



**ZAGREBAČKA  
BURZA**

*Zagreb Stock Exchange*

## **ZSE APA Service**

**MiFID II POST-TRADE PUBLICATION**

**VERSION 1.1**

3 January 2017

## Introduction

**MiFID II** requires all investment firms within the EU to publish over-the-counter (OTC) trades in financial instruments. The requirement is covering all asset classes. All investment firms, including Systematic Internalisers, trading OTC are required to publish post-trade reports via an **Approved Publication Arrangement (APA)** entity. APA must be certified by its National Competent Authority. ZSE offers such compliant system to financial institutions.

**ZSE APA Service** focuses on post-trade data publication. It does not offer pre-trade publication services that may be required by Systematic Internalisers. Also, deferred publication is not supported. All OTC trades reported to ZSE APA Service are published immediately. OTC trade reports must be submitted for all instruments traded on a trading venue within the EU. List of such instruments is available in ESMA Financial Instruments Reference Data System (FIRDS). ZSE APA Service uses the information from the FIRDS registry to determine if a report submission is mandatory. Reports must be submitted for the following asset classes:

**Table 1. Equity and equity-like financial instruments**  
*defined in Annex III of Commission Delegated Regulation (EU) 2017/587*

Asset Class	MiFIR Code
Shares	SHRS
ETFs	ETFS
Depositary Receipts	DPRS
Certificates	CRFT
Other Equity-like instruments	OTHR

**Table 2. Non-equity financial instruments**  
*defined in Annex IV of Commission Delegated Regulation (EU) 2017/583*

Asset Class	MiFIR Code
Bonds	BOND
Securitised derivatives	SDRV
Structured Finance Products	SFPS
ETCs	ETCS
ETNs	ETNS
Emission Allowances	EMAL
Derivative	DERV

## Reporting interfaces

Financial institutions can report OTC trades through two ZSE APA interfaces:

- **Web GUI** (<https://services.zse.hr>) – manual reporting;
- **RESTful API** (Annex I) – automated reporting.

Both interfaces are offered through standard HTTPS protocol via Internet. Financial institution authenticates to the service with unique logon details. Access to interfaces is available within two work hours after transmission of the application form for ZSE APA Service.

Both interfaces feature:

- Entry of OTC trades,
- Listing reported OTC trades,
- Report correction or cancellation.

Before utilizing the RESTful API on the production environment, the customer must ensure the implementation is successfully tested on the simulation environment.

## OTC report fields

ZSE APA Service will reject any report which does not specify the following mandatory fields:

- **ISIN** – International Securities Identification Number, as defined in ISO 6166.
- **Asset class** – as listed in Table 1 and Table 2.
- **Sub-asset class** – Applicable and mandatory for derivatives.  
Possible values: *Options, Futures, Forward Rate Agreement, Forwards, Swaps, Portfolio, Swaptions, Futures on a swap, Forwards on a swap, Forward Freight Agreements, Spread betting, CFD, Other.*
- **Underlying asset class** – Applicable and mandatory for securitised derivatives or derivatives.  
Possible values: *Interest rate, Equity, Commodity, Credit, Currency.*

- **Execution time** – Date and time when the transaction was executed.  
Two ISO 8601 formats are supported by the service:
  - UTC: YYYY-MM-DDThh:mm:ss.dddZ
  - with timezone designator: YYYY-MM-DDThh:mm:ss.ddd±hh:mm
 Execution time cannot be set into the future. *Publication time* is automatically assigned by the service.
  
- **Price** – Traded price of the transaction excluding, where applicable, commission and accrued interest. Decimal number of up to 18 digits in total of which up to 13 digits can be fraction digits. Where price is not applicable the field must be empty. Where price is currently not available but pending, text value **PNDG** must be used. In such cases, investment firms are obliged to publish the price by correcting the original trade report as soon as possible.
  
- **Price notation** – Indicates whether the price is expressed in monetary value, in percentage or in yield.
  
- **Price currency** – Trade currency code, as defined in ISO 4217. Mandatory only if the price is expressed as monetary value (see *Price notation*).
  
- **Quantity** – The number of units of the financial instrument, or the number of derivative contracts in the transaction. Decimal number of up to 18 digits in total of which up to 17 digits can be fraction digits.
  
- **Notation of the quantity in measurement unit** – Indication of measurement units in which the quantity in measurement unit is expressed. Applicable and mandatory for commodity derivatives, emission allowance derivatives and emission allowances.
  
- **Quantity In measurement unit** – The equivalent amount of commodity traded expressed in measurement unit. Applicable and mandatory for commodity derivatives, emission allowance derivatives and emission allowances.
  
