data flow code>_<Sender>_<Recipient>_<DocumentId>.xml) and uses Message as the file content.

The email message is created using following rules:

1. Created file is attached
2. The subject of the email is set to be the same as the filename of the attachment
3. Target e-mail address (recipient) is set based on Channel configuration. The configuration is accessed by Market Participant using Online Service.
4. Sender of the email is set according to fixed Messaging Service configuration

4.3.2.3 Security

As stated above, Market Participants are not directly authenticated. Market Participants SMTP server can use plain communication (which is vulnerable to wiretapping) or secured STARTTLS transport, which needs to be configured with certificate issued by widely accepted certification authority (using self-signed or non-trusted certificates is not

supported). In such case data transport is automatically protected (encrypted) with TLS (using the configured certificates).

4.3.3 Web Service

Following figure depicts the main consideration regarding the Web Service Channel.

The Messaging Service contains dedicated Web Service Server to receive Messages from MPS. MPS can implement the Web Server (with API defined below, using the same WSDL) as well in order to receive Messages from Messaging Service.

MPS use WS clients (secured with HTTPS) to push Messages to Messaging Service. MPS might implement Web Server; Messaging Service then uses WS client to push Messages to this external Web Server.

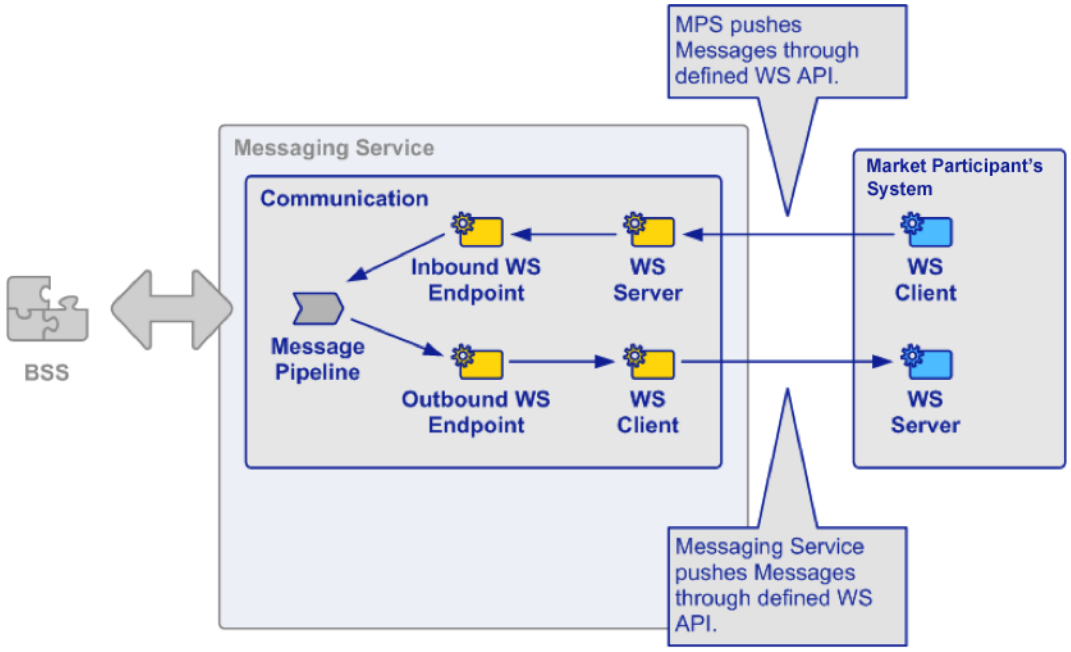

Figure 5: Web Service Channel

4.3.3.1 Inbound Web Service

Inbound WS Channel is directly called from WS Server every time an MPS Client invokes it. The Message is extracted from the WS Request, processed and a WS Response is sent back to MPS.

4.3.3.2 Outbound Web service

Outbound WS Channel is used by Messaging Service to deliver the Message using Web Services (HTTPS). The Channel creates WS Request (using the Message) and uses WS Client to deliver the Message to external WS Server. The physical URL is resolved from configuration defined by MPS in Online Service.

4.3.3.3 Web Service API

Following figure outlines the Web Service API. The API has single method *uploadRequest* with single parameter, which represents the Message content (CDATA value). The WS-Security is used in order to secure the message with username/password. The username/password is stored in the Balance Settlement System and configured by Market Participant users using Online Service.

The method returns the InternalId of the Message and result code of the operation. In case the message is refused (e.g. due to some failure), the SoapFault is raised using standard fault code and message, complemented with custom list of refusal reasons.

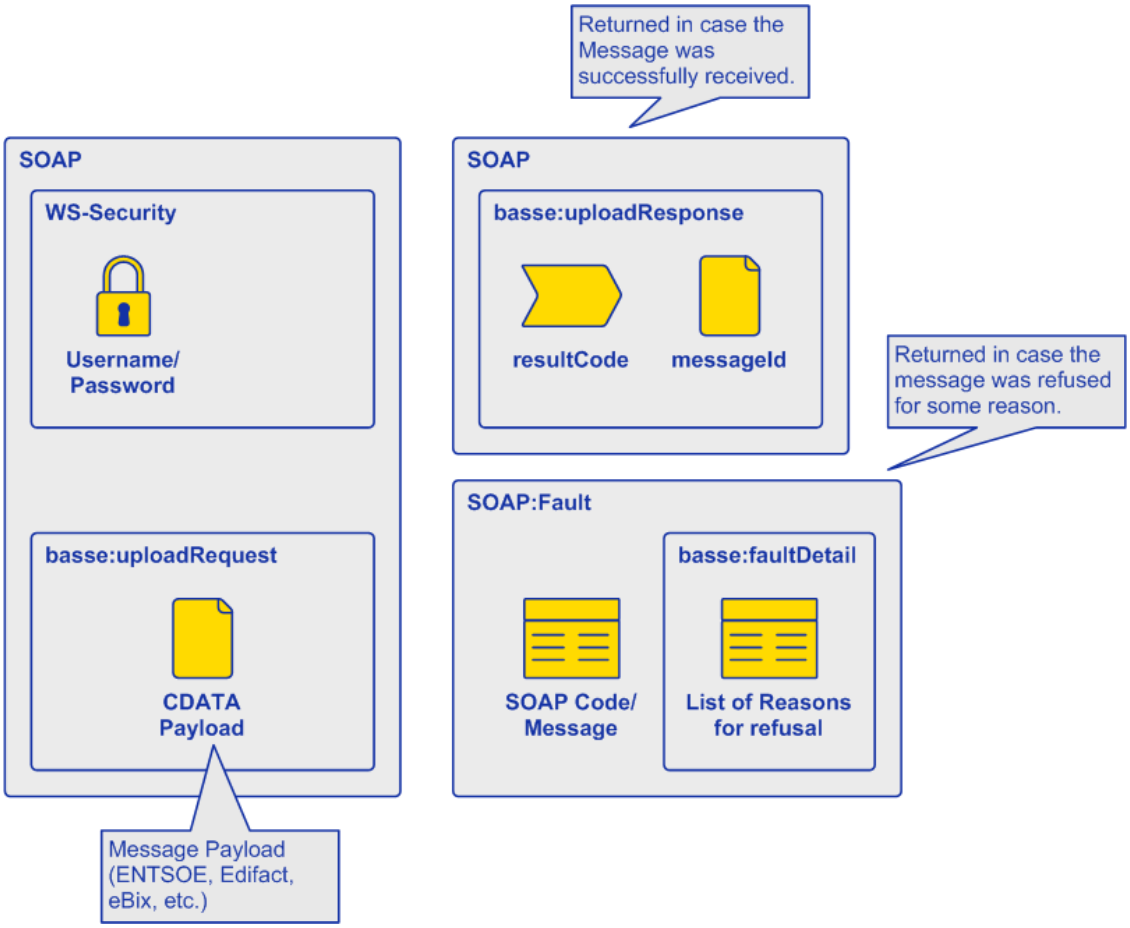

Figure 6: Web Service Endpoint API

Following WS Request is a sample of valid request (the Message inside was shortened) to upload data to Messaging Service using WS Channel:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:mes="http://www.nbs.coop/messaging-service-0.1">
    <soapenv:Header>
        <wsse:Security xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd" soapenv:mustUnderstand="1">
            <wsse:UsernameToken xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd"
wsu:Id="UsernameToken-2">
                <wsse:Username>useraccount</wsse:Username>
                <wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">some_password</wsse:Password>
            </wsse:UsernameToken>
        </wsse:Security>
    </soapenv:Header>
```

