# Star 02.01 - B2B programmer guide

Version 04

15/06/2015

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# Chapter 1. History

| Version | Date | Changes |
|---|---|---|
| Star 02.01<br>Doc V1 | 08-04-2015 | Initial version |
| Star 02.01<br>Doc V2 | 30/04/2015 | Version submitted after internal IT review |
| Star 02.01<br>Doc V23 | 06/05/2015 | Version submitted after business review |

# 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 R1 and R2 reserves. This is done using the process "ReserveBid" 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. C# code samples are supplied.

- ReserveBid process description

  The second part describes the process of the ReserveBid.

- 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 ReserveBidDocument
    - URI= (https://star.elia.be/b2B/r1r2/offers/v1) and in demo: https://stardemo.elia.be/b2B/r1r2/offers/v1
    - Method= PUT
    - ContentType = text/xml
    - Authentication using the ISOEXT login
    - Body: XML as defined in section Reserve Bid Document protocol
    - BodyResponse: XML as defined in the ReserveBidDocumentResponse.

# Chapter 4. ReserveBid 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 ReserveBid message

### 4.2.1. The Bidder initiates a ReserveBidDocument to Elia.

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

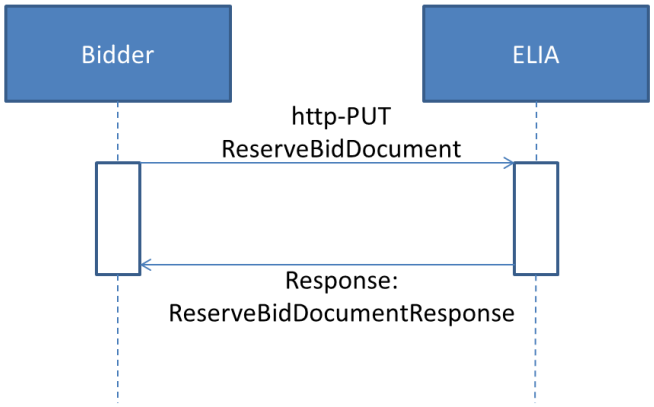
The bidder will use an HTTP-PUT method with an XML message (as defined in Messages specifications) containing all the necessary information to push theirs bids into STAR.

The message contains for each bid, the contract reference related to the bid, the quantity and the price per MW/H. Additionally to that, some Bid parameters will be defined to specify:

- the tariff Period applicable for the bid
- if the bid may not be combined with other bids
- if the bid contains a volume of power that is divisible or not

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. ReserveBidDocumentResponse will contains the result of this validation process

### 4.3.2. Technical validation

#### 4.3.2.1. XML structure validation

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

ReserveBidDocument.xsd

#### 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. For checking purposes, this EIC code will be returned in the HTTP-response.

### 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 gate 1 is open.

#### 4.3.3.2. Bidder Contract validation

For all bid/bidDetail/contractReference, following checks are done

- 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. Service type validation

For all bid/bidDetail/serviceType, following checks are done

- The serviceType contains one of the valid values (see Field serviceType or XSD for the list of valid values)
- The serviceType is one of the service type defined in the contract valid for the auction period (Lot).

#### 4.3.3.4. Service type /reserveType validation

Per combination of contract reference (reserveType) and serviceType only one volume can be offered.

Per combination of contract reference (reserveType) and serviceType only one price can be offered.

- 0 or 1 bid detail for R1 can be specified in 1 bid
- 0 1, or 2 bid details for R2 can be specified in 1 bid
- If 2 volumes for R2 are defined, then it is verified that 2 serviceType are used: 1 with Upward and 1 with Downward.

#### 4.3.3.5. Bid details validation

- Check "mayNotbeCombinedWith" contains only valid bidNumber (existing bidNumber as specified in bid itself)
- Check that bidNumber are unique in the whole message

# Chapter 5. Messages specifications

## 5.1. ReserveBidDocument XML structure

### 5.1.1. Data structure ReserveBidDocument body XML.

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

#### 5.1.1.1. Synopsis

| Field | Cardinality | Data type | Description |
|---|---|---|---|
| deliveryPeriod | Mandatory | Period | The delivery Period applicable for the whole message |
| 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 ReserveBidDocument 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.

| | |
|---|---|
| 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 and must starts with '1' |
| mayNotBeCombinedWithAll | mandatory | boolean | Indicates if the current bid cannot be combined with ALL other bids. |
| mayNotBeCombinedWith | 0 <=n | MNBCW | Contains a list of bids that cannot be combined with this one. |
| tariffPeriod | mandatory | String (3 characters) | Indicates the auction TariffPeriod for which the current bid is applicable. |
| divisible | Mandatory | boolean | Indicates if the volume specified in the list of bid detail is divisible or not. |
| bidDetail | 1 <= 3 | List of bidDetail | List of product applicable for the current bid |

##### 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 ReserveBidDocument starting from '1'.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | Int |

###### 5.1.2.1.2.2 Field mayNotBeCombinedWith

This information gives the list of bids that cannot be combined with this one.