- **Nominal value** – Nominal amount or notional amount. For spread bets, the notional amount shall be the monetary value wagered per point movement in the underlying financial instrument. For credit default swaps, it shall be the notional amount for

which the protection is acquired or disposed of. The information reported in this field shall be consistent with the value provided in field Price. The field is mandatory for non-equity asset classes.

- **Nominal currency** – Nominal currency code, as defined in ISO 4217. The field is applicable and mandatory if *Nominal value* is entered.
- **Type** – Applicable and mandatory for emission allowances.  
Possible values: EUAE, CERE, ERUE, EUAA or OTHR.
- **Transaction to be cleared** – Applicable and mandatory for derivatives. Identifies whether the transaction will be cleared.
- **Transaction Identification Code (TIC)** – Mandatory only in case of a report correction or cancellation. A report correction/cancellation will be rejected if specified Transaction Identification Code is not generated by ZSE APA Service.

## Trade flags

The following flags may be used to flag OTC trades reported to ZSE APA Service:

- **BENC** – Benchmark transaction flag  
*Equity:* Transactions executed in reference to a price that is calculated over multiple time instances according to a given benchmark, such as volume-weighted average price or time-weighted average price;  
*Non-equity:* All kinds of volume weighted average price transactions and all other trades where the price is calculated over multiple time instances according to a given benchmark.
- **ACTX** – Agency cross transactions flag  
Transactions where an investment firm has brought together customers price offers with the purchase and the sale conducted as one transaction and involving the same volume and price

- **TNCP** – Transactions not contributing to the price discovery process  
Transactions not contributing to the price discovery process MiFIR Article 23 and as set out in Commission Delegated Regulation (EU) 2017/587 Article 2
- **SDIV** – Special dividend flag  
Transactions that are either: Executed during ex-dividend period where the dividend or other form of distribution accrues to the buyer instead of the seller (or vice versa in the cum-dividend period)
- **SIZE** – Transactions above the standard market size flag  
*Equity:* Transactions executed on a systematic internaliser where the size of the incoming price offer was above the standard market size Commission Delegated Regulation (EU) 2017/587 Article 11  
*Non-equity:* Transactions executed under the post-trade size specific to the instrument deferral. ZSE APA Service does not accept SIZE flag for non-equity instruments as deferral is not supported.
- **ILQD** – Illiquid instrument transaction flag  
*Equity:* Transactions in illiquid instruments as determined in accordance with Commission Delegated Regulation (EU) 2017/587 Article 1 - 9 executed on a systematic internaliser  
*Non-equity:* Transactions executed under the deferral for instruments for which there is not a liquid market.
- **RPRI** – Transactions which have received price improvement flag  
Transactions executed on a systematic internaliser with a price improvement MiFIR Article 15 (2)
- **TPAC** – Package transaction flag  
Package transactions which are not exchange for physicals as defined in Commission Delegated Regulation (EU) 2017/583 Article 1
- **XFPH** – Exchange for physical transaction flag  
Exchange for physicals as defined in Commission Delegated Regulation (EU) 2017/583 Article 1

ZSE APA service will automatically flag reports with **CANC** and/or **AMND** flags upon report correction or cancellation.

According to ESMA Q&A on MiFID II and MiFIR transparency topics, flags for OTC trades reported to ZSE APA Service may be combined as follows:

### Combination of equity flags

- 1) *Descriptive flags*: **BENC**, **ACTX**, **TNCP** and **SDIV**. They can be combined with each other and with the flags under 5. The **NPFT** flag is not applicable for APA.
- 2) *Post-trade deferral flag*: **LRGS**. The application of the deferred publication is an option and not an obligation, therefore the LRGS flag has to be used only in case of the effective use of the deferred publication. ZSE APA Service does not accept LRGS flag as deferral is not supported.
- 3) *Pre-trade waiver flags*: **RFPT**, **NLIQ**, **OILQ** and **PRIC** are not applicable for APA.
- 4) *Algorithmic trading flag*: **ALGO** is not applicable for APA.
- 5) *Flags related to Systematic Internalisers*: **SIZE**, **ILQD** and **RPRI**. They can be combined among each other and with the flags under 1.
- 6) *Flag related to reporting to APAs*: **DUPL**. ZSE APA Service does not accept DUPL flag. Only original trade reports are subject to the service.