```
   <soapenv:Body>
      <mes:uploadRequest>
 <![CDATA[
<rsm:AggregatedDataPerNeighboringGridForSettlementForSettlementResponsible
    xmlns:rsm="un:unece:260:data:EEM-
AggregatedDataPerNeighboringGridForSettlementForSettlementResponsible"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="un:unece:260:data:EEM-
AggregatedDataPerNeighboringGridForSettlementForSettlementResponsible
../../XSD/df_mgxi/schema/ebIX_AggregatedDataPerNeighboringGridForSettlementForSe
ttlementResponsible_2013pA.xsd">
    <rsm:Header>
        <rsm:Identification>test039</rsm:Identification>
        <rsm:DocumentType listAgencyIdentifier="260">E31</rsm:DocumentType>
        <rsm:Creation>2013-10-24T08:56:00Z</rsm:Creation>
        <rsm:SenderEnergyParty>
            <rsm:Identification
schemeAgencyIdentifier="305">TD_DSO1_EIC</rsm:Identification>
        </rsm:SenderEnergyParty>
        <rsm:RecipientEnergyParty>
            <rsm:Identification
schemeAgencyIdentifier="9">8674321657841</rsm:Identification>
        </rsm:RecipientEnergyParty>
    </rsm:Header>
…
</rsm:AggregatedDataPerNeighboringGridForSettlementForSettlementResponsible>
            ]]>
      </mes:uploadRequest>
   </soapenv:Body>
</soapenv:Envelope>
```

4.3.3.4 Security

As stated above, Market Participants are authenticated using WS-S username/password (no other authentication method is supported). Both eSett and Market Participant Web Service endpoints (https/TLS) must be configured with certificate issued by widely accepted certification authority (using self-signed or non-trusted certificates is not supported). The data transport is automatically protected with TLS (using the configured certificates).

4.4 Supported Data flows

Following table lists the data flow types supported by Messaging Service. Please refer to Business Requirement Specification for more details. XSD for all data flow types (along with message examples and format description) can be found at https://www.ediel.org.

For the Outbound data flows, the Message Identification is generated using following pattern:

YYYYMMDD_<Data flow code>_<Sender>_<Recipient>_<DocumentId>.xml

Example of Message Identification is 20160210_SERO_44X-00000000004B_BRP01_197844d55474efe96114.

Messages with same format (e.g. SERO and MGIM) follows the same basic message structure but the content of the elements differ. For example different identifiers and recipient are presented.

Table 4 Messaging Service data flows

Data flow code	Data flow	Process	From	To	Format
PXTI	PX Market Trade	Scheduling	NPS or TSO (optional)	NPS or TSO (optional)	ENTSO-E ESS Schedule Document v4r1
PXFI	PX Market Flow	Scheduling	NPS	eSett	ENTSO-E ESS Schedule Document v4r1
SPTI	Spot Price	Scheduling	NPS	eSett	ENTSO-E ECAN Publication Document
BITI	Bilateral Trade	Scheduling	BRP or TSO	eSett	ENTSO-E ESS Schedule Document v4r1
BICO	Bilateral Trade Confirmation Report	Scheduling	eSett	BRP	ENTSO-E ESS Confirmation Report v4r1
PRPI	Production Plan	Scheduling	TSO	eSett	ENTSO-E ERRP Planned Resource Schedule Document v5r0
ACRI	Activated Reserve	Scheduling	NOIS (on behalf of TSOs)	eSett	NEG (based on ENTSO-E ERRP) Reserve allocation result document
REPI	Regulation Prices	Scheduling	NOIS (on behalf of TSOs)	eSett	NEG (based on ENTSO-E ECAN) Publication Document
RPMI	Production	Metering and settlement	DSO	eSett	NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)
RECI	Consumption	Metering and settlement	DSO	eSett	NEG (ebIX® based) Aggregated Data per MGA for Settlement Responsible (E31, E44)
MGXI	MGA Exchange	Metering and settlement	DSO	eSett	NEG (ebIX® based) Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)
MGCO	MGA Exchange Confirmation Report	Metering and settlement	eSett	DSO	NEG Confirmation of Aggregated Data Per Neighbouring Grid From Settlement Responsible (A07/A08), E44)
SERO	Settlement Result	Metering and	eSett	BRP	ENTSO-E Energy Account Report Document (EAR)

Data flow code	Data flow	Process	From	To	Format
		settlement			v1r2
MGIO	MGA Imbalance	Metering and settlement	eSett	DSO and BRP	ENTSO-E Energy Account Report Document (EAR) v1r2

Note: Examples of each listed data flow can be found at www.esett.com/materials

4.5 Acknowledgements

After delivery of message from Market Participant to Messaging Service, Participant will be acknowledged about the results of delivery by Acknowledgement message. The Acknowledgement is treated as a special kind of Message, which is not tied to any particular Process, Direction or System – the Format is ENTSO-E AcknowledgementDocument v6r0. Purpose is to inform Market Participant about result of message processing, whether positive or not, in which case reason of processing failure is stated.

Details how Acknowledgement is structured and how to recognize contained information about processing results are published in the Business Requirement Specification.

4.6 Integration Procedure

This chapter describes the technical tasks, which need to be performed in order to implement the integration.

The main prerequisite for integration is ability to create and process Messages (of ENTSO-E or ebIX formats).

4.6.1 FTP

- MPS user configures the FTP channel using Online Service
    1. FTP folder name
    2. FTP user name (can be changed later)
    3. FTP password (can be changed later)
- MPS implements an FTP Client (supporting SSH FTP) and configures it with URL and port (provided by eSett) and username/password (configured by MPS in previous step)
    1. *Note: Connecting to FTP using provided credentials will allow MPS to access it's folder*
- MPS connects to FTP and places Inbound messages to the INBOUND folder
- MPS connects to FTP server and uses outbound folder configured in Messaging Service as Outbound channel.

4.6.2 Mail

- MPS user configures the Mail channel using Online Service
    1. Recipient e-mail address (where Messaging Service sends the Outbound Message to)
- MPS implements Mail Client configured with MPS based SMTP and POP3/IMAP server
- MPS uses the client to send Inbound Messages to Balance Settlement System Messaging Service e-mail address (all MPS use the same address)
- MPS uses the client to poll the Outbound Messages (using POP3 or IMAP) from their INBOX

4.6.3 Web Service

- MPS user configures the Web Service channel using Online Service
    1. WS Username
    2. WS Password
- MPS implements a WS Client (WSDL available at www.esett.com/materials) and configures it with URL (provided by eSett) and sets WS-Security username/password to credentials configured by MPS in previous step. MPS uses this WS client to send Inbound Message to Messaging Service.
- MPS implements a WS Server (WSDL available at www.esett.com/materials) and deploys it to a server which is accessible to Messaging Service over internet (the URL of this WS Server is configured in first step). Messaging Service then sends requests with Outbound Messages to this server (and uses WS-Security username/password configured by MPS in first step.

5 Information Service Integration

5.1 Interfaces

Information Service interface allows MPS to request data from Balance Settlement System. The request is represented by an ENTSO-E Status Request Message. Based on the request, Balance Settlement System creates a response, consisting of according business document (one of the supported ENTSO-E or ebIX formats) and passes it back to MPS as a Message. Using this interface, MPS can retrieve information related to the Settlement process.

Information Service provides Web Service as a channel to access the information. MPS must implement specific WS Client in order to use Information Service. The details of the Web Service Channel are specified in section below.

Figure 7: Information Service Channel

5.1.1 Request Format

The Information Service uses ENTSO-E Status Request Document 2.0 as a request format. The document gives sufficient flexibility to request the data from Information Service. The identification of Data Flow and any parameters that need to be passed as data filtering criteria can be represented using the RequestComponent element (see example below).

Example document (request for Bilateral Trades for given time period and given optional parameter (example shows also WS Security header)):

