

MATS REST API Client Application Design Guide

EPEX SPOT
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1. Introduction

1.1 Audience

This MATS REST API Client Application Design Guide is meant for:

- developers writing client applications to communicate with the MATS REST API,
- any other profile like project managers who would like to understand API fundamentals.

1.2 Purpose

The purpose of this document is to describe the principles of the MATS API & MATS Authentication API, giving enough elements and guidelines:

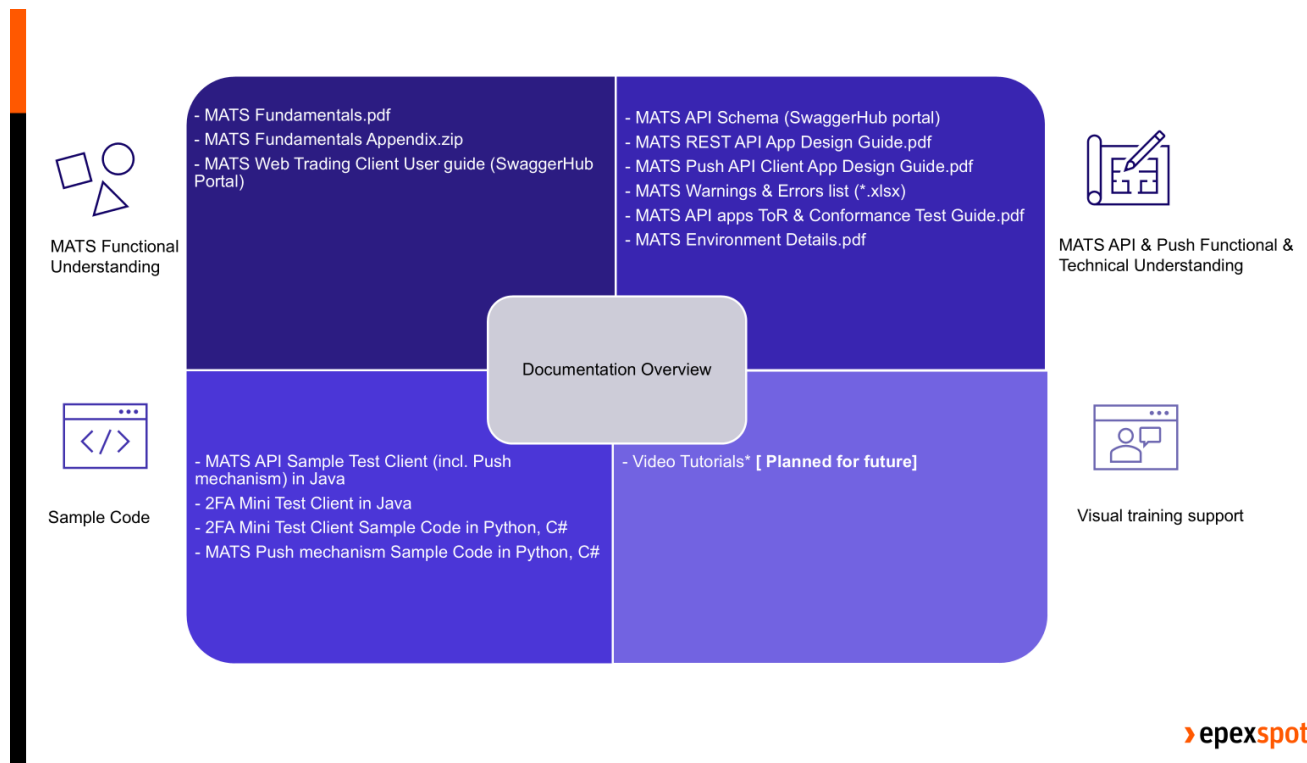
- to understand the MATS REST API fundamentals,
- to understand the MATS Authentication API fundamentals,
- to build an efficient client application.

1.3 Document revision history

Evolution	Date	Version	Author	Comments
Update	29.04.2025	1.3	EPEX SPOT API Customer Services	- Removed the sections related ToR & Conformance Testing. These information are part of 04 - MATS API apps ToR & Conformance Test Guide.pdf - Include MATS Authentication API related guidelines
Update	01.05.2025	1.4	EPEX SPOT API Customer Services	- Includes the Reset Password Request Email content for reference - Include the details about Password Update Confirmation email
Update	17.07.2025	1.5	EPEX SPOT API Customer Services	- Removed the MATS 1FA section which was related to the deprecated MATS REST API Connection - Include the possibility to request password reset email via GUI for API user account - Include the User account lock out rules - Trading Limits (overview, new section) - FTS orders (Future-To-Spot) - User-agent usage
Update	14.08.2025	1.6	EPEX SPOT API Customer Services	- Include Password expiry scenario details - Include retry mechanism details in case of server error - Include multiple duration & CPM details for order management
Update	03.11.2025	1.7	EPEX SPOT API Customer Services	- Update the documentation overview part - Remove the ETS references and update the information in Order management

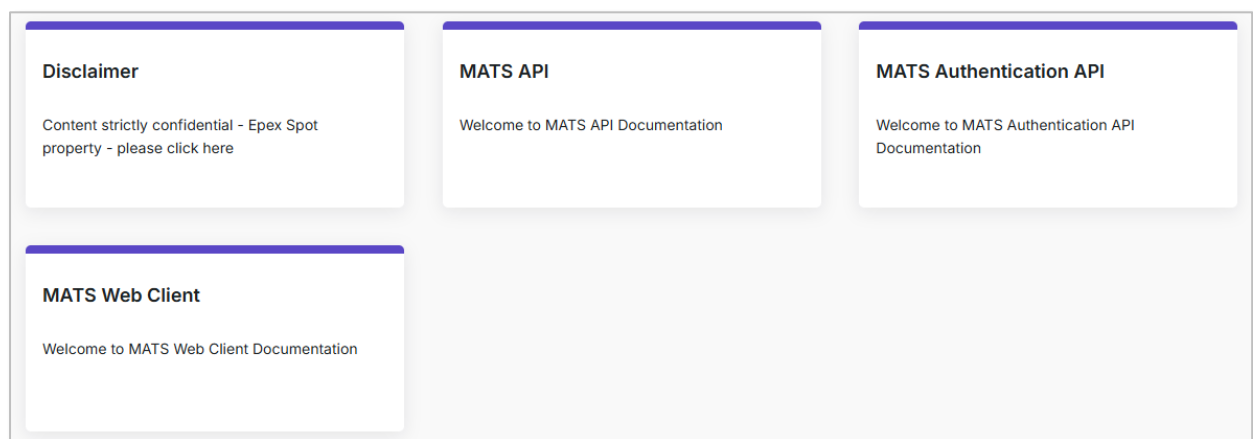
2. MATS API and non-API documentation overview

The below indicated overview gives you an overview of documentations related to functional and technical guidance.



We strongly invite you to check:

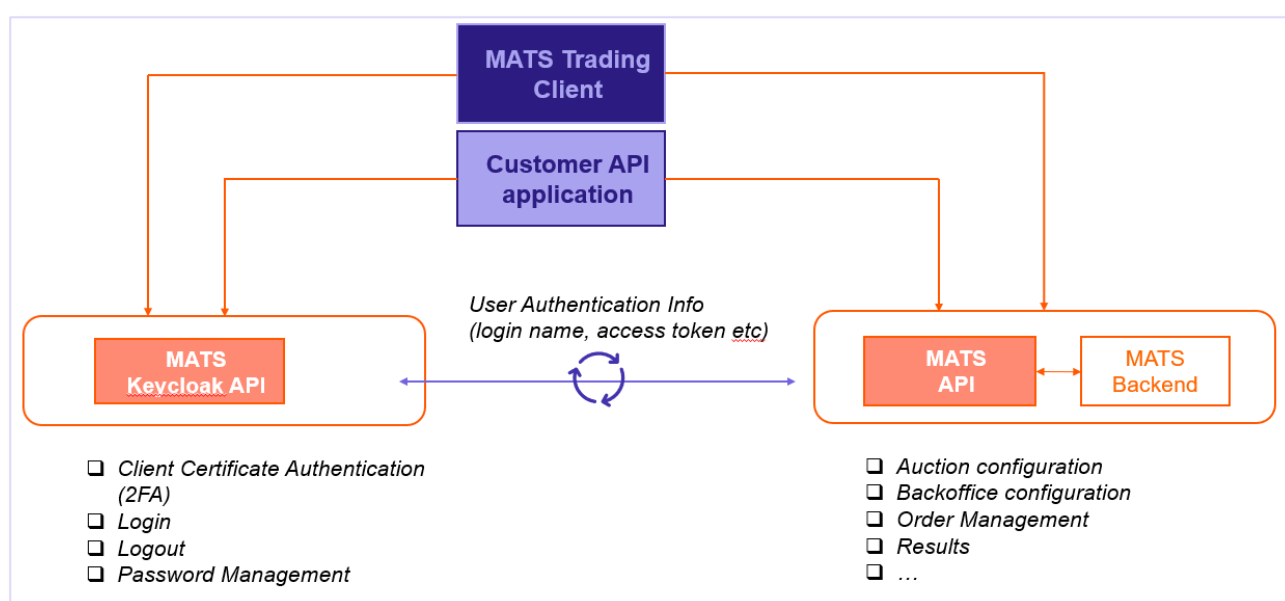
- the content of the MATS Fundamentals that are common to the MATS Web client and APIs.
- The [MATS online portal](#):



3. MATS Architecture

Both the MATS web trading client and API applications communicate with the MATS backend via the MATS API. The technical solution Keycloak is being used for the user authentication & password management processes.