### Combination of non-equity flags

- 1) *Descriptive flags*: **BENC** and **ACTX**. Descriptive flags can be combined with each other, as well as with flags under 3. The **NPFT** flag is not applicable for APA.
- 2) *Post-trade deferral flags*: **LRGS**, **ILIQ**, and **SIZE**. The application of the deferred publication is an option and not an obligation. Post-trade deferral flags should only be used in case of the effective use of the deferred publication. ZSE APA Service does not accept these flags as deferral is not supported.
- 3) *Package transaction flags*: **TPAC** and **XFPH**. These flags are mutually exclusive. These flags can be combined with flags under 1.

- 4) *Supplementary deferral flags*: **LMTF, DATF, VOLO, FWAF, IDAF, VOLW** and **COAF**. ZSE APA Service does not accept these flags as deferral is not supported.
- 5) *Full details flags*: **FULF, FULA, FULV** and **FULJ**. They should be reported once the deferral time period lapses and all the details of the transactions on an individual basis are published. ZSE APA Service does not accept these flags as deferral is not supported.

## Report processing

All data reported to ZSE APA Service is checked against ESMA Financial Instruments Reference Data System (FIRDS). The system checks if a report is mandatory for submission to the APA as soon as the ISIN is entered into Web GUI. RESTful API offers a similar functionality through direct query of ISIN status. ZSE will accept any report for financial instrument that is subject to market suspension.

The following tolerance levels will be used for price and quantity validation against FIRDS:

- **Price**:  $\pm 30\%$  from the previous close price;
- **Quantity**:  $\pm 50\%$  of Average Daily Turnover (ADT).

If validation errors are raised, such as ISIN code not being compliant to ISO 6166 and similar, the customer must correct the information to submit the report.

If validation warnings are raised, the customer may correct the information or skip the validation if provided information was double checked as correct.

Once the report is accepted, ZSE APA service will assign a unique *Transaction Identification Code (TIC)*. The customer must specify TIC to identify the report in case of correction or cancellation. TIC is a concatenation of reporting date and trade report number which is unique per each reporting date. Accepted reports will automatically be dispatched for publication. Please note that deferred publication of trades is not supported.



## Data publication

ZSE APA Service publishes post-trade data through two channels:

- **ZSE website** – human readable format;
- **ZSE feed service** – machine readable XML format.

Publication of post-trade information on equity and equity-like instruments must be made available as close to real-time as technically possible and in any case within one minute of the relevant transaction. Publication of post-trade information on non-equity instruments must be made available as close to real time as technically possible and in any case (a) within 15 minutes after the execution of the relevant transaction from 3 January 2018 until 1 January 2020; (b) within 5 minutes after the execution of the relevant transaction after 1 January 2020.

ZSE APA service processes every transaction as close to real-time as possible, at a maximum within 2 seconds. Data is published as soon as reported, within operating hours.

Post-trade data published on ZSE website is delayed by 15 minutes. Data vendors can access real time post-trade data in XML file format. XML schema is available at: <https://feed.zse.hr/schema>.

## Operating hours

ZSE APA Service operates within Zagreb Stock Exchange trading hours: **8:30 – 16:30 CET**.

Publication of post-trade information on equity and equity-like instruments must be made available in accordance with article 14(2) of the Commission Delegated Regulation (EU) 2017/587. Publication of post-trade information on non-equity instruments must be made available in accordance with article 7(4) of the Commission Delegated Regulation (EU) 2017/583.

Trades older than 90 calendar days will not be accepted by ZSE APA Service.



## Service infrastructure and record retention

ZSE APA Service is developed and maintained by Zagreb Stock Exchange. The service is deployed on Linux based servers in ZSE primary data centre located in Zagreb and secondary data centre located in Varaždin, Croatia. Both data centres provide power supply redundancy, high level of security and 24/7 access for maintenance. Logging is enabled throughout ZSE infrastructure to proactively identify any issues with the service.

ZSE will inform its National Competent Authority (HANFA) in cases of any significant change to the service, service disruption or security breach. ZSE will inform the public of any service disruption or security breach via ZSE website.

ZSE APA Service stores all reported data for at least 3 years. Data no longer accessible through the service is archived.