```
<soap:Envelope xmlns:inf="http://www.basse.eu/information-service-1.0"
xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:urn="urn:entsoe.eu:wgedi:components">
   <soap:Header xmlns:wsa="http://www.w3.org/2005/08/addressing"><wsse:Security
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="UsernameToken-
F50D6C2297C7D81D1F1449669355941134">
<wsse:Username>User_name</wsse:Username>
<wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-
username-token-profile-1.0#PasswordText">password</wsse:Password><wsse:Nonce
```

```
EncodingType="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-
message-security-1.0#Base64Binary">GFoemDPGx9N0+tGnshjnGQ==</wsse:Nonce>

<wsu:Created>2015-12-09T13:55:55.941Z</wsu:Created>

</wsse:UsernameToken></wsse:Security><wsa:Action>http://www.basse.eu/information
-service-
1.0/IInformationService/GetData</wsa:Action><wsa:To>https://localhost:44301/Info
rmationService.svc</wsa:To></soap:Header>
   <soap:Body>
    <inf:GetData >
        <inf:request  DtdVersion="1" DtdRelease="0">
            <urn:DocumentIdentification v="XYZ"/>
            <urn:DocumentType v=""/>
            <urn:SenderIdentification v="SENDER_CODE " codingScheme="A01"/>
            <urn:SenderRole v="A04"/>
            <urn:ReceiverIdentification v="44X-00000000004B"
codingScheme="A01"/>
            <urn:ReceiverRole v="A05"/>
            <urn:CreationDateTime v="2015-01-21T18:00Z"/> <urn:RequestComponent>
                <urn:RequestedAttribute v=" DataFlow "/>
                <urn:RequestedAttributeValue v="RPM" />
            </urn:RequestComponent>
            <urn:RequestComponent>
                <urn:RequestedAttribute v="TimeInterval"/>
                <urn:RequestedAttributeValue v="2014-11-25T22:00Z/2015-11-
30T23:00Z" codingScheme=""/>
            </urn:RequestComponent>
            <urn:RequestComponent>
                <urn:RequestedAttribute v="TimeResolution"/>
                <urn:RequestedAttributeValue v="PT1H" codingScheme=""/>
            </urn:RequestComponent>
            <urn:RequestComponent>
                <urn:RequestedAttribute v="OPTIONAL_PARAMETER "/>
                <urn:RequestedAttributeValue v="MBAEXAMPLECODE"
codingScheme="A01"/>
            </urn:RequestComponent>
            </inf:request>
    </inf:GetData>
</soap:Body>
</soap:Envelope>
```

The available attributes for given data flows are documented in detail below. The RequestComponent attributes is designed in order to use standard message attributes (e.g. DocumentType or ProcessType) where possible. For header construction, please note following security notes:

- Add into soap header wsse:Security element with username and plain password.

- Add default wsa:Action and add default wsa:To

Roles and the corresponding codes in requests:

- Balance Responsible Party (Sender role code A08)
- Retailer (Sender role code A12)
- Distribution System Operator (Sender role code A18)

5.1.2 Result Format

Response from method ‘GetData’ is in a XML format that corresponds to the data that is received. Please see following section for more details. For basic idea of how is message encapsulated see following example.

In this example a response for ‘Production’ dataflow is returned. Please see, that the actual response is a XML document encoded in the CDATA section.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
   <s:Header>
      <a:Action s:mustUnderstand="1">http://www.basse.eu/information-service-
0.1/IInformationService/GetDataResponse</a:Action>
      <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
         <u:Timestamp u:Id="_0">
            <u:Created>2015-06-29T15:35:00.487Z</u:Created>
            <u:Expires>2015-06-29T15:40:00.487Z</u:Expires>
         </u:Timestamp>
      </o:Security>
   </s:Header>
   <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
      <GetDataResponse xmlns="http://www.basse.eu/information-service-1.0">
         <GetDataResult>

            <Content><![CDATA[<?xml version="1.0" encoding="utf-8"?>
<ValidatedDataForSettlementForAggregator
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="un:unece:260:data:EEM-
ValidatedDataForSettlementForAggregator">
                        ……
</ValidatedDataForSettlementForAggregator>
               ]]>
            </Content>
         </GetDataResult>
      </GetDataResponse>
   </s:Body>
</s:Envelope>
```

5.1.3 Supported Data Flows

The table below describes

- *Name* and *Description* of the Data Flow supported by Information Service
- *Format* of document that is returned by the Information Service
- Available *Selection Parameters* which a Market Participant can use when querying the Information Service.

Table 5 Information Service data flows

Data Flow	Description	Counterparty / System	Result Format	Selection parameters
Bilateral Trades	Hourly/aggregated values of Bilateral Trade	BRP	ENTSO-E ESS Schedule Document v4r1	Chapter 5.1.3.1
PX Market Trades	Hourly/aggregated values of PX Market Trade	BRP, NPS	ENTSO-E ESS Schedule Document v4r1	Chapter 5.1.3.2
PX Market Flows	Hourly/aggregated values of PX Market Flow	BRP, NPS	ENTSO-E ESS Schedule Document v4r1	Chapter 5.1.3.3
MGA Exchanges	Hourly/aggregated values of MGA Exchanges.	DSO	NEG (ebIX® based) Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)	Chapter 5.1.3.4 Chapter 5.1.3.5
Consumption	Hourly/aggregated values of Consumption	BRP, DSO	NEG (ebIX® based) Aggregated Data per MGA for Settlement Responsible (E31, E44)	Chapter 5.1.3.6
Production	Hourly/aggregated values of Production	BRP, DSO	NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)	Chapter 5.1.3.7
Production Plan	Hourly/aggregated values of Production Plans	BRP	ENTSO-E ERRP Planned Resource Schedule Document v5r0	Chapter 5.1.3.8
Activated Reserves	Hourly/aggregated values of Activated Reserves	BRP	NEG (based on ENTSO-E ERRP) Reserve allocation result document	Chapter 5.1.3.9
Imbalance Adjustment	Hourly/aggregated values of Imbalance Adjustment	BRP	ENTSO-E ERRP Reserve Allocation Result Document	Chapter 5.1.3.10

Data Flow	Description	Counterparty / System	Result Format	Selection parameters
Prices	Hourly/aggregated values of Prices that are used for settlement	BRP, DSO, NPS	NEG (based on ENTSO-E ECAN) Publication Document	Chapter 5.1.3.11
Consumption Imbalance	Hourly/aggregated values of all settlement results – Consumption Imbalance (volumes, amounts, ...)	BRP	ENTSO-E Energy Account Report Document (EAR) v1r2	Chapter 5.1.3.12
Production Imbalance	Hourly/aggregated values of all settlement results – Production Imbalance (volumes, amounts, ...)	BRP	ENTSO-E Energy Account Report Document (EAR) v1r2	Chapter 5.1.3.13
MGA Imbalance	Hourly/aggregated values of all settlement results – MGA Imbalance (volumes, amounts, ...)	BRP, DSO	ENTSO-E Energy Account Report Document (EAR) v1r2	Chapter 5.1.3.14

5.1.3.1 Bilateral Trades

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"BIT"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" – for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"InBRP" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of IN BRP of Bilateral Trade
"OutBRP" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of OUT BRP of Bilateral Trade
"AgreementID" Optional	Agreement ID of Bilateral Trade. 1 "1" – for Bilateral Trades only between BRPs 2 *ID Number* – for Bilateral Trades between Retailers
"MBA" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<ScheduleDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:1">
  <DocumentIdentification v="INFS-BITI-1" />
  <DocumentVersion v="1" />
  <DocumentType v="A01" />
```

```
  <ProcessType v="Z05" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
  <SenderRole v="A05" />
  <ReceiverIdentification v="BRP1" codingScheme="A01" />
  <ReceiverRole v="A08" />
  <CreationDateTime v="2015-12-10T12:00Z" />
  <ScheduleTimeInterval v="2015-08-14T22:00Z/2015-11-10T22:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <ScheduleTimeSeries>
    <SendersTimeSeriesIdentification v="v1" />
    <SendersTimeSeriesVersion v="1" />
    <BusinessType v="A08" />
    <Product v="8716867000030" />
    <ObjectAggregation v="A01" />
    <InArea v="MBA" codingScheme="A01" />
    <OutArea v="MBA" codingScheme="A01" />
    <InParty v="BRP2" codingScheme="A01" />
    <OutParty v="BRP1" codingScheme="A01" />
    <CapacityAgreementIdentification v="1" />
    <MeasurementUnit v="MWH" />
    <Period>
      <TimeInterval v="2015-09-10T15:00Z/2015-09-10T17:00Z" />
      <Resolution v="PT1H" />
      <Interval>
        <Pos v="1" />
        <Qty v="3" />
      </Interval>
      <Interval>
        <Pos v="2" />
        <Qty v="5" />
      </Interval>
    </Period>
</ScheduleTimeSeries>
</ScheduleDocument>
```

5.1.3.2 PX Market Trades

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"PXT"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" - for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"PXTrader" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of PX Trader (Retailer or BRP)
PartyBRP	CODE – in v attribute CODING SCHEME – in CodingScheme attribute
"ProcessType"	"A01" – for Elspot trades "A19" – for Elbas trades
"MBA" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA
"PortfolioID" Optional	ID of PX Trading Agreement

Response example
<?xml version="1.0" encoding="utf-16"?> <ScheduleDocument xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:1"> <DocumentIdentification v="INFS-PXTI-1" /> <DocumentVersion v="1" />