From a customer perspective, user accounts are managed in MATS trading system. The internal processes will ensure that user data is synchronized between MATS and Keycloak to ensure the smooth flow.



4. MATS REST API & MATS Authentication API Overview

CATEGORY	OVERVIEW
1/ AUTHENTICATION API	Manage login and passwords - Login/logout (connect/disconnect) - Set or Reset a new password - Modify your user password
2/ CONFIGURATION REFERENCE DATA (REST API)	Retrieve your <u>user</u> configuration: what your user is assigned to - Get your participant information and portfolios - Get your Read or Write trading permissions on (Portfolio, bidding level) - Get your settlement members (for trading limits) Retrieve <u>auctions</u> configuration: - Get your auctions, markets and bidding levels - Get related auction sessions and delivery periods
3/ ORDER MANAGEMENT (REST API)	Manage your orders: - Retrieve, Submit, Modify, Delete, Delete All - Linear, block, scalable complex orders, confirm Future-To-Spot orders
4/ MARKET RESULTS (REST API)	Continuation from ETS, mixing private & public results: - Retrieve CSV results, Retrieve Trade report (XML) New, pure JSON: - Public: Retrieve Market Results - Private: Aggregated results, Individual linear/block/scalable orders results
5/ TRADING LIMITS (REST API)	- Retrieve Trading Limits - Retrieve Trading Limit Information - Retrieve Trading Limit Usages

Please consult our [MATS portal](#) to access the details of all the related requests and responses.

5. Zoom on functional areas

Please consult this section in conjunction with [MATS API online portal](#) where you can find a complementary description of each request and response message.

5.1 MATS 2FA Authentication and Password Management

5.1.1 Get Started: *Request a password reset email*

When a user is created, an email is automatically sent to the user's email address:

- Email Subject: *[MATS] – [Exchange Name] - Password Reset Request*
- Email Content:

Dear USER01,

We received a request to reset your password for USER01. If this request does not come from you or your organization, please contact Market Operations team.

To reset your password:

1. Click on the link below or copy and paste it into your browser:

<MATS ENV Link>

2. Follow the prompts to set up your new password.

For security purpose, the link is valid only for the next 24 hours. After this period, you will need to restart the password reset process.

If you encounter any issues or have any questions, please do not hesitate to contact us.

Kind regards,

Market Operations team

If the **password reset link included in the email has expired** or if you **no longer remember the password**, then you can follow the below process to set a new password:

- Send the below API request. This will allow the user to receive a new password reset email which contains a valid reset password link:
 - **reset-password/email?username={add_your_username}&client_id=api**
- Click on the password reset link included in the email and follow the instructions to manually set a new password in the GUI.
- The Password validity is set automatically when a user resets his/her password. Refer to **section 5.2.6** to understand how to know the password expiry date and time.

Upon successful password reset, the user will receive a password update confirmation email.

- Email Subject: **[MATS] – [Exchange Name] - Password Update Confirmation**
- Email Content:

Dear USER01,

Your password has been successfully changed on Thu May 01 14:56:28 GMT 2025 from the IP address: xx.xx.x.xxx. If this request does not come from you or your organization, please contact Market Operations team.

Kind regards,

Market Operations team

a) Quick tip: To request a password reset email

As a quick and easy alternative, for an API user account, you can also request for a new reset password email via the MATS Web client.

1. Open the MATS Web Client URL in a web browser (refer **03 - MATS Environment Details.pdf**) for the web client url)
2. Click on the **'Forgot your password?'** link.
3. Enter the registered login name and click the 'Send link' button. If the account is registered, a password-reset email will be sent.
4. Click on the password reset link included in the email and follow the instructions to manually set a new password in the GUI.
5. Password validity is set automatically when user reset his/her password. Refer **section 5.2.6** to understand how to know the password expiry date and time.

5.1.2 Get Client Certificate

Before logging in the trading system, customers must have a “Client Certificate”. A “Client Certificate” is used as a second factor authentication when logging in the system.

If you do not have a “Client Certificate” or do not know how to use the “Client Certificate” as a second factor authentication, please refer **05 - MATS Client Certificate Guide For Web Client & API App** for these details.

You do not need to pass on the client certificate when sending all other MATS REST API request(s).

5.1.3 Login

Once the user successfully set a new password for his/her MATS user account and configured the client certificate (in a keystore file format) for your API application, the **Login** request enables a user:

- to log in MATS,
- to acquire **access_token** included in the API response, **valid for 24 hours**, that will be required when sending almost any other request (except for some password management requests & log out request),
- to acquire **refresh_token** included in the API response, **valid for 24 hours**, that will be required when sending a **logout** request

5.1.4 Login: kick out an existing user session

A user can log in only once at a time, meaning that a user can have **only one active token at a time**.

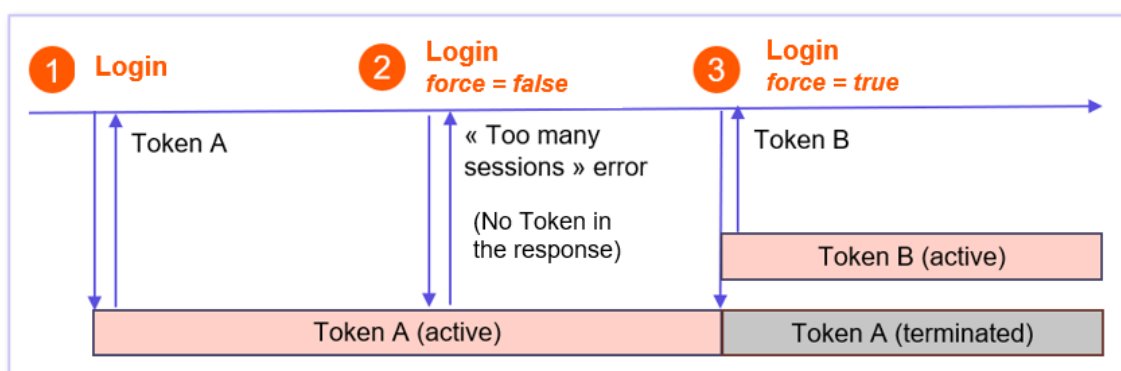
If there is already an active token for the same user, an error response with **HTTP status code 409**, is returned

```
{
  "error": "too_many_sessions",
  "error_description": "A session already exists for this user and client. Use force=true to terminate the session and retry."
}
```

If a user received the above mentioned error response, and wants to kickout the existing user session, then this user must send a **Login** request with the field: **“force”: “true”**. Please find below a screenshot of the request via Postman:

Params Authorization Headers (11) Body • Scripts Settings		
☐ none ☐ form-data ☒ x-www-form-urlencoded ☐ raw ☐ binary ☐ GraphQL		
	Key	Value
☒	grant_type	password
☒	client_id	api
☒	username	USERA
☒	password	UserPassword@2025
☒	force	true

Please note that in case of error, no token is being returned. Only responses to successful logins contain access and refresh tokens (steps 1 and 3 in the below example):



5.1.5 Logout

The Logout request using the Refresh token enables the user:

- to log out from MATS

Please find below the screenshot of the request via Postman as a reference.

Params Authorization Headers (11) Body • Scripts Settings		
☐ none ☐ form-data ☒ x-www-form-urlencoded ☐ raw ☐ binary ☐ GraphQL		
	Key	Value
☒	refresh_token	eyJhbGciOiJIUzUxMiIsInR5cCI6IkpXLTQ...
☒	client_id	api
	Key	Value

5.1.6 Update user password

While a user is connected to MATS, if this user wishes to update the current password of his/her MATS user account, then the below steps must be followed:

- Pre-requisite: the User is logged in and acquired an **access_token** which has not expired (refer **section 5.1.3**)
- Send the API request: **/credential/password**. This will allow the user to update the current password.
- The password **validity** is extended automatically when user update his/her password.
- Either the user can acquire the new extended password expiry from the API response or refer to **section 5.2.6** to understand how to know the *password expiry date and time* on an ad hoc basis.

Upon successful password update, the user will receive a password update confirmation email.

- Email Subject: **[MATS] – [Exchange Name] - Password Update Confirmation**
- Email Content:

Dear USER01,

Your password has been successfully changed on Thu May 01 14:56:28 GMT 2025 from the IP address: xx.xx.x.xxx. If this request does not come from you or your organization, please contact Market Operations team.