This field is optional in case the MayNotBeCombinewWithAll is set to 'True'.

| | |
|---|---|
| Cardinality | 0 <= n |
| Data type | MNBCW |

#### 5.1.2.1.2.3 Field mayNotBeCombinedWithAll

If true, that means that the current bid cannot be combined with all the other bids sent in this ReserveBidDocument message.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | boolean |

#### 5.1.2.1.2.4 Field tariffPeriod

This information describes the applicable TariifPeriod for the bid.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | string (3 characters) |

*The following table indicates the valid values:*

| Value | Description |
|---|---|
| A01 | The auction is for a BASE period |
| A02 | The auction is for a PEAK period |
| A03 | The auction is for a Long Off Peak period |

#### 5.1.2.1.2.5 Field divisible

This field indicates if current bid can have the volume divisible or not.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | boolean |

#### 5.1.2.1.2.6 Field bidDetail

This field indicates the details of the bid.

| | |
|---|---|
| Cardinality | 1 <= 3 |
| Data type | BidDetail |

### 5.1.2.2. Data structure MNBCW: May not be combined with indicator

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

#### 5.1.2.2.1. Synopsis

This field indicate the BidNumber for which the current bid cannot be combined with

| Field | Cardinality | Data type | Description |
|---|---|---|---|
| bidnumber | Mandatory | int | Bid Number |

#### 5.1.2.2.2. Detailed fields information

##### 5.1.2.2.2.1 Field bidNumber

This information represents a Bid number that cannot be combined with the current one.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | int |

### 5.1.2.3. Data structure bidDetail: Detail information for a bid

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

#### 5.1.2.3.1. Synopsis

| Field | Cardinality | Data type | Description |
|---|---|---|---|
| contractReference | Mandatory | string | Contract reference |
| serviceType | Mandatory | string (3 characters) | Describe the service type applicable in this bid |
| price | Mandatory | decimal | Specifies the price per MWH. Max 2 decimal is allowed |
| volume | Mandatory | int | Specifies the power volume. |

#### 5.1.2.3.2. Detailed fields information

##### 5.1.2.3.2.1 Field contractReference

This information represents the contract reference like 'R1-xxxx-2015'.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | string |

##### 5.1.2.3.2.2 Field serviceType

This information represents the serviceType (Direction) for the current product.

| | |
|---|---|
| Cardinality | optional |
| Data type | string (3 characters) |

*The following table indicates the valid values:*

| Value | Description |
|---|---|
| A01 | Signifies that the Volume field is used for the service type 'Upward' |
| A02 | Signifies that the Volume field is used for the service type 'Downward' |
| Z01 | signifies that the Volume field is used for the service type 'Symmetric100' (only for R1) |
| Z02 | signifies that the Volume field is used for the service type 'Symmetric200' (only for R2) |

#### 5.1.2.3.2.3 Field price

This field indicates the price per MW/H for applicable for this bid. Max 2 decimals are accepted.

The price value must be greater than 0.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | decimal |

#### 5.1.2.3.2.4 Field volume

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

The volume value must be greater than 0.

| | |
|---|---|
| Cardinality | optional |
| Data type | int |

This field indicates the volume of power applicable for this bid

## 5.2. ReserveBidDocumentResponse structure.

### 5.2.1. Data structure ReserveBidDocumentResponse

#### 5.2.1.1. XSD structure

The structure can be found in the following XSD:

ReserveBidDocumentResponse.xsd

#### 5.2.1.2. Synopsis

| Field | Cardinality | Data type | Description |
|---|---|---|---|
| bidder | Mandatory | Partner | Identifies the bidder based on its login |
| deliveryPeriod | Mandatory | | |

| Field | Cardinality | Data type | Description |
|---|---|---|---|
| bidDocumentStatus | Mandatory | boolean | Indicates if the ReserveBidDocument 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 ReserveBidDocument has been sent.

| | |
|---|---|
| Cardinality | Mandatory |
| Data type | Partner |

##### 5.2.1.3.2. Field deliveryPeriod

This information represents the delivery period for which the ReserveBidDocument 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 ReserveBidDocument 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 ReserveBidDocument.