```
<DocumentType v="A01" />
<ProcessType v="A01" />
<ScheduleClassificationType v="A02" />
<SenderIdentification v="44X-00000000004B" codingScheme="A01" />
<SenderRole v="A05" />
<ReceiverIdentification v="BRP1" codingScheme="A01" />
<ReceiverRole v="A08" />
<CreationDateTime v="2016-05-03T07:18:52.5688577Z" />
<ScheduleTimeInterval v="2016-01-01T22:00:00Z/2016-06-22T22:00:00Z" />
<Domain v="10Y1001A1001A91G" codingScheme="A01" />
<SubjectParty v="BRP1" codingScheme="A01" />
<SubjectRole v="A08" />
<ScheduleTimeSeries>
  <SendersTimeSeriesIdentification v="PXT1” />
  <SendersTimeSeriesVersion v="1" />
  <BusinessType v="A08" />
  <Product v="8716867000030" />
  <ObjectAggregation v="A01" />
  <InArea v=“MGA1” codingScheme="A01" />
  <InParty v="RE1" codingScheme="A01" />
  <MeasurementUnit v="MWH" />
  <Period>
    <TimeInterval v="2016-04-21T22:00:00Z/2016-04-22T22:00:00Z" />
    <Resolution v="PT1H" />
    <Interval>
      <Pos v="1" />
      <Qty v="5" />
    </Interval>
                    …
    <Interval>
      <Pos v="24" />
      <Qty v="120" />
    </Interval>
  </Period>
```

```
  </ScheduleTimeSeries>
</ScheduleDocument>
```

5.1.3.3 PX Market Flows

RequestedAttribute	RequestedAttributeValue
"DataFlow”	“PXF”
“TimeResolution”	“P1Y” – for yearly aggregated data “P1M” – for monthly aggregated data “P7D” – for weekly aggregated data “P1D” – for daily aggregated data “PT1H”, “PT60M” - for hourly data
“TimeInterval”	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: “2015-01-02T02:00Z/2015-02-01T02:00Z” system will return data for January 2015 and February 2015.
“ProcessType”	“A01” – for Elspot trades “A19” – for Elbas trades
“InArea” Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA
“OutArea” Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<ScheduleDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:1">
  <DocumentIdentification v="" />
  <DocumentVersion v="1" />
  <DocumentType v="A55" />
```

```
  <ProcessType v="A01" />
  <ScheduleClassificationType v="A02" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
  <SenderRole v="A05" />
  <ReceiverIdentification v="BRP1” codingScheme="A01" />
  <ReceiverRole v="A08" />
  <CreationDateTime v="2015-12-10T14:00Z" />
  <ScheduleTimeInterval v="2015-10-01T00:00Z/2015-11-21T23:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <ScheduleTimeSeries>
    <SendersTimeSeriesIdentification v="PXF16" />
    <SendersTimeSeriesVersion v="1" />
    <BusinessType v="A66" />
    <Product v="8716867000030" />
    <ObjectAggregation v="A01" />
    <InArea v=“MBA1” codingScheme="A01" />
    <OutArea v=“MBA2” codingScheme="A01" />
    <MeasurementUnit v="MWH" />
    <Period>
      <TimeInterval v="2015-10-21T22:00Z/2015-10-27T22:00Z" />
      <Resolution v="PT1H" />
      <Interval>
        <Pos v="1" />
        <Qty v="1" />
      </Interval>
      …
      <Interval>
        <Pos v="144" />
        <Qty v="1" />
      </Interval>
    </Period>
  </ScheduleTimeSeries>
</ScheduleDocument>
```

5.1.3.4 MGA Exchanges

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"MGX"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" – for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"InMGA" Optional	PARTY CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of In MGA from MGA Oriented Border
"OutMGA" Optional	PARTY CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of Out MGA from MGA Oriented Border

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<AggregatedDataPerNeighboringGridForSettlementForSettlementResponsible
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="un:unece:260:data:EEM-AggregatedDataPerNeighboringGridForSettlementForSettlementResponsible">
  <Header>
    <Identification>test</Identification>
    <DocumentType listAgencyIdentifier="260">E31</DocumentType>
    <Creation>2016-02-01T14:00:00Z</Creation>
    <SenderEnergyParty>
      <Identification schemeAgencyIdentifier="305">BASSE</Identification>
    </SenderEnergyParty>
    <RecipientEnergyParty>
      <Identification schemeAgencyIdentifier="305">DSO</Identification>
```

```
  </RecipientEnergyParty>
</Header>
<ProcessEnergyContext>
  <EnergyBusinessProcess listAgencyIdentifier="260">E44</EnergyBusinessProcess>
  <EnergyBusinessProcessRole listAgencyIdentifier="330">DDX</EnergyBusinessProcessRole>
  <EnergyIndustryClassification listAgencyIdentifier="330">23</EnergyIndustryClassification>
</ProcessEnergyContext>
<PayloadEnergyTimeSeries>
  <Identification>1</Identification>
  <RegistrationDateTime>0001-01-01T00:00:00</RegistrationDateTime>
  <ObservationPeriodTimeSeriesPeriod>
    <ResolutionDuration>PT1H</ResolutionDuration>
    <Start>2015-08-31T22:00:00Z</Start>
    <End>2015-09-01T22:00:00Z</End>
  </ObservationPeriodTimeSeriesPeriod>
  <ProductIncludedProductCharacteristic>
    <Identification schemeAgencyIdentifier="9">8716867000030</Identification>
    <UnitType listAgencyIdentifier="330">MWH</UnitType>
  </ProductIncludedProductCharacteristic>
  <MPDetailMeasurementMeteringPointCharacteristic>
    <MeteringPointType listAgencyIdentifier="260">E20</MeteringPointType>
  </MPDetailMeasurementMeteringPointCharacteristic>
  <InAreaUsedDomainLocation>
    <Identification schemeAgencyIdentifier="305">MGA02</Identification>
  </InAreaUsedDomainLocation>
  <OutAreaUsedDomainLocation>
    <Identification schemeAgencyIdentifier="305">MGA01</Identification>
  </OutAreaUsedDomainLocation>
  <ObservationIntervalObservationPeriod>
    <Sequence>1</Sequence>
    <ObservationDetailEnergyObservation>
      <EnergyQuantity>1</EnergyQuantity>
    </ObservationDetailEnergyObservation>
  </ObservationIntervalObservationPeriod>
```