Kind regards,

Market Operations team

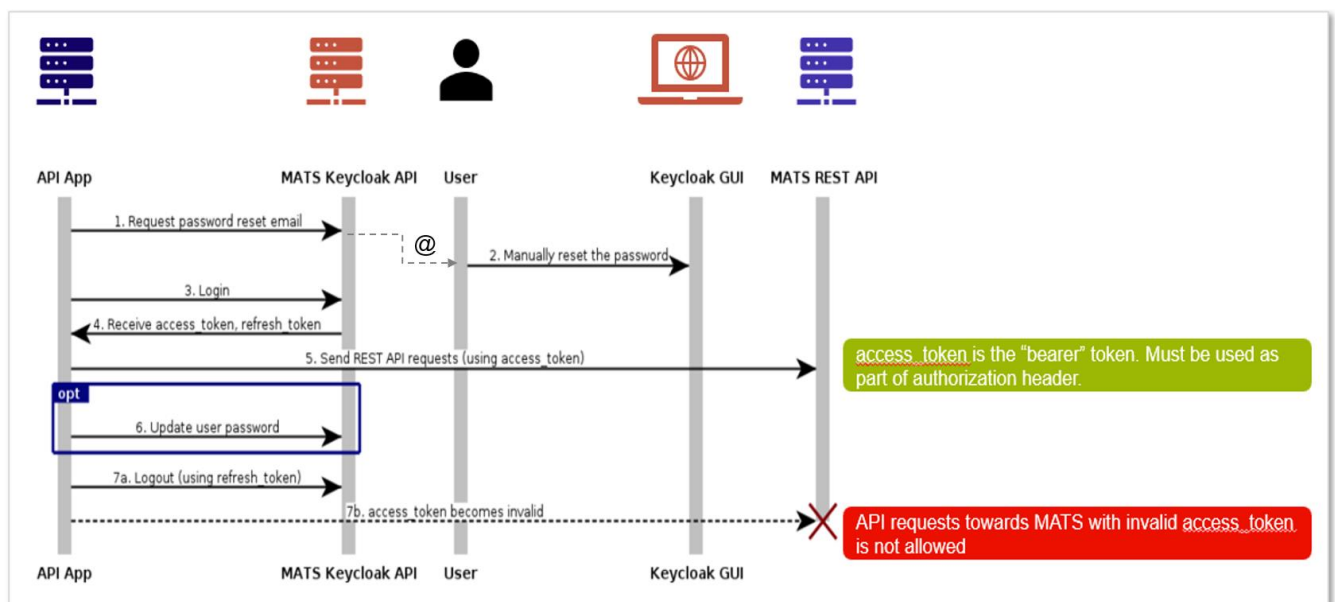
5.1.7 Know password expiry: *Retrieve user information*

If a user wants to know his/her password expiry date and time, then:

- Send the API request: **/protocol/openid-connect/userinfo**
- **password_expiry** included in the API response allows the user to preserve this information at the user's end and enables to update the password in a timely manner (before its expiry):

```
{
  "sub": "c693f903-0492-4467-b469-3a7e08599345",
  "password_expiry": "2025-07-23T08:16:56Z",
  "email": "user@company.com",
  "group": [
    "TRADER"
  ],
  "username": "USERA"
}
```

5.1.8 Sequence of actions



Customers using Push:

- 7a. Logout (using refresh_token) will automatically disconnect the user session from Push server as well.

5.1.9 Pay attention: User account lock out

Please note the below user account lockout policies

- After **5** failed connection attempts due to invalid credentials, user account will be permanently locked. User will be notified about the permanent account lockout via the email.
- In this case, please contact **Market Operations Team** to unlock the user account.

System consider failed connection attempt in one of the below situation:

- If API user **didn't provided MATS client certificate** when trying to login

- If API user provided a MATS client certificate but the **certificate is not valid**** when trying to login
- If API user provided **incorrect credentials** (i.e. login & password)

A client certificate is considered invalid, when it contains incorrect participant short name which must be included during the CSR creation. This information is part of the **O attribute in the CSR (refer **05 - MATS Client Certificate Guide For Web Client & API App.pdf** for more details about CSR creation rules).

5.1.10 Pay attention: Password expiry

The maximum age of a password is 90 days from the date the user last updated it.

In order to ensure a smooth rotation, we would advise the following:

1. Retrieve and store the password_expiry information (refer **section 5.1.7**) after the password is updated.
2. At least 1 day prior to the password_expiry, update user password (refer **section 5.1.6**).

Follow the above cycle each time the password is updated.

a) You forgot to update your password! What happens next?

If the user has not updated the password and the password expiry date/time has passed, then:

- If the user attempts to log in MATS after the password is expired, the below error message is returned in the API response:


```
{
  "error": "invalid_grant",
  "error_description": "Account is not fully set up"
}
```
- Along with the above mentioned error message, the email address linked to the user account will receive a Password reset email (refer **section 5.1.1**) automatically

If you encounter this situation, kindly proceed with the password reset process as instructed in the email.

CAUTION: Please note that if you attempt to log in more than 5 times with an expired password, then this is treated as invalid login attempts. This will lead to user account lockout (refer **section 5.1.9**).

5.2 Retrieve Reference Data

5.2.1 User configuration

b) Participant Info

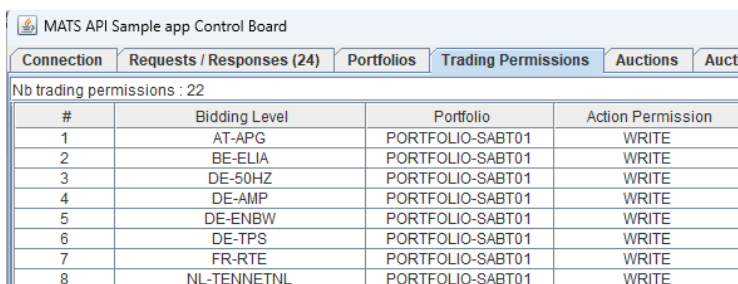
The **/api/participants** request enables to retrieve your MATS company/participant entity characteristics (name = “short Name”, company name, role, exchange name).

c) Trading permissions

For members and ISVs, the **/api/trading-permissions** request enables to retrieve:

- the list of portfolio / bidding level combination they are assigned to,
- along with their action permission = READ or WRITE triplets.

Sample Test Client example for a trader user:

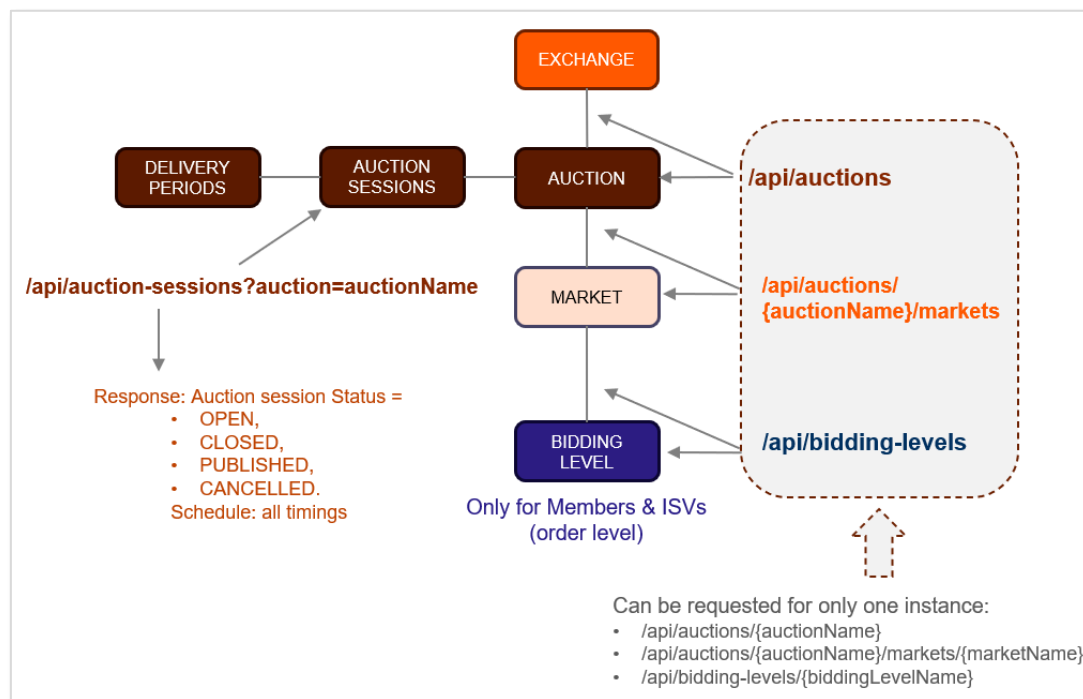


MATS API Sample app Control Board			
Connection	Requests / Responses (24)	Portfolios	Trading Permissions
Nb trading permissions : 22			
#	Bidding Level	Portfolio	Action Permission
1	AT-APG	PORTFOLIO-SABT01	WRITE
2	BE-ELIA	PORTFOLIO-SABT01	WRITE
3	DE-50HZ	PORTFOLIO-SABT01	WRITE
4	DE-AMP	PORTFOLIO-SABT01	WRITE
5	DE-ENBW	PORTFOLIO-SABT01	WRITE
6	DE-TPS	PORTFOLIO-SABT01	WRITE
7	FR-RTE	PORTFOLIO-SABT01	WRITE
8	NL-TENNETNL	PORTFOLIO-SABT01	WRITE

For non-market participants (« Data vendors »), who do not have any assigned bidding level (only required to submit orders), the response only lists all Market they have a READ permission on.

