Star 01.01 - B2B programmer guide for mFRR

Version 02

12/07/2019

Table of Contents

Chapter 1. History

Version	Date	Changes
Star 01.01 Doc V1	04-07-2019	Initial version based on new mFRR design
Star 01.01 Doc V2	10-07-2019	Comments by ABO

Chapter 2. Introduction

This document is a developer guide for the use of the STAR B2B REST API for communicating between Bidder and Elia with the STAR application. This document describes the how a bidder can send its offer about mFRR reserves. This is done using the process "mFRRBid" using XML messages exchange.

This document is organized into four sections.

- Using the Star B2B portal

  The first part explains how the communication interface with the B2B portal actually works.

- mFRRStarBid process description

  The second part describes the process of the mFRRStartBid.

- Messages specifications

  The third part is a detailed message specification.

- Message samples

  The last part gives some samples of XML messages.

Chapter 3. Using the B2B portal

3.1. STAR B2B REST API

The STAR REST API is for the interface between Elia Web server and the client Web browser.

3.2. Description of the REST API

3.2.1. Server-side

The STAR REST API is the programmatic interface to a defined request-response message system expressed in XML exposed via HTTPS based web server.

- HTTPS – PUT method for sending MFRRStarBidDocument
    - URI= https://star.elia.be/b2B/mFRR/offers/v1 (to be confirmed)

      Method= PUT
    - ContentType = text/xml
    - Authentication using the ISOEXT login
    - Body: XML as defined in section mFRRStarBididDocument protocol
    - BodyResponse: XML as defined in the mFRRStarBidDocumentResponse.

3.2.2. Client-side

Not Applicable

Chapter 4. mFRRStarBid process description

4.1. Introduction

This section describes how B2B process to communicate with STAR is implemented concerning in order for the bidders to send bids to ELIA STAR system.

4.2. Send a mFRRStarBid message

4.2.1. The Bidder initiates an mRRStarBidDocument to Elia.

The Bidder decides to generate several bids for a specific delivery period (block of 4 hours). To do that he can decides to send a B2B message to the application STAR containing the bid details.

Therefore, it is important to understand that there is one message per delivery period of 4 hours. If the bidder send message for a delivery period already sent (a second time for example), all previous bids will be deleted and replaced by the new ones (no history and go back to previous version is possible).

Therefore, per Delivery day, it is possible to send six different messages, each one for each delivery period.

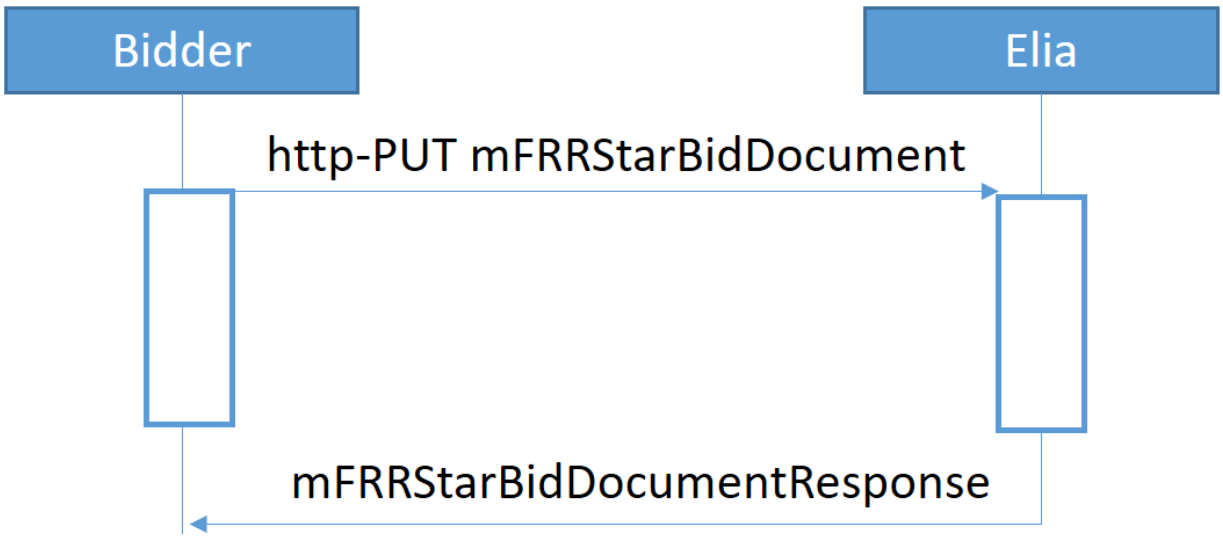
In addition "Validation Bids", as defined in the B2C, process is started after reception of the bids. The status is not returned by the B2B, and so suppliers need to chek bid status on the web site or on the report sent back by email.