```
    <ObservationIntervalObservationPeriod>
...
      <Sequence>264</Sequence>
      <ObservationDetailEnergyObservation>
        <EnergyQuantity>1</EnergyQuantity>
      </ObservationDetailEnergyObservation>
    </ObservationIntervalObservationPeriod>
  </PayloadEnergyTimeSeries>
</AggregatedDataPerNeighboringGridForSettlementForSettlementResponsible>
```

5.1.3.5 Consumption

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"REC"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" - for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"PartyBRP" - for Consumption linked to BRPs "PartyRE" – for Consumption linked to Res Optional	PARTY CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired party. In case of Consumption it might be BRP or Retailer.
"MGA" Optional	MGA CODE – in v attribute MGA CODING SCHEME – in CodingScheme attribute Code and Coding scheme of MGA
"SettlementMethodType" Optional	"E01" – for Profiled "E02" – for Non-profiled
"BusinessType"	"A04" – for Consumption (total consumption)

Optional	“A07” – for Net production/consumption “A15” – for Losses “A72” – for Interruptible Consumption “B27” – for Pumped “B28” – for Large installation consumption “B36” – for Large installation consumption (Only used in Finland)

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<AggregatedDataPerMGAForSettlementForSettlementResponsible
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="un:unece:260:data:EEM-AggregatedDataPerMGAForSettlementForSettlementResponsible">
 <Header>
  <Identification>INFS-RECI-1</Identification>
  <DocumentType listAgencyIdentifier="260">E31</DocumentType>
  <Creation>2015-12-10T12:00Z</Creation>
  <SenderEnergyParty>
   <Identification schemeAgencyIdentifier="305">BASSE</Identification>
  </SenderEnergyParty>
  <RecipientEnergyParty>
   <Identification schemeAgencyIdentifier="305">DSO</Identification>
  </RecipientEnergyParty>
 </Header>
 <ProcessEnergyContext>
  <EnergyBusinessProcess listAgencyIdentifier="260">E44</EnergyBusinessProcess>
  <EnergyBusinessProcessRole listAgencyIdentifier="330">DDX</EnergyBusinessProcessRole>
  <EnergyIndustryClassification listAgencyIdentifier="330">23</EnergyIndustryClassification>
 </ProcessEnergyContext>
 <PayloadEnergyTimeSeries>
  <Identification>CNS62</Identification>
  <RegistrationDateTime>0001-01-01T00:00:00</RegistrationDateTime>
  <ObservationPeriodTimeSeriesPeriod>
   <ResolutionDuration>PT1H</ResolutionDuration>
   <Start>2015-08-31T22:00Z</Start>
```

```
    <End>2015-09-03T22:00Z</End>
  </ObservationPeriodTimeSeriesPeriod>
  <BalanceResponsibleInvolvedEnergyParty>
    <Identification schemeAgencyIdentifier="305">RE</Identification>
  </BalanceResponsibleInvolvedEnergyParty>
  <BalanceSupplierInvolvedEnergyParty>
    <Identification schemeAgencyIdentifier="305">BRP</Identification>
  </BalanceSupplierInvolvedEnergyParty>
  <ProductIncludedProductCharacteristic>
    <Identification schemeAgencyIdentifier="9">8716867000030</Identification>
    <UnitType listAgencyIdentifier="330">MWH</UnitType>
  </ProductIncludedProductCharacteristic>
  <MPDetailMeasurementMeteringPointCharacteristic>
    <MeteringPointType listAgencyIdentifier="260">E17</MeteringPointType>
    <SettlementMethodType listAgencyIdentifier="260">E02</SettlementMethodType>
    <BusinessType listAgencyIdentifier="330">A04</BusinessType>
  </MPDetailMeasurementMeteringPointCharacteristic>
  <MeteringGridAreaUsedDomainLocation>
    <Identification schemeAgencyIdentifier="305">MGA</Identification>
  </MeteringGridAreaUsedDomainLocation>
  <ObservationIntervalObservationPeriod>
    <Sequence>1</Sequence>
    <ObservationDetailEnergyObservation>
      <EnergyQuantity>0</EnergyQuantity>
    </ObservationDetailEnergyObservation>
  </ObservationIntervalObservationPeriod>
  …
    <Sequence>72</Sequence>
    <ObservationDetailEnergyObservation>
      <EnergyQuantity>0</EnergyQuantity>
    </ObservationDetailEnergyObservation>
  </ObservationIntervalObservationPeriod>
 </PayloadEnergyTimeSeries>
</AggregatedDataPerMGAForSettlementForSettlementResponsible>
```

5.1.3.6 *Production*

RequestedAttribute	RequestedAttributeValue
"DataFlow"	“RPM”
“TimeResolution”	“P1Y” – for yearly aggregated data “P1M” – for monthly aggregated data “P7D” – for weekly aggregated data “P1D” – for daily aggregated data “PT1H”, “PT60M” - for hourly data
“TimeInterval”	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: “2015-01-02T02:00Z/2015-02-01T02:00Z” system will return data for January 2015 and February 2015.
“ProductionUnit” Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired production unit.

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<ValidatedDataForSettlementForAggregator xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="un:unece:260:data:EEM-ValidatedDataForSettlementForAggregator">
  <Header>
    <Identification>1</Identification>
    <DocumentType listAgencyIdentifier="260">E66</DocumentType>
    <Creation>2015-12-10T12:00Z</Creation>
    <SenderEnergyParty>
      <Identification schemeAgencyIdentifier="305">BASSE</Identification>
    </SenderEnergyParty>
    <RecipientEnergyParty>
      <Identification schemeAgencyIdentifier="305">DSO</Identification>
    </RecipientEnergyParty>
```

```
</Header>
<ProcessEnergyContext>
  <EnergyBusinessProcess listAgencyIdentifier="260">E44</EnergyBusinessProcess>
  <EnergyBusinessProcessRole listAgencyIdentifier="330">DDX</EnergyBusinessProcessRole>
  <EnergyIndustryClassification listAgencyIdentifier="330">23</EnergyIndustryClassification>
</ProcessEnergyContext>
<PayloadEnergyTimeSeries>
  <Identification>PROD1</Identification>
  <RegistrationDateTime>0001-01-01T00:00:00</RegistrationDateTime>
  <ObservationPeriodTimeSeriesPeriod>
    <ResolutionDuration>PT1H</ResolutionDuration>
    <Start>2015-10-18T00:00Z</Start>
    <End>2015-10-20T00:00Z</End>
  </ObservationPeriodTimeSeriesPeriod>
  <ProductIncludedProductCharacteristic>
    <Identification schemeAgencyIdentifier="9">8716867000030</Identification>
    <UnitType listAgencyIdentifier="330">MWH</UnitType>
  </ProductIncludedProductCharacteristic>
  <MPDetailMeasurementMeteringPointCharacteristic>
    <MeteringPointType listAgencyIdentifier="260">E18</MeteringPointType>
  </MPDetailMeasurementMeteringPointCharacteristic>
  <MeteringPointUsedDomainLocation>
    <Identification schemeAgencyIdentifier="305">PU</Identification>
  </MeteringPointUsedDomainLocation>
  <ObservationIntervalObservationPeriod>
    <Sequence>1</Sequence>
    <ObservationDetailEnergyObservation>
      <EnergyQuantity>240</EnergyQuantity>
      <QuantityQuality listAgencyIdentifier="330">21</QuantityQuality>
    </ObservationDetailEnergyObservation>
  </ObservationIntervalObservationPeriod>
  <ObservationIntervalObservationPeriod>
    <Sequence>2</Sequence>
    <ObservationDetailEnergyObservation>
```

```
        <EnergyQuantity>240</EnergyQuantity>
        <QuantityQuality listAgencyIdentifier="330">21</QuantityQuality>
      </ObservationDetailEnergyObservation>
    </ObservationIntervalObservationPeriod>
  </PayloadEnergyTimeSeries>
</ValidatedDataForSettlementForAggregator>
```

5.1.3.7 Production Plan

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"PRP"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" - for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"RegulationObject" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired Regulation Object.
"MBA" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<PlannedResourceScheduleDocument xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="urn:entsoe.eu:wgedi:errp:plannedresourcescheduledocument:5:0">
```

```
  <DocumentIdentification v="1" />
  <DocumentVersion v="1" />
  <DocumentType v="A14" />
  <ProcessType v="A17" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
  <SenderRole v="A05" />
  <ReceiverIdentification v="BRP" codingScheme="A01" />
  <CreationDateTime v="2015-12-10T12:00Z" />
  <TimePeriodCovered v="2014-01-01T00:00Z/2019-09-21T00:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <PlannedResourceTimeSeries>
    <TimeSeriesIdentification v="PP61" />
    <BusinessType v="A01" />
    <Product v="8716867000030" />
    <ConnectingArea v=“MBA” codingScheme="A01" />
    <ResourceObject v="RO" codingScheme="A01" />
    <ResourceProvider v="BRP" codingScheme="A01" />
    <MeasurementUnit v="MWH" />
    <ObjectAggregation v="A06" />
    <Period>
      <TimeInterval v="2015-10-18T22:00Z/2015-12-09T23:00Z" />
      <Resolution v="P1D" />
      <Interval>
        <Pos v="1" />
        <Qty v=“1” />
      </Interval>
      …
      <Interval>
        <Pos v="52" />
        <Qty v=“1” />
      </Interval>
    </Period>
  </PlannedResourceTimeSeries>
</PlannedResourceScheduleDocument>
```