5.2.2 Auctions configuration

The MATS API gives the possibility to retrieve all required data to build the following Reference Data structure:



Please refer to the Sample Test Client starting sequence description for further details.

5.3 Order Management

For some functional background and illustrations, please refer to the following documents:

- the Functional package *MATS Fundamentals.pdf*
- Functional package appendices: *MATS - Delivery period illustration.xlsx*.

5.3.1 Order Requests

The MATS API enables you to manage your orders, based on the user's permissions:

Operation	Request for linear orders
Retrieve	Retrieve the current version of orders (which can only be in a ACTIVE status): • GET /api/auction-sessions/{auctionSessionId}/linear-orders • GET /api/auction-sessions/{auctionSessionId}/linear-orders/{linearOrderId} Retrieve Order history of one given order (ACTIVE or INACTIVE orders, DELETED orders cannot be retrieved): • GET /api/auction-sessions/{auctionSessionId}/linear-orders/{linearOrderId}?version=all
Submit	• POST /api/auction-sessions/{auctionSessionId}/linear-orders

	- The MATS API replies with your MATS order ids and a version number (starting at 1). Curve points: based on actual delivery start and end time, using auction sessions delivery periods. For both submission & modifications: Multiple orders can be added in the same request: you can optimize your requests by mixing several (portfolio/bidding levels) combinations in the same request. - If multiple orders are included in the request, the complete operation will fail at the first error encountered.
Modify	POST /api/auction-sessions/{auctionSessionId}/linear-orders - In case of modification, the order id featured in the response to a submission request must be provided in the API modification request. - Each modification increases the order version number. - The previous version of the order is set with a status = INACTIVE, which can be retrieved with a get linear order with the <i>version=all</i> query parameter.
Delete	DELETE /api/auction-sessions/{auctionSessionId}/linear-orders/{linearOrderId}
Delete All	DELETE /api/auction-sessions/{auctionSessionId}/linear-orders/all

Note: please refer to our MATS API portal to get messages for all order types.

5.3.2 Curve points and usage of delivery periods:

Curve points must indicate the delivery start and end delivery time:

- Request URL:** [/api/auction-sessions/17/linear-orders](#)
- Request Body:**

```
[ {
  "portfolioName" : "PORTFOLIO-T01",
  "biddingLevelName" : "DE-AMP",
  "duration" : 60,
  "settlementCurrency" : "EUR",
  "curves" : [ {
    "comment" : "Test",
    "deliveryStartDateTime" : "2024-11-04T23:00:00.000Z",
    "deliveryEndDateTime" : "2024-11-05T00:00:00.000Z",
    "curvePoints" : [ {
      "price" : -500.0,
      "volume" : 10
    }, {
      "price" : 4000.0,
      "volume" : 10
    } ]
  } ]
} ]
```

This can be achieved by using the Delivery Period reference data :

- Retrieve all delivery periods,

- and find “in memory” the delivery periods you need by filtering on your relevant auction session Id, duration (15, 30, or 60 minutes) and sequence number(s):

MATS API Sample app Control Board

Connection	Requests / Responses (108)	Portfolios	Trading Permissions	Auctions	Auctions Sessions	Auction Sessions Delivery Periods	Mark
Nb delivery periods : 1416							
#	Auction Session Id	Auction name	Sequence nb	Duration	Delivery Start DateTime	Delivery End DateTime	
1	21	CH	1	60	2024-12-20T23:00:00.000Z	2024-12-21T00:00:00.000Z	
2	21	CH	2	60	2024-12-21T00:00:00.000Z	2024-12-21T01:00:00.000Z	
3	21	CH	3	60	2024-12-21T01:00:00.000Z	2024-12-21T02:00:00.000Z	
4	21	CH	4	60	2024-12-21T02:00:00.000Z	2024-12-21T03:00:00.000Z	
5	21	CH	5	60	2024-12-21T03:00:00.000Z	2024-12-21T04:00:00.000Z	
6	21	CH	6	60	2024-12-21T04:00:00.000Z	2024-12-21T05:00:00.000Z	
7	21	CH	7	60	2024-12-21T05:00:00.000Z	2024-12-21T06:00:00.000Z	
8	21	CH	8	60	2024-12-21T06:00:00.000Z	2024-12-21T07:00:00.000Z	
9	21	CH	9	60	2024-12-21T07:00:00.000Z	2024-12-21T08:00:00.000Z	
10	21	CH	10	60	2024-12-21T08:00:00.000Z	2024-12-21T09:00:00.000Z	

Please refer as well to the Functional package appendices, *MATS - Delivery period illustration.xlsx* document.

5.3.3 Orders Life Cycle: status, order IDs & version

MATS introduces an order status that is visible in the API.

The Order Id determined by the MATS system do not change across the order life cycle (modifications, deletion).

The order version increases at each step (modification or deletion).

An optional *Client Order Id* enables:

- to map MATS Order Ids with customers’ internal order Ids, and can be modified during the order life cycle (e.g. when modifying the order, to match customers’ internal order Id logic).
- For block orders, mapping each sent block in one request with block order IDs determined by MATS (see below).

Client order Id format:

- upper and lower case letters,
- numbers,
- symbols: “-“, “_”.
- *Example: ORDER_ID-1*

5.3.4 Linear and Scalable complex orders

Order management life cycle: **Linear Orders** (and Scalable Complex orders)

Order Id, Version

MATS API

- › **Creation:** key = auction session Id / portfolio / bidding level / duration
 - › 1 single linear order per key
 - › ACTIVE status
 - › Optional *Client Order Id* (will be provided in all responses, incl. Retrieve)
- › **Modification:**
 - › key = creation key + order Id
 - › **order Id must be provided and does NOT change**
 - Error if the order Id is not provided :*
 - Error code = OLSIF0036 "You cannot submit more than 1 linear order for the Portfolio: COMPANYA-T02, Bidding Level: BE-ELIA and Duration: 60. Order submission is rejected"
 - › new version = previous version +1
 - › *Client Order Id* can be modified (to fit your own order life cycle)
- › **Deletion:** DELETED status; same order Id; new version = previous version +1
- › **Retrieval:**
 - › only the ACTIVE version of linear orders related to an auction session. (DELETED orders are not visible).
 - › Possibility to retrieve all versions of an ACTIVE order.

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5.3.5 Block orders

Order management life cycle: **Block Orders**

Order Id, Version

MATS API

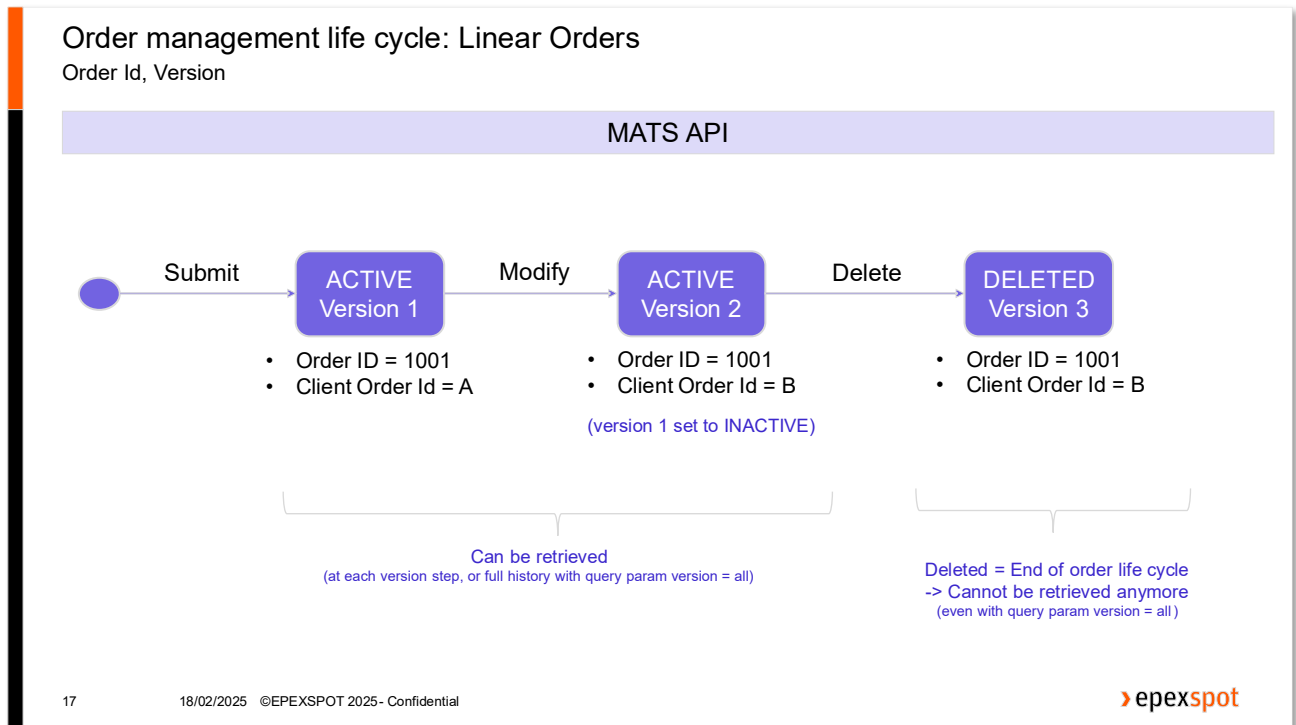
- › **Creation:** key = auction session Id / portfolio / bidding level / duration
 - › If the Order Id in the request does not exist in MATS : considered as a new order.
 - › The range [1, 9999] is reserved to customers virtual/temporary order Ids.
 - › Optional *Client Order Id* (will be provided in all responses, incl. Retrieve).
 - › blockCodePRM and Order Id: Parent-child relation (see next slide).
- › **Modification:**
 - › Same behavior as Linear orders.
 - › When needing to modify a block order, **if this block is part of a family or group**, then all block orders which are part of this family or group must be provided in the modification request (even if no change is performed).
- › **Deletion:**
 - › When deleting a block order, **if this block is part of a family or group**, then all block orders which are part of this family or group are deleted.
- › **Retrieval:**
 - › Same behavior as Linear orders.