The bidder will use an HTTP-PUT method with an XML message (as defined in Messages specifications) containing all the necessary information to push theirs bids into STAR.

The message contains for each bid, the contract reference related to the bid, the volume, price (€/MW/h) and bid type. It is possible to submit up to two prices per capacity bid (P_standard and P_flex). In case only P_standard is submitted, the corresponding volume will always be awarded as mFRR Standard. In case only P_flex is submitted, the corresponding volume will always be awarded as mFRR Flex. In case two different prices are submitted for the concerned capacity bid, P_standard applies if the volume is awarded by ELIA as mFRR Standard; P_flex applies if the volume is awarded by ELIA as mFRR Flex. All bids are considered as fully divisible and fully combinable.

The TSO replies by a response giving the result of the transaction.

The following diagram illustrates the scenario description:



4.3. Message Validation process.

4.3.1. Description

The validation process is the process defined in the STAR application to validate the structure and the content of the received message.

mFRRStarBidDocumentResponse will contains the result of this validation process

4.3.2. Technical validation

4.3.2.1. XML structure validation

The received XML message mFRRStarBidDocument will be validated thought its XML structure using XSD validation. If this validation fails, the message will be rejected.

4.3.2.2. Authentication validation

It is validated at this level that authentication used by the caller is a valid one.

Based on the ISOEXT login used, STAR application will identify the bidder with its EIC code.

4.3.3. Business validation

4.3.3.1. Delivery Period Validation

Check is done to verify that Start date /End date specified for the auction period correspond to an existing auction in STAR and for which bids can be entered depending on gate opening datetime. See also A05, A57, A81 at following section Data structure Reason: Reason identifier

4.3.3.2. Bidder Contract validation

For all contractReference defined in the bid, following checks are done (See also Error code Z02 at following section Data structure Reason: Reason identifier)

- The contractReference exists
- The contractReference is well associated to the bidder (linked to the ISOEXT login)

- The contractReference is valid for the auction period

4.3.3.3. BidType validation

Per Bid, one volume can be offered for a specified BidType (Standard, Flex or StandardFlex): this validation is done through XSD validation.

4.3.3.4. Bid details validation

Check that bidNumber are unique in the whole message (See also Error code Z04 at following section Data structure Reason: Reason identifier)

4.3.3.5. Prequalified volume validation

The volume offered for a specific mFRR Reserve Service Type , cannot exceed the prequalified volume corresponding with the mFRR Service type for each ContractReference (See also Error code Z13 at following section Data structure Reason: Reason identifier)

Chapter 5. Messages specifications

5.1. mFRRStarBidDocument XML structure

5.1.1. Data structure mFRRStarBidDocument body XML.

The message is application for an entire DeliveryPeriod. If the bidder has already sent a message for the same Delivery period, the existing bids will be deleted and replaced by the one defined in the message (before close gate datetime).

An empty message is possible (no bid) and so in that case all existing bids will be deleted. Pay attention that if the current message is rejected (A02 as ReasonCode), then the existing bids are still applicable and stored in Elia STAR system.