## More information and contacts

For the latest information about ZSE APA Service please visit [www.zse.hr/apa](http://www.zse.hr/apa) or contact:

***Information and application for ZSE APA Service***

[apa@zse.hr](mailto:apa@zse.hr)

***Technical support***

[tech-support@zse.hr](mailto:tech-support@zse.hr)



## Annex I: WebGUI

### Web GUI service location:

PRODUCTION: <https://services.zse.hr>

SIMULATION: <https://services-test.zse.hr>

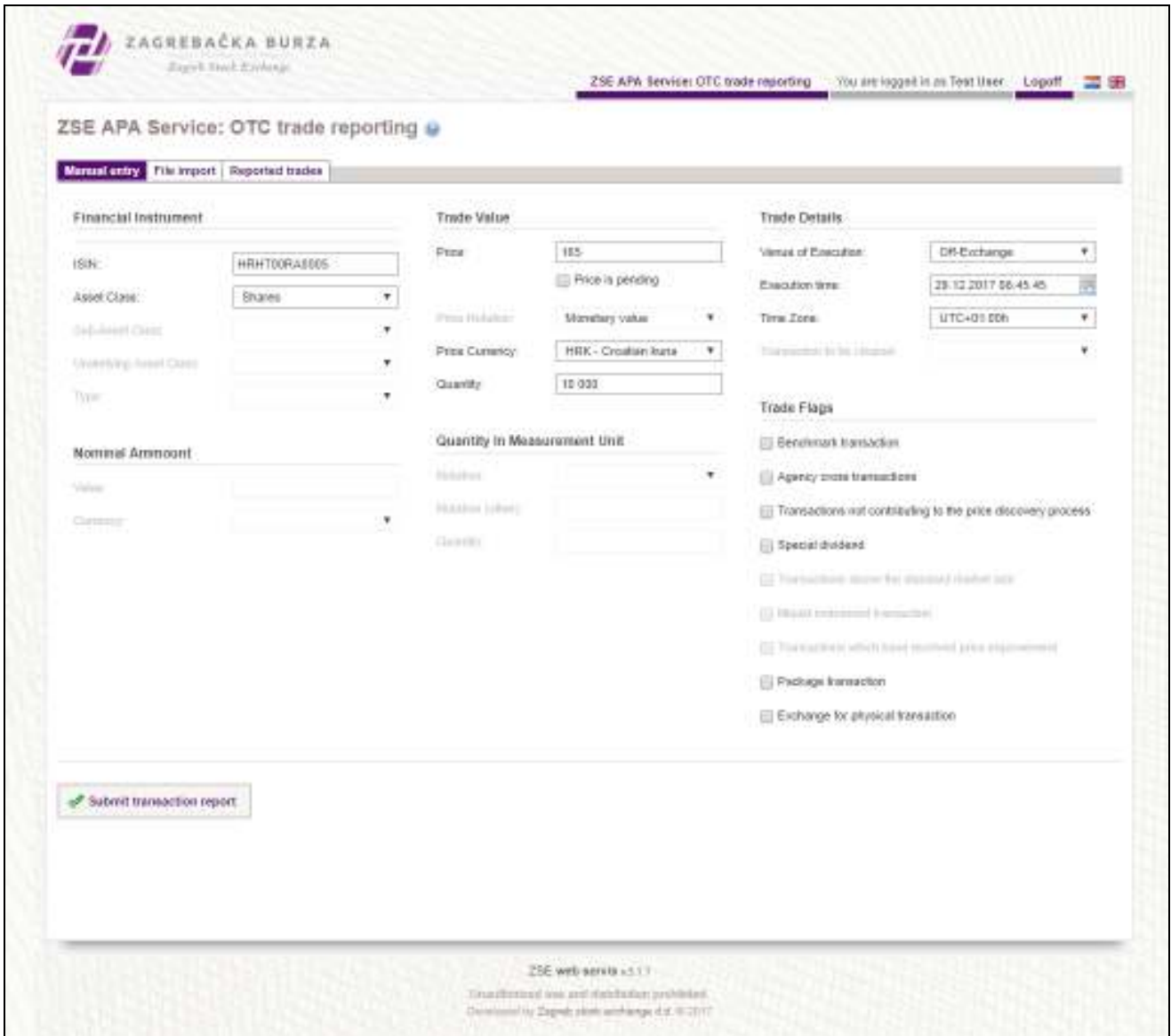
### WebGUI features:

- Form for manual entry, change or cancellation of OTC trades
- Form for delivering the XML file in accordance with the ZseApaTrade\_v1.xsd or ZSE-OTC-1.0.xsd specification (only for financial instruments for which the Zagreb Stock Exchange is the most relevant market in terms of liquidity)
- View of OTC trades reported in the last 90 calendar days with the possibility to change or cancel OTC trades.

Form for manual entry of OTC trades automatically displays only fields which are mandatory according to the asset class, sub-asset class and underlying asset class.

Before submitting the OTC trade report, WebGUI interface will perform some automatic data checks and display all potential errors to user. User will be obliged to validate those potential errors and to re-confirm the OTC trade report. All successfully submitted OTC trade reports are displayed to the user in a separate view.