5.1.3.8 Activated Reserves

RequestedAttribute	RequestedAttributeValue
"DataFlow”	“ACR”
“TimeResolution”	“P1Y” – for yearly aggregated data “P1M” – for monthly aggregated data “P7D” – for weekly aggregated data “P1D” – for daily aggregated data “PT1H”, “PT60M” - for hourly data
“TimeInterval”	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: “2015-01-02T02:00Z/2015-02-01T02:00Z” system will return data for January 2015 and February 2015.
“BusinessType” Optional	*See table 9 in Business Requirement Specification, TSO/NPS communication, version 1.4.A.*
“ReasonCode” Optional	
“RegulationObject” Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired Regulation Object.
“MBA” Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA

Response example
<?xml version="1.0" encoding="utf-8"?> <ReserveAllocationResultDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="urn:ediel:org:neg:errp:reserveallocationresultdocument:1:0"> <DocumentIdentification v="" /> <DocumentVersion v="1" />

```
<DocumentType v="A38" />
<SenderIdentification v="44X-00000000004B" codingScheme="A01" />
<SenderRole v="A05" />
<ReceiverIdentification v="BRP" codingScheme="A01" />
<ReceiverRole v="A08" />
<CreationDateTime v="2015-12-10T12:00Z" />
<ReserveBidTimeInterval v="2015-03-01T22:00Z/2015-11-02T22:00Z" />
<Domain v="10Y1001A1001A91G" codingScheme="A01" />
<AllocationTimeSeries>
  <TimeSeriesIdentification v="v1" />
  <TenderingParty v="BRP" codingScheme="A01" />
  <BusinessType v="A12" />
  <AcquiringArea v="MBA" codingScheme="A01" />
  <MeasureUnitQuantity v="MWH" />
  <Currency v="EUR" />
  <MeasureUnitPrice v="MWH" />
  <ReserveObject v="RO" codingScheme="A01" />
  <Direction v="A01" />
  <Period>
    <TimeInterval v="2015-10-20T22:00Z/2015-10-27T22:00Z" />
    <Resolution v="PT1H" />
    <Interval>
      <Pos v="1" />
      <Qty v="1" />
      <SettlementAmount v="1" />
    </Interval>
                    …
    </Interval>
    <Interval>
      <Pos v="168" />
      <Qty v="1" />
      <SettlementAmount v="1" />
    </Interval>
  </Period>
```

```
    <Period>
      <TimeInterval v="2015-10-27T23:00Z/2015-11-02T22:00Z" />
      <Resolution v="PT1H" />
<Interval>
        <Pos v="1" />
        <Qty v="1" />
        <SettlementAmount v="1" />
      </Interval>
                    …
      <Interval>
        <Pos v="143" />
        <Qty v="1" />
        <SettlementAmount v="1" />
      </Interval>
    </Period>
    <Reason>
      <ReasonCode v="Z30" />
    </Reason>
  </AllocationTimeSeries>
</ReserveAllocationResultDocument>
```

5.1.3.9 Imbalance Adjustment

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"IBA"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" - for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and

	February 2015.
“RegulationObject” Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired Regulation Object.
“MBA” Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<ReserveAllocationResultDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="urn:ediel:org:neg:errp:reserveallocationresultdocument:1:0">
  <DocumentIdentification v="" />
  <DocumentVersion v="1" />
  <DocumentType v="A38" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
  <SenderRole v="A05" />
  <ReceiverIdentification v="BRP" codingScheme="A01" />
  <ReceiverRole v="A08" />
  <CreationDateTime v="2015-12-10T12:00Z" />
  <ReserveBidTimeInterval v="2015-09-01T00:00Z/2015-10-21T23:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <AllocationTimeSeries>
    <TimeSeriesIdentification v="IA61" />
    <TenderingParty v="BRP" codingScheme="A01" />
    <AcquiringArea v=“MBA” codingScheme="A01" />
    <MeasureUnitQuantity v="MWH" />
    <Currency v="EUR" />
    <MeasureUnitPrice v="MWH" />
    <ReserveObject v="RO" codingScheme="A01" />
    <Direction v="A01" />
    <Period>
      <TimeInterval v="2015-09-01T00:00Z/2015-10-21T23:00Z" />
```

```
    <Resolution v="PT1H" />
    <Interval>
      <Pos v="1" />
      <Qty v="0" />
      <SettlementAmount v="0" />
    </Interval>
    …
    <Interval>
      <Pos v="1223" />
      <Qty v="1" />
      <SettlementAmount v="1" />
    </Interval>
  </Period>
 </AllocationTimeSeries>
</ReserveAllocationResultDocument>
```

5.1.3.10 Prices

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"REP"
"TimeResolution"	"PT1H", "PT60M" - for hourly data *Only hourly data will be available for Prices*
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ
"MBA" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA
"BusinessType"	"A62" – for Spot price "B20" – for Balance up regulation price "B21" – for Balance down regulation price "B22" – for Main direction (no price) "B23" – for Consumption imbalance price "B24" – for Production sales imbalance price "B25" – for Production purchase imbalance price

	“B26” – for MBAs prices between Market Balance Areas
BusinessType can be listed in the request file multiple times. For example if market participant requests Spot Prices and Consumption Imbalance Prices then the BusinessType will be listed twice, first with “A62” value and second with “Z58” value.	
“Currency”	“EUR” – stands for EURO “NOK” – stands for Norwegian Krone “SEK” – stands for Swedish Krona

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<PublicationDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="urn:ediel:org:neg:ecan:publicationdocument:1:0">
  <DocumentIdentification v="" />
  <DocumentVersion v="1" />
  <DocumentType v="A44" />
  <ProcessType v="A30" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
  <SenderRole v="A05" />
  <ReceiverIdentification v="BRP" codingScheme="A01" />
  <ReceiverRole v="A08" />
  <CreationDateTime v="2015-12-10T12:00Z" />
  <PublicationTimeInterval v="2014-01-01T00:00Z/2019-09-21T23:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <PublicationTimeSeries>
    <TimeSeriesIdentification v="v1" />
    <BusinessType v="A62" />
    <InArea v=“MBA” codingScheme="A01" />
    <OutArea v=“MBA” codingScheme="A01" />
    <Currency v="EUR" />
    <MeasureUnitPrice v="MWH" />
<Period>
      <TimeInterval v="2015-10-20T22:00Z/2015-10-27T22:00Z" />
      <Resolution v="PT1H" />
      <Interval>
```

```
      <Pos v="1" />
      <Price v="1" />
    </Interval>
                ...
    <Interval>
      <Pos v="360" />
      <Price v="1" />
    </Interval>
  </Period>
 </PublicationTimeSeries>
</PublicationDocument>
```

5.1.3.11 Consumption Imbalance

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"CIM"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" - for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"BRP" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired BRP
"MBA" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MBA
"Currency"	*ISO Code of desired currency (EUR, NOK, SEK)* *Please note that default currency for settlement is EUR, amounts are recalculated to NOK and SEK using ECB rate, which can cause that in*

	conclusion invoiced amount in NOK and SEK can slightly differ from amount provided by this DF.