5.1.1.1. Synopsis

Field	Cardinality	Data type	Description
deliveryPeriod	Mandatory	Period	The delivery Period applicable for the whole message (block of 4 hours)
Bid	0 <= n	List of bid	List of bids sent by the bidder.

5.1.1.2. Detailed fields information

5.1.1.2.1. Field deliveryPeriod

This information represents the delivery period for which the mFRRStarBidDocument message is applicable.

This information gives the start and end date period for the current tender. Based on this field, STAR application will check if the gate 1 is well opened for this period.

Possible values for blocks of 4 hours:

- 00:00-04:00
- 04:00-08:00
- 08:00-12:00
- 12:00-16:00
- 16:00-20:00
- 20:00-24:00

Cardinality	Mandatory
Data type	Period

5.1.1.2.2. Field bid

List of Bid

This information describes the list of bids sent by the bidder for the tendering period. If no bid is specified, all existing bids in STAR for this bidder and for the given delivery period will be deleted in STAR.

Cardinality	0 <= n
Data type	list of bid

5.1.2. Message parts

5.1.2.1. Data structure bid: Base information for a bid

XML Namespace: http://www.elia.be/namespaces/public/Star/b2bmsg

5.1.2.1.1. Synopsis

Field	Cardinality	Data type	Description
bidNumber	mandatory	Int	Identifier of the Bid. Must be unique in the whole message
contractReference	Mandatory	string	Contract reference
bidType	Mandatory	bidType	BidType: Standard, Flex or StandardFlex.
volume	Mandatory	Int	Volume to be considered for the bid (fully divisible) in MW
priceStandard	Optional	decimal	P_standard Price that applies if the volume is awarded by ELIA as mFRR Standard
priceFlex	Optional	decimal	P_flex Price that applies if the volume is awarded by ELIA as mFRR Flex

5.1.2.1.2. Detailed fields information

5.1.2.1.2.1 Field bidNumber

This information describes the identifier of the bid. This is a unique number in the mFRRStarBidDocument starting from '1'.

Cardinality	Mandatory
Data type	Int

5.1.2.1.2.2 Field contractReference

This information represents the contract reference like 'mFRR-xxxx-2015'.

Cardinality	Mandatory
Data type	string

5.1.2.1.2.3 Field BidType

This information describes the BidType used for the associated volume and price.

Cardinality	Mandatory
Data type	string

The following table indicates the valid values:

Value	Description
Flex	Bid type is Flex Only P_flex will be taken into account
Standard	Bid type is Standard Only P_standard will be taken into account
StandardFlex	Bid type can be Standard or Flex. 2 prices should be supplied: P_Standard and P_flex

5.1.2.1.2.4 Field priceStandard

This field is applicable for BidType=Standard or StandardFlex and indicates the price per MW/H for this bid (€/MW/h). Max 2 decimals are accepted.

The price value must be greater than zero.

Cardinality	Optional as not applicable for Flex Bid Type
Data type	decimal

5.1.2.1.2.5 Field priceFlex

This field is applicable for BidType=Flex or StandardFlex. This field indicates the price per MW/H for this bid(€/MW/h). Max 2 decimals are accepted.

The price value must be greater or equal than zero.

Cardinality	Optional as not applicable for Standard Bid Type
Data type	decimal

5.1.2.1.2.6 Field volume

This field indicates the volume of power applicable for this bid.

The volume value must be greater or equal to zero.

Cardinality	optional
Data type	int

5.2. mFRRStarBidDocumentResponse structure.

5.2.1. Data structure mFRRStarBidDocumentResponse

5.2.1.1. XSD structure

The structure can be found in the following XSD:

5.2.1.2. Synopsis

Field	Cardinality	Data type	Description
bidder	Mandatory	Partner	Identifies the bidder based on its login
deliveryPeriod	Mandatory	Period	Identifies the Delivery period (block of 4 hours)
bidDocumentStatus	Mandatory	boolean	Indicates if the mFRRStarBidDocument has been accepted or not
reason	1 <= n	Reason	

5.2.1.3. Detailed Fields information

5.2.1.3.1. Field bidder

This information represents the identification of the bidder based on the login used when the MFRRStarBidDocument has been sent.