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5.3.6 Illustration diagram

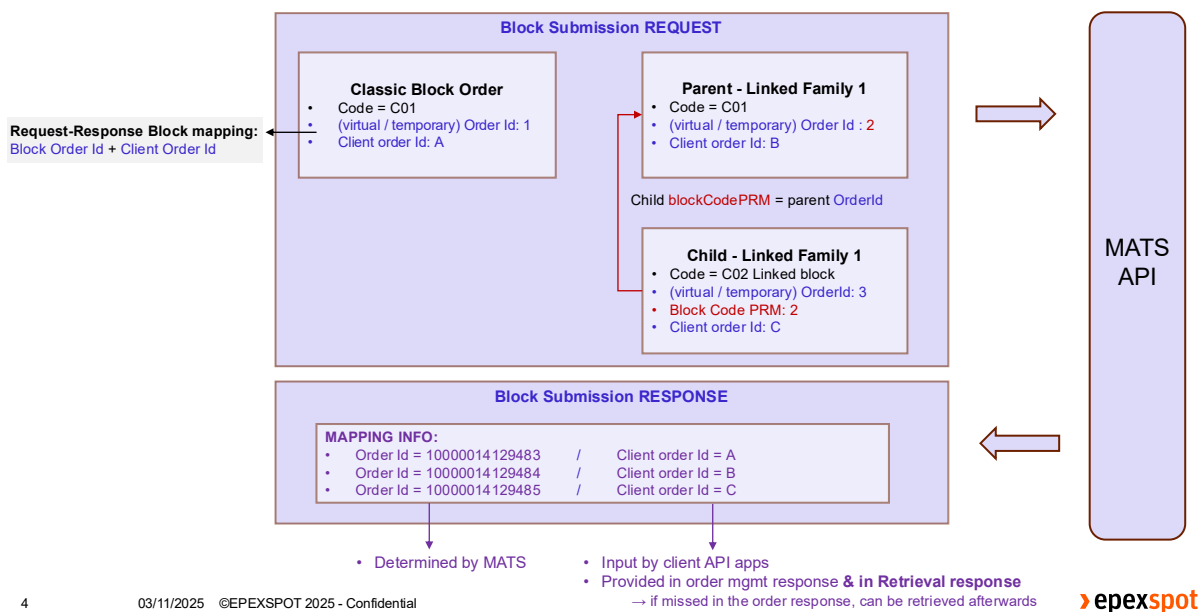
a) Version Update



b) Block Mapping – Order Id, Client Order Id, BlockCodePRM

Order management life cycle: Block Orders

Mapping with Client Order Id



5.3.7 Future-To-Spot (FTS) orders

a) Future-To-Spot Fundamentals & Process

Unlike other order types available, traders are not allowed to submit a FTS order in the trading system, as per the process. The integration of FTS positions is managed via a dedicated process as defined by the exchange.

Please refer **MATS Fundamentals.pdf** for the more detailed information FTS fundamentals and process.

Additionally, trading members can refer to operational rules and procedure for FTS from the document(s) available in the **Member Area - Download** section of **EPEX SPOT** Website.

b) Future-To-Spot Life Cycle

1. Import :

- market operators import in the trading system an FTS order file,

2. Automatic Orders creation in MATS:

- this file import triggers the automatic creation of **future-to-spot (FTS) orders** (each one corresponding to delivery period of a week or a month)
- **For each FTS order**, the system creates all related **linear orders** to cover the corresponding delivery period, with the "ACTIVE" status (1 linear order per delivery day)

3. Confirmation:

- Once an FTS order is created, trading users must follow the below action:
- "Confirm" the future-to-spot order before its respective auction session (before the first auction session run of the week or month)

If the **FTS order is not confirmed**, the corresponding linear orders which contain the FTS positions **will not be considered in the matching process during the auction run**.

Once FTS order is confirmed, the respective linear orders will be considered for the matching process and the information about executed volume can be verified/used based on the linear order results available.

Please note that FTS orders are not part of the auction results. But rather the associated linear orders are part of the auction results.

c) Future-To-Spot Order Requests

The MATS API enables you to manage FTS orders and associated linear orders, based on the user's permissions:

Operation	Request for FTS & linear orders
Retrieve	Retrieve the current version of orders (which can only be in a ACTIVE status): • GET /api/auction-sessions/future-to-spot-orders Retrieve Order history of one given order (ACTIVE or INACTIVE orders, DELETED orders cannot be retrieved):

	• GET /api/auction-sessions/future-to-spot-orders/{futureToSpotOrderId}?version=all Retrieve linear orders associated to FTS order: • GET /api/auction-sessions/{auctionSessionId}/linear-orders?future-to-spot-order-id={FTS order id} Retrieve FTS order statistics associated to an auction session: • GET /api/auction-sessions/{auctionSessionId}?include[]=order-book-statistics
Confirm	An user can confirm the FTS order: • PATCH /api/future-to-spot-orders/{futureToSpotOrderId}

5.3.8 Management of CPM (Cross Product Matching)

With the introduction of 15 minute granularity (“15 MTU”) and Cross Product Matching, users will have the below possibilities:

1. Able to submit orders in durations 60, and/or 30, and/or 15 for the same combination of (auction date, portfolio, bidding level)
 - a. Kindly note that if you are a trader active in any of our Service Partner Exchanges (HUPX, BSP etc.) then the configuration might differ depending on the exchange.
 - b. We advise you to always check the available configuration via the below GET API end points:
 - i. **/api/bidding-levels**
 - ii. **/api/bidding-levels/{biddingLevelName}**
2. Able to retrieve market results (MCP & MCV) in Market Time Unit,
3. Able to retrieve aggregated results in Market Time Unit,
4. Able to retrieve trade results in Market Time Unit,
5. Able to retrieve individual order results in the same granularity as the submitted order duration.

a) Key aspects of 15MTU & CPM

SDAC 15 MTU – MATS API Impacts

API Order management & duration

- The MATS API enables to handle order submission in 15-, 30-, and 60-minute granularity thanks to the **duration** field & auction sessions **delivery periods**.
- Order requests require UTC start & end delivery times...
- ...that can be found in the list of delivery periods: auction session Id, duration
- You can find **available durations at bidding level**:



Bidding Level name	Durations
CH-SGD	[60]
AT-APG	[15, 30, 60]
BE-ELIA	[15, 30, 60]
DE-50HZ	[15, 30, 60]
DE-AMP	[15, 30, 60]
DE-ENBW	[15, 30, 60]
DE-TPS	[15, 30, 60]

#	Auction Session Id	Auction name	Sequence nb	Duration	Delivery Start DateTime	Delivery End DateTime
385	29	CORE	1	60	2024-11-21T23:00:00.000Z	2024-11-22T00:00:00.000Z
386	29	CORE	2	60	2024-11-22T00:00:00.000Z	2024-11-22T01:00:00.000Z
387	29	CORE	3	60	2024-11-22T01:00:00.000Z	2024-11-22T02:00:00.000Z
388	29	CORE	4	60	2024-11-22T02:00:00.000Z	2024-11-22T03:00:00.000Z
389	29	CORE	5	60	2024-11-22T03:00:00.000Z	2024-11-22T04:00:00.000Z
390	29	CORE	6	60	2024-11-22T04:00:00.000Z	2024-11-22T05:00:00.000Z
391	29	CORE	7	60	2024-11-22T05:00:00.000Z	2024-11-22T06:00:00.000Z
392	29	CORE	8	60	2024-11-22T06:00:00.000Z	2024-11-22T07:00:00.000Z

ORDER SUBMISSION request: 60mn example

- Request URL `/api/auction-sessions/29/linear-orders`
- Request Body:

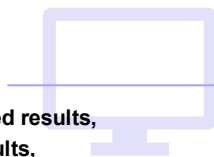
```
{
  "portfolioName": "PORTFOLIO-T01",
  "biddingLevelName": "BE-ELIA",
  "duration": 60,
  "settlementCurrency": "EUR",
  "comment": "Best",
  "deliveryStartDateTime": "2024-11-22T00:00:00.000Z",
  "deliveryEndDateTime": "2024-11-22T01:00:00.000Z",
  "curvePoints": [
    {
      "price": -500.0,
      "volume": 10.1
    },
    {
      "price": 4000.0,
      "volume": 10.1
    }
  ]
}
```