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<EnergyAccountReport xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="urn:ediel:org:neg:esp:energyaccountreportddocument:1:0">
  <DocumentIdentification v="" />
  <DocumentVersion v="1" />
  <DocumentType v="A12" />
  <DocumentStatus v="A01" />
  <ProcessType v="A06" />
  <ClassificationType v="A02" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
  <SenderRole v="A05" />
  <ReceiverIdentification v="BRP" codingScheme="A01" />
  <ReceiverRole v="A08" />
  <DocumentDateTime v="2015-12-10T12:00Z" />
  <AccountingPeriod v="2014-01-01T00:00Z/2019-09-21T00:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <AccountTimeSeries>
    <SendersTimeSeriesIdentification v="v1" />
    <BusinessType v="B15" />
    <Product v="8716867000030" />
    <ObjectAggregation v="A01" />
    <Area v="MBA" codingScheme="A01" />
    <Party v="BRP" codingScheme="A01" />
    <MeasurementUnit v="MWH" />
    <Currency v="EUR" />
    <Period>
      <TimeInterval v="2015-10-18T22:00Z/2015-12-10T23:00Z" />
      <Resolution v="P7D" />
      <AccountInterval>
        <Pos v="1" />
```

```
      <InQty v="0" />
      <OutQty v="0" />
      <SettlementAmount v="0" />
    </AccountInterval>
    …
    <AccountInterval>
      <Pos v="31" />
      <InQty v="0" />
      <OutQty v="0" />
      <SettlementAmount v="0" />
    </AccountInterval>
  </Period>
 </AccountTimeSeries>
</EnergyAccountReport>
```

5.1.3.12 Production Imbalance

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"PIM"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" - for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"BRP" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired BRP
"MBA" Optional	CODE – in v attribute CODING SCHEME – in CodingScheme attribute

	Code and Coding Scheme of desired MBA
“Currency”	*ISO Code of desired currency (EUR, NOK, SEK)* *Please note that default currency for settlement is EUR, amounts are recalculated to NOK and SEK using ECB rate, which can cause that in conclusion invoiced amount in NOK and SEK can slightly differ from amount provided by this DF.*

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<EnergyAccountReport xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="urn:ediel:org:neg:esp:energyaccountreportddocument:1:0">
  <DocumentIdentification v="" />
  <DocumentVersion v="1" />
  <DocumentType v="A12" />
  <DocumentStatus v="A01" />
  <ProcessType v="A06" />
  <ClassificationType v="A02" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
  <SenderRole v="A05" />
  <ReceiverIdentification v="BRP" codingScheme="A01" />
  <ReceiverRole v="A08" />
<DocumentDateTime v="2015-12-10T12:00Z" />
  <AccountingPeriod v="2015-01-24T00:00Z/2016-08-21T23:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <AccountTimeSeries>
    <SendersTimeSeriesIdentification v="v1" />
    <BusinessType v="B14" />
    <Product v="8716867000030" />
    <ObjectAggregation v="A01" />
    <Area v="MBA" codingScheme="A01" />
    <Party v="BRP" codingScheme="A01" />
    <MeasurementUnit v="MWH" />
    <Currency v="EUR" />
    <Period>
```

```
    <TimeInterval v="2015-08-30T22:00Z/2015-12-09T23:00Z" />
    <Resolution v="PT1H" />
    <AccountInterval>
<Pos v="1" />
      <InQty v="0" />
      <OutQty v="0" />
      <SettlementAmount v="0" />
    </AccountInterval>
    ...
    <AccountInterval>
      <Pos v="744" />
      <InQty v="0" />
      <OutQty v="0" />
      <SettlementAmount v="0" />
    </AccountInterval>
  </Period>
 </AccountTimeSeries>
</EnergyAccountReport>
```

5.1.3.13 MGA Imbalance

RequestedAttribute	RequestedAttributeValue
"DataFlow"	"MIM"
"TimeResolution"	"P1Y" – for yearly aggregated data "P1M" – for monthly aggregated data "P7D" – for weekly aggregated data "P1D" – for daily aggregated data "PT1H", "PT60M" - for hourly data
"TimeInterval"	YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ System will take into account also parts of the intervals. So for example if there are demanded monthly aggregated data for this interval: "2015-01-02T02:00Z/2015-02-01T02:00Z" system will return data for January 2015 and February 2015.
"MGA"	CODE – in v attribute

Optional	CODING SCHEME – in CodingScheme attribute Code and Coding Scheme of desired MGA

Response example

```
<?xml version="1.0" encoding="utf-8"?>
<EnergyAccountReport xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="urn:ediel:org:neg:esp:energyaccountreportddocument:1:0">
  <DocumentIdentification v="" />
  <DocumentVersion v="1" />
  <DocumentType v="A12" />
  <DocumentStatus v="A01" />
  <ProcessType v="A06" />
  <ClassificationType v="A02" />
  <SenderIdentification v="44X-00000000004B" codingScheme="A01" />
<SenderRole v="A05" />
  <ReceiverIdentification v="BRP" codingScheme="A01" />
  <ReceiverRole v="A08" />
  <DocumentDateTime v="2015-12-10T12:00Z" />
  <AccountingPeriod v="2014-09-01T00:00Z/2015-09-21T23:00Z" />
  <Domain v="10Y1001A1001A91G" codingScheme="A01" />
  <AccountTimeSeries>
    <SendersTimeSeriesIdentification v="v1" />
    <BusinessType v="B29" />
    <Product v="8716867000030" />
    <ObjectAggregation v="A01" />
    <Area v="MGA" codingScheme="A01" />
    <Party v="BRP" codingScheme="A01" />
    <MeasurementUnit v="MWH" />
    <Period>
      <TimeInterval v="2015-08-30T22:00Z/2015-09-21T23:00Z" />
      <Resolution v="PT1H" />
      <AccountInterval>
        <Pos v="1" />
```

```
      <InQty v="0" />
      <OutQty v="0" />
    </AccountInterval>
    …
    <AccountInterval>
      <Pos v="529" />
      <InQty v="0" />
      <OutQty v="0" />
    </AccountInterval>
  </Period>
 </AccountTimeSeries>
</EnergyAccountReport>
```

5.1.4 Handling of Optional Parameters

Some of the request parameters of Information Service are marked as optional. If any of these parameters are left out of the request XML document, it is assumed that the sender wants to get information about all of the values, which are accessible to the sender.

E.g. when requesting Production hourly data, one can leave the Production Unit parameter out. The Information Service will then return values for all Production Units the sender is entitled to access.

Please take into account that in this scenario the response might (especially for large service providers) surpass the limit for maximal response size. The preferred solution is then to query smaller time interval (e.g. one day instead of one week).

5.2 Web Service Channel

Following figure explains the composition of Web Service Request Interface.

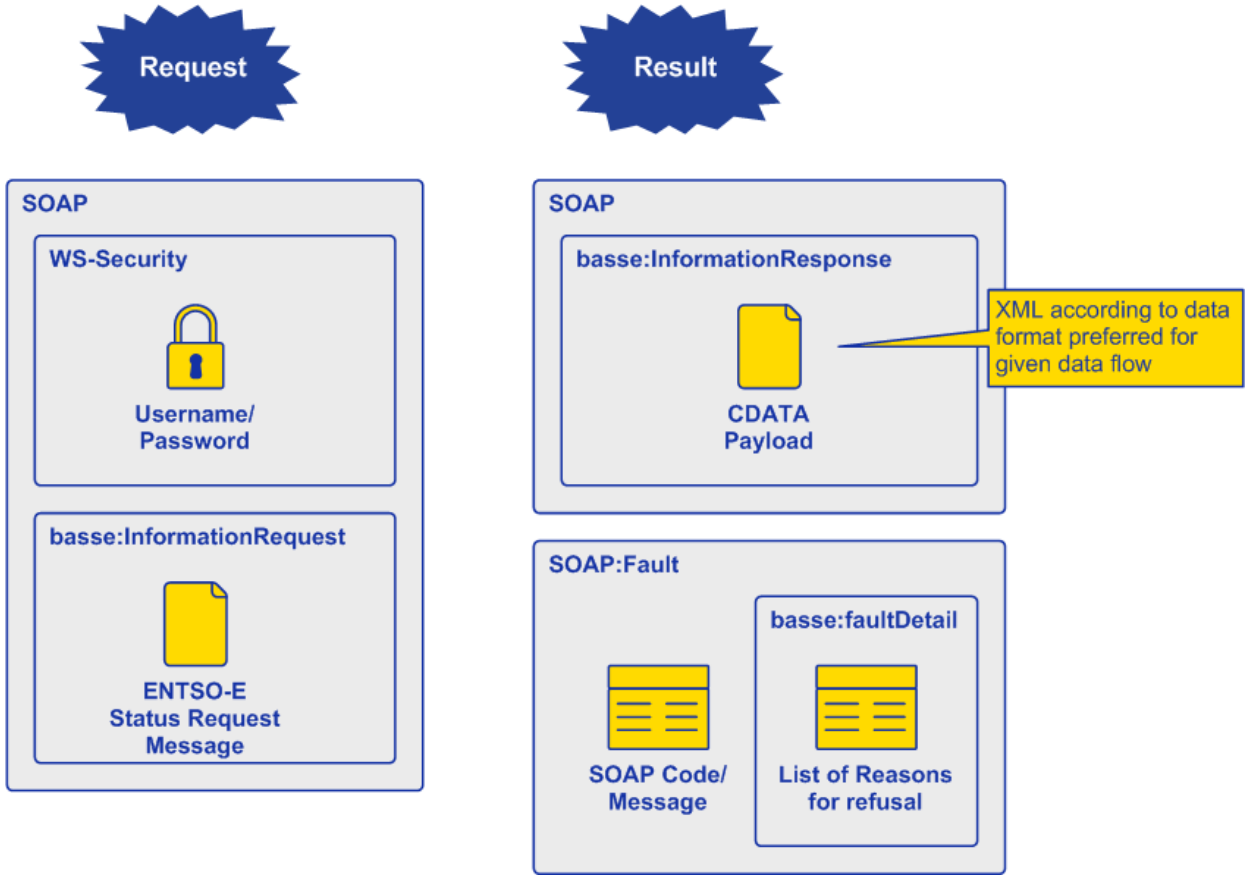

Figure 8: Physical Request Format

The request channel uses WS-Security envelope to transmit the user's credentials. The request itself is then composed as ENTSO-E Status Request document.