Cardinality	Mandatory
Data type	Partner

5.2.1.3.2. Field deliveryPeriod

This information represents the delivery period for which the MFRRStarBidDocument message has been accepted (or rejected).

This information gives the start and end date period for the current tender.

Cardinality	Mandatory
Data type	Period

5.2.1.3.3. Field bidDocumentStatus

If the MFRRStarBidDocument is accepted, this field will return “True” else “False”.

Cardinality	mandatory
Data type	boolean

5.2.1.3.4. Field reason

Cardinality	1 <= n
Data type	reason

This contains the reason accepted or rejected MFRRStarBidDocument.

5.3. Generic message parts

5.3.1. Data structure Partner: Partner identifier

This data structure is used to identify a partner in a transaction. It forms part of several message structures.

The fact that the code type must be specified in addition to the code itself, allows users to use their preferred code type, provided it is recognised by the system.

In addition, the identity of a partner can be indicated in words to make messages easier to read for humans.

5.3.1.1. Synopsis

Field	Cardinality	Data type	Description
code	mandatory	string (16 characters)	Code
codeType	mandatory	string (3 characters)	Code type
friendlyName	optional	string	Friendly name

5.3.1.2. Detailed fields information

5.3.1.2.1. Field code

Code

Cardinality	mandatory
Data type	string (16 characters)
Min len.	1

5.3.1.2.2. Field codeType

Code type

Cardinality	mandatory
Data type	string (3 charcaters)
Min len.	1

The following table indicates the valid values:

Value	Description
C03	EIC code

5.3.1.2.3. Field friendlyName

Friendly name

Cardinality	optional
Data type	string

Min len.	1

This field is optional and not used by the system which is processing the messages. It is only there to facilitate human reading of the message.

5.3.2. Data structure Reason: Reason identifier

XML Namespace: http://www.elia.be/namespaces/public/Star/b2bmsg

This data structure is used to identify the reason for message rejection. It forms part of several message structures.

5.3.2.1. Synopsis

Field	Cardinality	Data type	Description
reasonCode	mandatory	string (3 characters)	Reason code
reasonText	mandatory	string	

5.3.2.2. Detailed fields information

5.3.2.2.1. Field reasonCode

Cardinality	mandatory
Data type	string
Len	3

The following table indicates the valid values:

Value	ReasonText	Comment
A01	Message fully accepted. All received bids are added in the STAR database	That means that bidDocumentStatus is set to true
A02	Message fully rejected.	That means that bidDocumentStatus is set to true This code is always sent when at least one error occurred during the validation process.
A05	The contract reference %s% is not valid for the delivery period.	That means that the identified bidder has specified an incorrect contract reference for the given delivery period
A57	Gate for the given delivery period is not open.	The deliveryPeriod is a valid field but for which the gate is not open. This can occurs if the gate is already closed or not yet open to enter bids
A81	The introduced delivery period is invalid.	The delivery period of one or more offers does not correspond to the delivery period that is currently being auctioned in STAR.
B18	Failure during the mFRRStarBidDocument process	A failure occurred at STAR application.
Z01	XSD validation fails: %S	The XSD validation has failed. The parameter "%s" gives the error(s) returned by this validation.
Z02	Contract reference does not match the user login	That means there the link with login used and bidder identification done using the contractReference has failed.
Z03	Login failure: the user %login% has no access to STAR application.	The login used has no access to the STAR application.
Z04	The received bid number is invalid or not unique	All bid number must be unique
Z13	Bid volume exceeds the maximum limit set by the prequalified volume for the specific mFRR reserve service type	Bid volume of one bid cannot be greater than the prequalified volume of the corresponding contract
Z14	Bid price is missing for bid %bidnumber%	Bid price is missing for a bid, taking into account the selected BidType

5.3.2.2.2. Field reasonText

Reason Text

Cardinality	Mandatory
Data type	string
Min len.	1

See the list of valid reasoncode to see the associated ReasonText.