Note: you can **combine in the same request** 15, 30 and 60 duration orders (e.g. on same or different portfolios, bidding levels)

SDAC 15 MTU – MATS API Impacts

API results

- The following results will always be published with **15-minute granularity**:
 - JSON format:
 - Public results
 - Private Aggregated results,
 - Private Trade results,
 - Reports (XML):
 - Trade Reports.



example

```
{
  "_data": [
    {
      "auctionSessionId": 1,
      "marketName": "MARKET",
      "duration": 15,
      "indexResults": [
        {
          "indexDefinitionName": "BaseLoad",
          "priceIndexes": [
            {
              "price": 60.15,
              "currency": "EUR"
            }
          ],
          "volume": 80.4
        }
      ],
      "periodResults": [
        {
          "deliveryStartDateTime": "2024-11-22T23:00:00.000Z",
          "deliveryEndDateTime": "2024-11-22T23:15:00.000Z",
          "priceIndexes": [
            {
              "price": 59,
              "currency": "EUR"
            }
          ],
          "volume": 80.5
        },
        {
          "deliveryStartDateTime": "2024-11-22T23:15:00.000Z",
          "deliveryEndDateTime": "2024-11-22T23:30:00.000Z",
          "priceIndexes": [
            {
              "price": 58,
              "currency": "EUR"
            }
          ],
          "volume": 40.9
        }
      ]
    }
  ]
}
```

SDAC 15 MTU – MATS API Impacts

API results

- › The following **Individual order results** will always be published with the **same granularity as the order duration**.

- › **Linear order results,**
- › **Block order results,**
- › **Scalable complex order results.**

example

- › **Mixed case:**

- › Reports (CSV):
 - Public Market Results: in 15-minute,
 - Private Aggregated Results: in 15-minute,
 - Individual Order Results: **same granularity as the order duration**.

```
{
  "data": [
    {
      "auctionSessionId": 1,
      "portfolioName": "PORTFOLIO-T01",
      "biddingLevelName": "BIDDINGLEVEL",
      "duration": 60,
      "orderId": 1000000007885,
      "settlementCurrency": "EUR",
      "periodResults": [
        {
          "orderPeriodId": 1000000056885,
          "deliveryStartDate": "2023-11-22T00:00:00.000Z",
          "deliveryEndDate": "2023-11-22T01:00:00.000Z",
          "paradoxically": "No",
          "paradoxicallyRejectedVolume": 0,
          "executedVolume": 100.01
        }
      ]
    },
    {
      "auctionSessionId": 1,
      "portfolioName": "PORTFOLIO-T01",
      "biddingLevelName": "BIDDINGLEVEL",
      "duration": 15,
      "orderId": 1000000007886,
      "settlementCurrency": "EUR",
      "periodResults": [
        {
          "orderPeriodId": 1000000056886,
          "deliveryStartDate": "2023-11-22T00:00:00.000Z",
          "deliveryEndDate": "2023-11-22T00:15:00.000Z",
          "paradoxically": "No",
          "paradoxicallyRejectedVolume": 0,
          "executedVolume": 51.05
        }
      ]
    }
  ]
}
```

33

03.11.2025 ©EPEXSPOT 2024 - Confidential

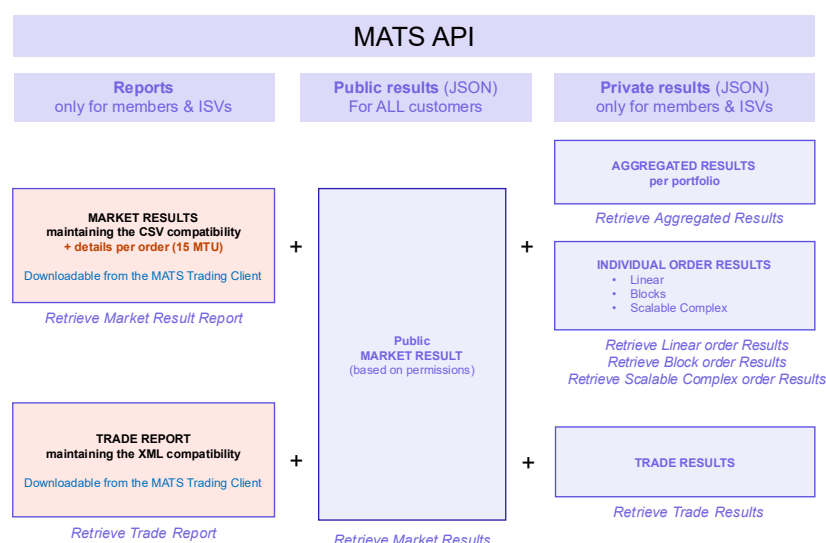
epexspot

5.4 Market Results

5.4.1 Market Results overview

The below diagram shows the market results and trade reports are available in MATS:

MATS API market results – Members, ISVs & Data Vendors



5

03/11/2025 ©EPEXSPOT 2024 - Confidential

epexspot

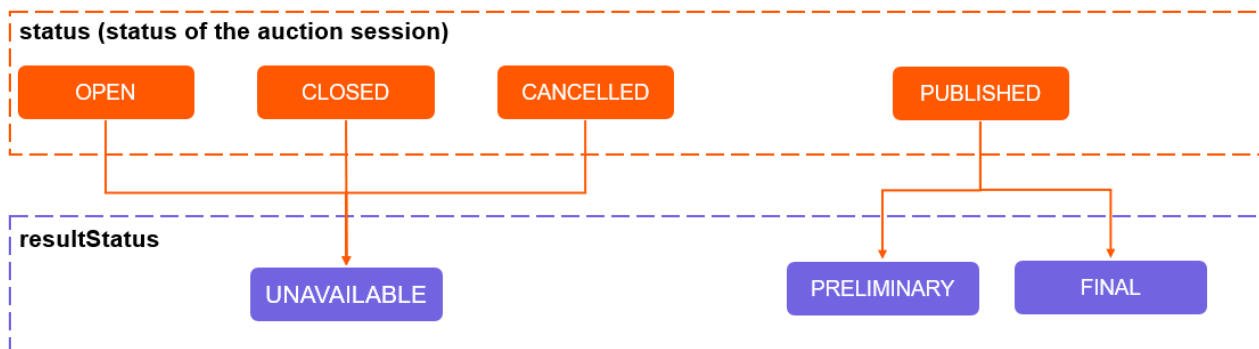
5.5 Auction session status & Result status

Please find below the pictorial representation about the co-existing relation between auction session status and result status.

- When the *status* of the auction session is OPEN or CLOSED or CANCELLED, then *resultStatus* will be “UNAVAILABLE”.
- When the status of the auction session is PUBLISHED, then *resultStatus* will be “PRELIMINARY” or “FINAL”.

For local auctions, the possible values are: UNAVAILABLE or FINAL

For coupled auctions, the possible values are: UNAVAILABLE or PRELIMINARY or FINAL



Please find below an example of API response for which “**status**”: “**OPEN**” & “**resultStatus**”: “**UNAVAILABLE**”. Here “**status**” is the auction session status.

```
{
  "_data": [
    {
      "id": 1,
      "auctionName": "CORE",
      "status": "OPEN",
      "currency": "EUR",
      "timeZone": "CET/CEST",
      "scopeDefinition": {
        "displayName": "PWR-MRC-D+1"
      },
      "resultStatus": "UNAVAILABLE",
      "schedule": {
        "auctionSessionDateTime": "2025-02-16T13:00:00.000Z",
        "orderEntryStartDateTime": "2025-01-02T13:00:00.000Z",
        "orderEntryEndDateTime": "2025-02-16T13:00:00.000Z",
        "publicationDateTime": "2025-02-16T13:45:00.000Z",
        "deliveryPeriodStartDateTime": "2025-02-16T23:00:00.000Z",
        "deliveryPeriodEndDateTime": "2025-02-17T23:00:00.000Z",
        "horizonDateTime": "2025-02-22T23:00:00.000Z",
        "maxCancellationDateTime": "2025-02-16T16:40:00.000Z"
      }
    }
  ]
}
```

5.6 Trading Limits (TL)

5.6.1 Fundamentals

Please refer to **MATS Fundamentals.pdf**.

5.6.2 Trading Limits Life Cycle

Several **events types** can lead to a **change of Trading Limits** for a given member in the trading system:

1. **After an upload in the trading system** (of the first TL version or of a subsequent version): Member Trading Limits may be updated several times a day in the trading system (*) with variations between business days and non-business days.
2. **After an order management action** done by any trader user (in the MATS client or via the API) of the member.
3. **After an auction Market results publication:**
 - a. Before the auction is run, a “worse case” execution scenario is taken into account in the TL calculation.
 - b. Once the auction is being run and the executed quantities determined, the risk is lifted and the TL is recalculated.

5.6.3 Trading Limits setup for ISVs in Test

For ISVs willing to implement a Trading limits retrieval in their API app:

- please note that by default only members have a trading limit defined in MATS **Test** environments, ISVs having no trading limits setup, which functionally means an “**infinite limit**”.
- This means you need to contact Market operations to get an actual TL set up if interested.