The response is either the XML document in format defined by each Data Flow (see section above) or, in case of error in processing, a SOAP fault document with detailed information about the error (e.g. user is not entitled to see given data etc).

The channel uses common Request-Reply synchronous communication pattern.

5.2.1 Request Limitations

The technical configuration of Information Service allows setting following parameters to limit the usage. In case any of these limitations is exceeded by the caller of the Information Service; an appropriate exception is returned to the caller.

Limitation	Default Value	Description
Maximum Data Values in Request	74.000	Maximum number of data values in a single Request.
Maximum Number	740.000	Maximum number of values requested by 1 Market Participant per

of Values per Minute		one minute. This throttles the communication with single Market Participant and protects Information Service against abnormal usage.

5.3 Usage Patterns

This section describes behaviour of the Information Service users (Market Participant Systems). The motivation is to ensure that Information Service will be used with respect to overall Balance Settlement System solution performance.

Information Service is expected to be used based on “events” distributed by Balance Settlement System Solution. These “events” might include outgoing e.g. data flows or reports, which are actively distributed from Balance Settlement System solution to Market Participant Systems.

Information Service is expected to be used on periodical basis with at most hourly frequency. Expected pattern is to fetch data after periodical gate closure times (hourly, daily, weekly, monthly or yearly).

Information Service is not expected to be frequently polled (with frequencies lower than 1 hour) for some data or event to appear in the system. All basic needs for outgoing data from eSett, shall be fulfilled by using data flows, reports or data packages.

Information Service is not expected to be directly used as a data source for any Market Participant located application (GUI, Reporting Engine, etc.). If there is need to display data fetched from Balance Settlement System, these data should be fetched and stored in Market Participant System – these stored data can then be used for other applications located in Market Participant’s premises.

5.4 Integration Procedure

This chapter describes the technical tasks which need to be performed in order to implement the integration.

The main prerequisite for integration is ability to create ENTSO-E Status Request Document (with parameters defined in 5.1.1) and process the returned Messages (of ENTSO-E or ebIX formats).

5.4.1 Web Service

- MPS implements a WS Client and configures it with Information Service URL (provided by eSett) and sets WS-Security username/password to credentials provided by eSett. MPS uses this WS client to send Status Request Messages to Information Service and gets set of requested information contained in ENTSO-E or ebIX document (defined in 5.1.1).

6 Integration via Online Service

This chapter describes how configuration of communication with Messaging Service can be adjusted using user interface of Online Service.

6.1 Communication Channel Configuration

This use case allows Market Participants to configure their communication channel for Messaging Service. Before starting with message delivery, it is necessary to choose preferred communication channel and fill in required information based on the choice. Following chapter describes how to select the channel and do the basic setup via Online Service.

6.1.1 Configuration Overview

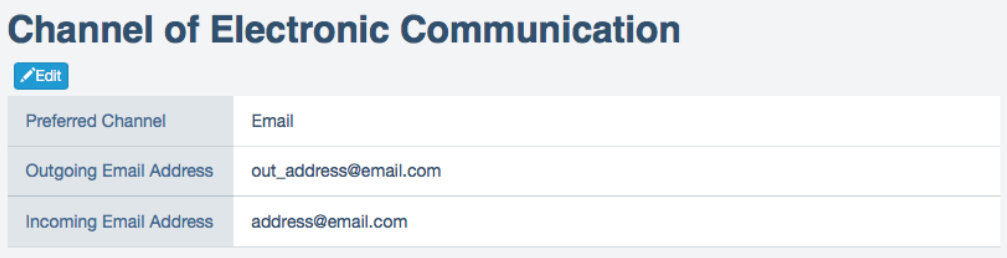

Figure 9: Example of Channel configuration

6.1.1.1 Channel of Electronic Communication

This table will be visible only to users of respective company (Market Participant), which have assigned role External Interface at least in mode Read.

Detailed description of all channels of electronic communication is described in chapters above.

Column Name	Description
Preferred Channel	Preferred channel of electronic communication. Options are 1. FTP 2. E-mail 3. Web Service
Incoming FTP Folder	Name of the folder, which has been assigned to a Market Participant. This is the folder where NBS Settlement System will expect messages to be delivered. Market Participant is forwarded to this location after connection.
Incoming FTP Username	Username used for login via FTP to a server
Incoming FTP Password	Password used to connect to FTP server, Market Participant can set and alter this password. Password has to contain at least 8 characters, one of which has to be capital letter, one special character and one number.
Outgoing FTP Address	URL of Market Participant's FTP server, where outgoing messages and acknowledgements from NBS Settlement system will be delivered.

Outgoing FTP Port	Port used for connection to Market Participant's FTP server
Outgoing FTP Protocol	Protocol used for connection to Market Participant's FTP server, allowed choices are "ftp" or "sftp".
Outgoing FTP Folder	Name of the folder, which should be used on Market Participant's FTP server for exchange of data between MP and eSett
Outgoing FTP Username	Username used for login via FTP to a server
Outgoing FTP Password	Password used to connect to Market Participant's FTP server.
Recipient Address	E-mail address of a recipient used for electronic communication used by NBS Settlement System to deliver outgoing messages and acknowledgement to Market Participant.
Incoming WS URL	URL of the web service used by Market Participant to connect to deliver messages into NBS Settlement System. This information is distributed by eSett.
Incoming WS Username	Username used for authentication of web service communication used by Market Participant to connect to Messaging Service to deliver messages to NBS Settlement System.
Incoming WS Password	Password used to connect to Web Service, Market Participant can set and alter this password. Password has to contain at least 8 characters, one of which has to be capital letter, one special character and one number.
Outgoing WS URL	URL of the web service, where outgoing messages and acknowledgements should be delivered to Market Participant.
Outgoing WS Username	Username used for authentication of outgoing web service communication.
Outgoing WS Password	Password used to connect to market Participant's Web Service.

7 Usage of Certificates

7.1 General Consideration

Certificates in Information Service and Messaging Service are used to secure the machine-to-machine communication between Balance Settlement System and Market Participants. All of these are only used as server-side domain certificates, i.e. they are installed on server in order to secure its identity (e.g. preventing man-in-the-middle attack) and to encrypt the communication between server and its client. These certificates can be any type of domain certificate (e.g. Single Domain, Multiple Domain or Wildcard) and must be issued by commonly trusted certification authorities (Balance Settlement System doesn't support adding public keys/certificates for untrusted certification authorities or self-signed certificates). Certificates are not supported for any other purpose (like client authentication or signatures) than server-side domain certification.

7.2 Web Services

All eSett communication web servers (Messaging Service Web Service and Information Service Web Service) are configured with trusted server-side domain certificate - Market Participant clients shouldn't need any configuration in order to establish secured (TLS) communication with them. Market Participant located web servers (Messaging Service Web Service - used to receive messages from Balance Settlement System) must be configured with trusted server-side domain certificate - if not so, Balance Settlement System will not trust these servers and will not establish secured (TLS) communication with them.

7.3 E-Mail

Machine-to-machine communication using e-mail can be optionally secured with STARTTLS. In that case, both communicating SMTP servers (Messaging Service SMTP and Market Participant SMTP) must be configured for STARTTLS with trusted server-side domain certificate (the same certificate as for Web Services can be used in case the domain is the same).