5.4. Data types

The following table describes all the datatypes allowed in XML data structure specifications.

Data type	Typical XML representation	Lexical pattern	Comments
string		.*	The following constraints can be expressed: minimum length, maximum length, pattern, choice of valid values
int	-1, 0, 126789675, +100000	[-+]?[0-9]+	The following constraints can be expressed: minimum value, maximum value. Values must be between 2147483647 and -2147483648 inclusive.
decimal	-1.23, 12678967.543233, +100000.00, 210	[-+]?[0-9]+(\.[0-9]+)?	The following constraints can be expressed: minimum value, maximum value. Values must have at most 28 digits, with.
boolean	1, 0, true, false	1|0|true|false	
code		.*	This is similar to string, but allowed values must be part of a documented "code table". The actual signification of the code table constraint is application-dependent
datetime	To indicate 1:20 pm on May the 31st, 1999 in Brussels which is 2 hours ahead of UTC, one would write: 1999-05-31T11:20:00Z	[0-9]{4}-[0-9]{2}-[0-9]{2}T[0-9]{2}(:[0-9]{2}(:[0-9]{2})?)?([+-][0-9]{2}(:[0-9]{2})?)?	Represents a time instant. UTC notation is required. See also the example below for daylight saving time handling.
time	13:20:00Z	[0-9]{2}(:[0-9]{2}(:[0-9]{2}?)?([+-][0-9]{2}(:[0-9]{2})?)?	Represents a time instant in the day. UTC notation is required. See also the example below for daylight saving time handling.
date	To indicate May the 31st, 1999, one would write:	[0-9]{4}-[0-9]{2}-[0-9]{2}	Represents a calendar date.

Data type	Typical XML representation	Lexical pattern	Comments
	1999-05-31		
Period	2015-04-01 00:00/2015-04-01 04:00	[0-9]{4}-[0-9]{2}-[0-9]{2}[0-9]{2}:[0-9]{2}/[0-9]{4}-[0-9]{2}-[0-9]{2}[0-9] {2}:[0-9]{2}	Represent the start date and an end date.
binary		Encoded binary data (the default encoding is base64)	Used to transfer data that is not unicode text.

Chapter 6. Sample message

6.1. mFRRStarBidDocument.

```
<?xml version="1.0" encoding="UTF-8"?>
<mFRRStarBidDocument>
  <deliveryPeriod v="2016-01-01 00:00/2016-01-01 04:00" />
  <bid>
    <bidNumber v="1" />
    <contractReference v="mFRR-012-2016" />
    <bidType v="Standard"/>
    <priceStandard v="10.30" />
    <volume v="10" />
  </bid>
  <bid>
    <bidNumber v="2" />
    <contractReference v="mFRR-012-2016" />
    <bidType v="StandardFlex"/>
    <priceStandard v="10.30" />
    <priceFlex v="10.30" />
    <volume v="20" />
  </bid>
  <bid>
    <bidNumber v="1" />
    <contractReference v="mFRR-012-2016" />
    <bidType v="Flex"/>
    <priceFlex v="10.30" />
    <volume v="10" />
  </bid>
</mFRRStarBidDocument>
```

6.2. mFRRStarBidDocumentResponse

```
<?xml version="1.0" encoding="UTF-8"?>
<mFRRStarBidDocumentResponse>
  <bidder>
    <code v="12TESTARPXXXX--Z"/>
    <codeType v="C03"/>
    <friendlyName v="TESTARP"/>
  </bidder>
  <deliveryPeriod v="2015-12-01 04:00/2015-12-31 08:00"/>
  <bidDocumentStatus v="false"/>
  <reason>
          <reasonCode v="A01"/>
          <reasonText v=" Message fully accepted. All received bids are added in the STAR
database."/>
  </reason>
</mFRRStarBidDocumentResponse>
```