Screenshot of WebGUI interface:



The screenshot shows the ZSE APA Service: OTC trade reporting interface. At the top, there is a navigation bar with the ZSE logo and name, the current page title 'ZSE APA Service: OTC trade reporting', and user information 'You are logged in as Test User' with a 'Logout' link. Below the navigation bar, there are three tabs: 'Manual entry' (selected), 'File import', and 'Reported trades'. The main content area is divided into several sections:

- Financial Instrument:** Includes fields for ISIN (HRHT00RA5505), Asset Class (Shares), Default Class, Underlying Asset Class, and Type.
- Nominal Amount:** Includes fields for Value and Currency.
- Trade Value:** Includes fields for Price (185), Price is pending (checkbox), Price Unit (Monetary value), Price Currency (HRK - Croatian Kuna), and Quantity (10 000).
- Quantity in Measurement Unit:** Includes fields for Relation, Relation (other), and Quantity.
- Trade Details:** Includes fields for Venue of Execution (DF-Exchange), Execution time (28.12.2017 06:45:45), Time Zone (UTC+01:00h), and Transaction to be closed.
- Trade Flags:** A list of checkboxes for various transaction types: Benchmark transaction, Agency cross transactions, Transactions not contributing to the price discovery process, Special dividend, Transactions done for dividend holder sale, Request extended transaction, Transactions which have reached price adjustment, Package transaction, and Exchange for physical transaction.

At the bottom left, there is a 'Submit transaction report' button. At the bottom center, there is a footer with the text 'ZSE web servis v.5.1.1', 'Unauthorized use and distribution prohibited', and 'Developed by Zagreb stock exchange d.o.o. © 2017'.

## Annex II: RESTful API

### REST service location

PRODUCTION: <https://rest.zse.hr>  
SIMULATION: <https://rest-test.zse.hr>

### Common status codes

Status code	Description
<b>401 Unauthorized</b>	Not authorized for specified resource
<b>400 Bad request</b>	Invalid request URI
<b>503 Service Unavailable</b>	Service is not available, usually due to trading holidays
<b>500 Internal Error</b>	Please contact Zagreb Stock Exchange if the problem persists

### Session login

Method	URL
<b>GET/POST</b>	<a href="/auth/login?public_key={UID}&amp;private_key={PWD}">/auth/login?public_key={UID}&amp;private_key={PWD}</a>

*Example:*

**POST** [https://rest.zse.hr/auth/login?public\\_key=test&private\\_key=abc123](https://rest.zse.hr/auth/login?public_key=test&private_key=abc123)

Status code	Description
<b>200 OK</b>	Authentication successful
<b>400 Bad request</b>	Invalid username or password

On successful authentication (200 OK), the reply body will contain an authorization token. The token will also be stored in a session cookie. To manipulate the resources, a REST client must transmit the Cookie header containing **authToken** value in each request:

*Example:*

*Cookie: authToken=zse55f1a58dcc34e6.29461195*

## Session logoff

Method	URL
<b>GET/POST</b>	/auth/logout

*Example:*

**POST** https://rest.zse.hr/auth/logout

Status code	Description
<b>200 OK</b>	Logged out

## APA Trade report operations

Method	URL
<b>POST</b>	/apa/trade/
	<b>Add</b> new trade report. POST data must contain XML according to ZseApaTrade_v1.xsd specification.
<b>GET</b>	/apa/trade/{TIC}
	<b>Query</b> trade report with specified TIC (Transaction Identification Code). Returns ZseApaTrade_v1.xsd compliant XML file.
<b>PUT</b>	/apa/trade/{TIC}
	<b>Correct</b> trade report with specified TIC (Transaction Identification Code). PUT data must contain XML according to ZseApaTrade_v1.xsd specification.
<b>DELETE</b>	/apa/trade/{TIC}
	<b>Cancel</b> trade report with specified TIC (Transaction Identification Code).

Status code	Method	Description
<b>200 OK</b>	<b>GET/DELETE</b>	Trade report is found. Information is returned/deleted.
	<b>POST/PUT</b>	Warnings were generated. The reply body contains errors in XML format. Validation must be skipped in order to store/publish the information.
<b>201 Created</b>	<b>POST/PUT</b>	Report is stored. The reply body contains transmitted XML with addition of TIC. Information is published.
<b>400 Bad request</b>	<b>POST/PUT</b>	Report contains errors. The reply body contains errors in XML format.
<b>404 Not found</b>	<b>GET/DELETE</b>	Trade report with specified TIC is not found.