5.6.4 Trading Limits Requests

The MATS API enables you to retrieve the trading limit information, based on the user's permissions:

Operation	Request for trading limits
Retrieve	Retrieve the list of settlement members associated with the portfolios for which the user has at least read permissions. The settlement member anme and account information within this response could potentially can be reused to link with the trading limits which could be retrieved : • GET /api/settlement-members

	Retrieve the list of trading limits associated with the settlement member accessible to the user for a given clearing date or retrieve a trading limit using the mainId for a given clearing date: • GET /api/trading-limits?clearing-date{date in the format yyyy-mm-dd} • GET /api/trading-limits/{mainId}?clearing-date{date in the format yyyy-mm-dd} Retrieve the trading limit usages using the mainId of the trading limit for the detailed exposure information per (portfolio, bidding level, order type) combination: • GET /api/trading-limits/{mainId}/usages?clearing-date{date in the format yyyy-mm-dd}
--	--

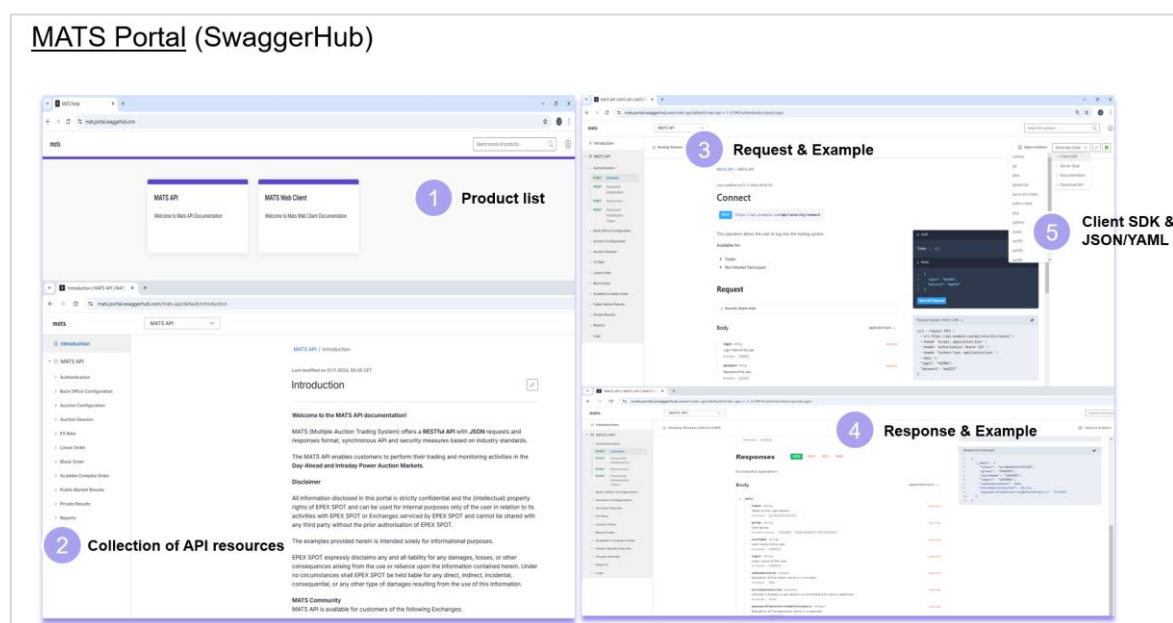
Note: please refer to our **MATS API portal** for more detailed information

6. MATS API schema & messages definitions and examples

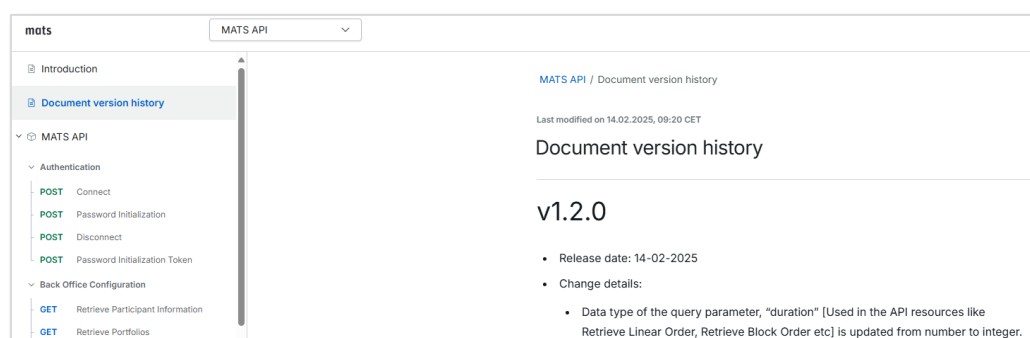
Please consult this section in conjunction with our [MATS online portal](#):

- 1) Access to the “products list”:
 - the API documentation
 - the MATS Web Client user guide
- 2) Collection of API resources :
 - all details about requests and responses data & format.
- 3) Requests definition and example messages.
- 4) Responses definition and example messages.
- 5) Export the API schema for your target language.

Note : for sample messages corresponding to your setup, please use our Sample Test Client.



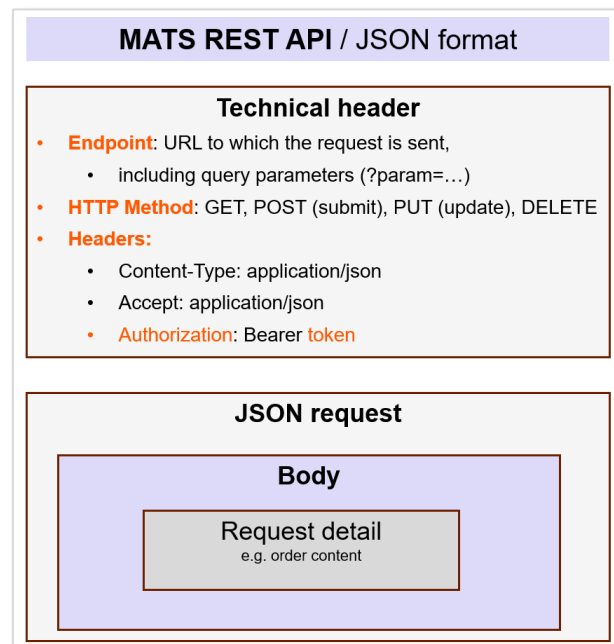
Please always check the **Document Version History** to be aware of the last changes:



7. REST API Messages structure

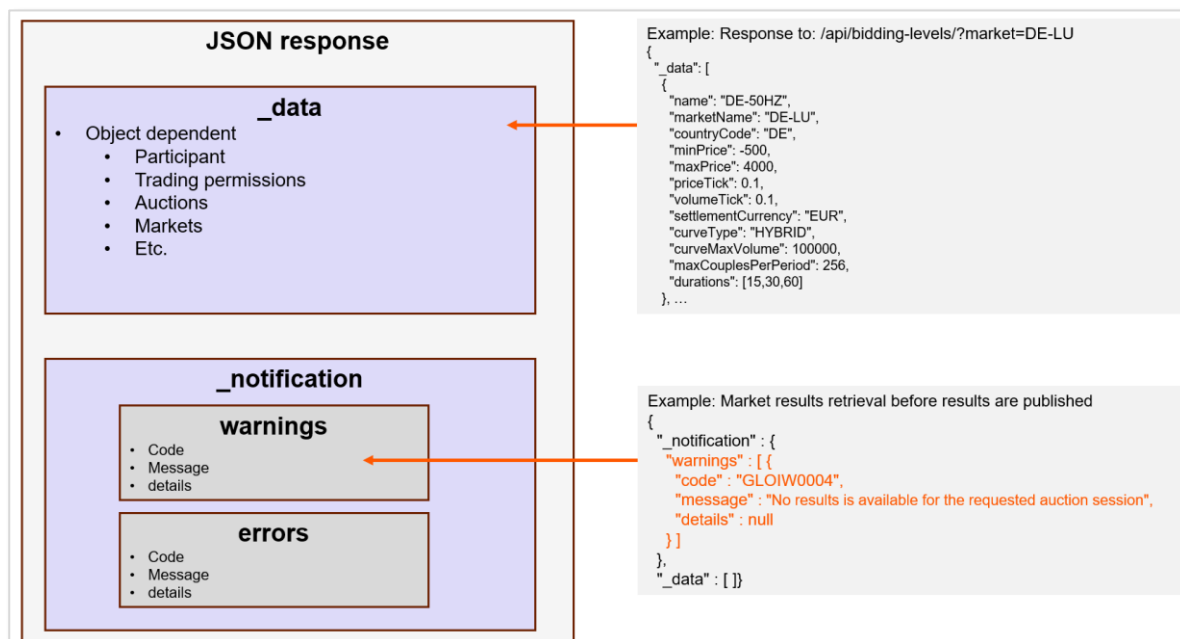
7.1 Requests

Requests are compound of a technical header and a JSON body:



7.2 Responses

Responses are compound of a `_data` part and a `_notification` part for potential warnings and errors.



8. Warning and Error management

As shown above in the 7.2 Responses section diagram, warnings and notifications are optional part within a response message.

You can find in the API package a list of the main warning and error codes.