## 5.3. Generic message parts

### 5.3.1. Data structure Partner: Partner identifier

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

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<br>This code is always sent when at least one error occurred during the validation process. |
| A05 | The contract reference %s% is no valid for the delivery period. | That means that the identified bidder has specified in the' contract reference for the given delivery period |
| A57 | Gate 1 for the given delivery period is not open. | The deliveryPeriod is a valid field but for which the gate 1 is not open |
| Z62 | Invalid Service type %s% received | Some service types are not recognized |
| A71 | MayNotbeCombinedWith rejected due to associated bid number unsuccessful | Some offer numbers in MNBCW are not recognized |
| A81 | Matching delivery period 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 ReserveBidDocument 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 | Invalid Bid number received or is not unique | All bid number must be unique |
| Z05 | Service type %s% received for the contract reference %s% | No valid service type found associated to the contract reference |
| Z06 | Bid %s% is not valid because service type references or combination are not valid | This error occurs if the service type referenced in the bid does not correspond to the valid ones per bid (1 service type for R1 |

| Value | ReasonText | Comment |
|---|---|---|
| | | and 2 different ones (upward and downward) for R2 |
| Z07 | MNBCW cannot include the offer nr of the concerned offer (its "own" ) : Offer Nr %s% | |
| Z08 | MNBCW for Offer Nr %s is not symmetric with the one defined in OfferNr %s | If Offer1 may not be combined with offer 2, then offer 23 may not be combined with offer 1 |

#### 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 | [0-9]{4}-[0-9]{2}-[0-9]{2}T[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. |

| Data type | Typical XML representation | Lexical pattern | Comments |
|---|---|---|---|
| | write: 1999-05-31T11:20:00Z | ][0-9]{2}(:[0-9]{2})?)? | |
| 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: 1999-05-31 | [0-9]{4}-[0-9]{2}-[0-9]{2} | Represents a calendar date. |
| Period | 2015-04-01/2015-04-30 | [0-9]{4}-[0-9]{2}-[0-9]{2}/[0-9]{4}-[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. ReserveBidDocument.

```
<?xml version="1.0" encoding="UTF-8"?>
<ReserveBidDocument>
  <deliveryPeriod v="2015-10-01/2015-10-30"/>
  <bid>
    <bidNumber v="1"/>
       <mayNotBeCombinedWithAll v="true"/>
    <tariffPeriod v="A01"/>
    <divisible v="true"/>
    <!--YES-->
    <bidDetail>
      <contractReference v="R1-018-2015"/>
      <serviceType v="Z01"/>
      <price v="15.23"/>
      <volume v="10"/>
    </bidDetail>
    <bidDetail>
      <contractReference v="R2-018-2015"/>
      <serviceType v="A02"/>
      <price v="15.23"/>
      <volume v="10"/>
    </bidDetail>
    <bidDetail>
      <contractReference v="R2-018-2015"/>
      <serviceType v="A01"/>
      <price v="15.23"/>
      <volume v="10"/>
    </bidDetail>
  </bid>
  <bid>
    <bidNumber v="2"/>
       <mayNotBeCombinedWithAll v="false"/>
    <mayNotBeCombinedWith>
              <bidNumber v="1"/>
       </mayNotBeCombinedWith>
    <tariffPeriod v="A02"/>
    <divisible v="false"/>
    <bidDetail>
      <contractReference v="R1-018-2015"/>
      <serviceType v="Z01"/>
      <price v="40.23"/>
      <volume v="24"/>
    </bidDetail>
  </bid>
</ReserveBidDocument>
```

This message will have the following result in STAR:

May 2015

| Offer number | R1 | | | R2 | | | R2 | | | Tariff Period | May not be combined with | Volume divisible? | Validation status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ServiceType | Volume (MW) | Price (€/MW/h) | ServiceType | Volume (MW) | Price (€/MW/h) | ServiceType | Volume (MW) | Price (€/MW/h) | | | | |
| Electrabel | | | | | | | | | | | | | |
| 1 | BE-Generation-Symmetric100 | 10 | 15,23 | Upward | 10 | 15,23 | Downward | 10 | 15,23 | BASE | All | Yes | Received |
| 2 | BE-Generation-Symmetric100 | 35 | 40,23 | Upward | 0 | 0,00 | Downward | 0 | 0,00 | P | 1 | No | Received |

## 6.2. ReserveBidDocumentResponse

```
<?xml version="1.0" encoding="UTF-8"?>
<ReserveBidDocumentResponse>
  <bidder>
    <code v="11XELECTRABEL--Z"/>
    <codeType v="C03"/>
       <friendlyName v="ELECTRABEL"/>
  </bidder>
  <deliveryPeriod v="2015-04-01/2015-04-31"/>
  <bidDocumentStatus v="false"/>
  <reason>
         <reasonCode v="A02"/>
         <reasonText v="Message fully rejected."/>
  </reason>
  <reason>
         <reasonCode v="Z62"/>
         <reasonText v="Invalid Service type received for Bid #5"/>
  </reason>
</ReserveBidDocumentResponse>
```