9. How to handle DST

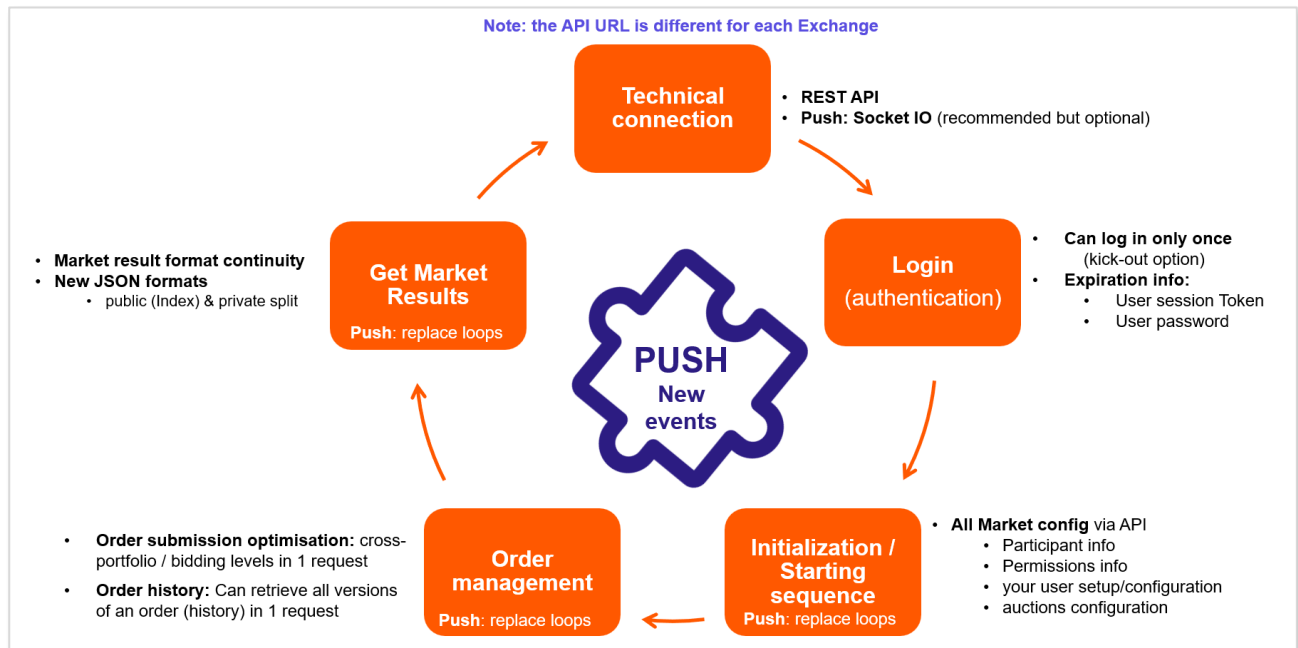
When submitting orders or retrieving results, API users need to refer to **delivery periods** in UTC format.

For the usage of delivery periods please refer to:

- the 5.2.2 section in this document
- to the Functional package appendices, *MATS - Delivery period illustration.xlsx* document, that contains examples for a regular days and both DTS23 and 25.

10. Typical structure of MATS API application

Here is a diagram showing the typical structure of an API application, with its different bricks from the initial technical connection to getting market results.



For the technical connection, please note that the **API URL** will be specific to each **Exchange**.

10.1 Remote user Agent

Customer API apps : indicate your app name

Please fill in the **User Agent http header** when sending a request:

➤ To facilitate the conformance test analysis and general API application monitoring,

➤ **User-Agent** = <product>/<product-version> <comment>

- With product = [member, DV or ISV name] – [Application name]
- Example: `EpexSpot-JavaSampleTestClient/1.4`



11. Java Sample Test Client

The API package contains a sample test client, Implemented in Java, for illustration purposes.

This client should never be used in production, only in simulation.

11.1 Get Started

11.1.1 How to download the Sample Test client

Please download the package. zip file as indicated in any MATS EPEX SPOT Info or DatanewZ.

11.1.2 How to install the Sample Test client

Unzip the package: the client is in the *12-Sample App & Code\01-Java Executable app* folder.

Caution: the client cannot be run directly from the zip file.

11.1.3 How to launch the Sample Test client

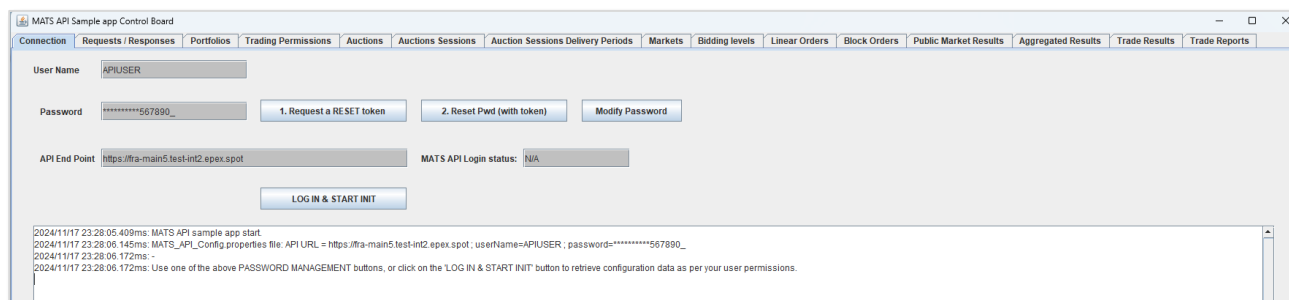
Double click on the following file: *Launch MATS API sample Test Client.bat*

11.2 Functionalities

11.2.1 Overview

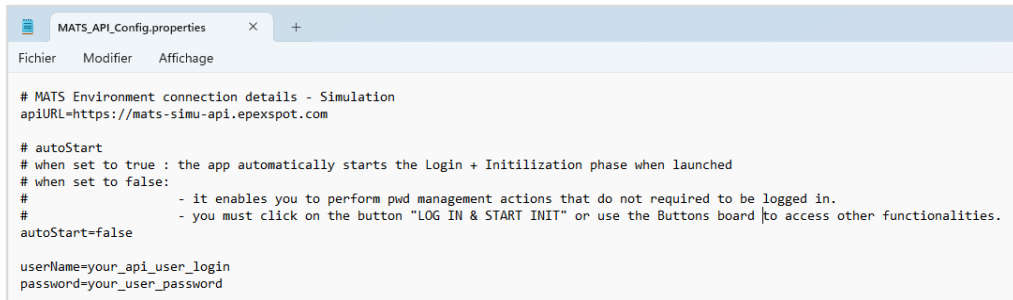
The test client is designed to:

- Manage passwords:
 - Button #1: receive a new email with a token to reset your user password (to be used in the initial token you receive at user creation already expired after 24 hours)
 - Button #2: set/reset a user password thanks to the password token received by email (resulting from a user creation or from having clicked on button #1)
 - Button #3: when you are connected, modify your current password.
- Retrieve your user and auctions configuration: button “LOG IN & START INIT”



11.2.2 Configuration file

You must first update the MATS_API_Config.properties with your own credentials (at least your user, to be able to use buttons #1 & #2), user and password for other functionalities.



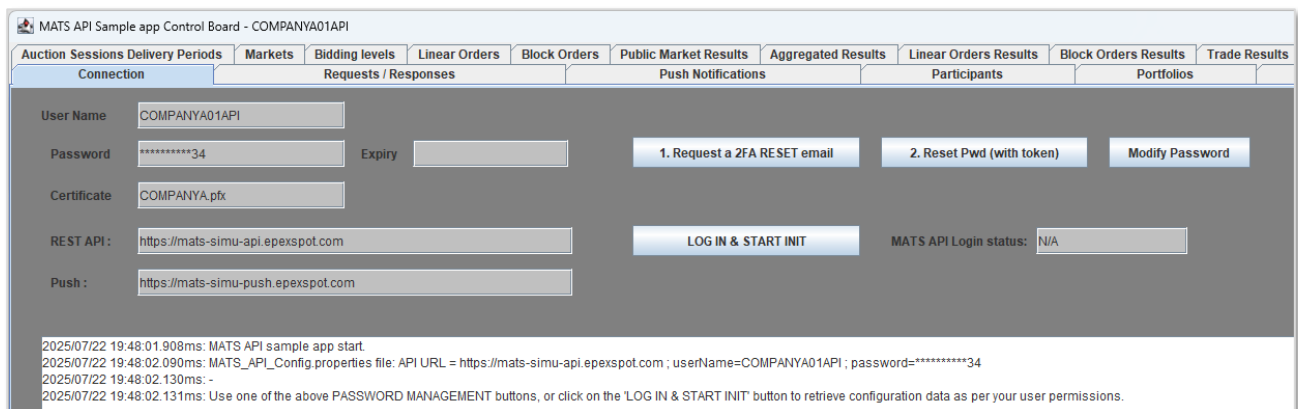
```
# MATS Environment connection details - Simulation
apiURL=https://mats-simu-api.epexspot.com

# autoStart
# when set to true : the app automatically starts the Login + Initialization phase when launched
# when set to false:
# - it enables you to perform pwd management actions that do not required to be logged in.
# - you must click on the button "LOG IN & START INIT" or use the Buttons board to access other functionalities.
autoStart=false

userName=your_api_user_login
password=your_user_password
```

11.2.3 STARTing/INITialization sequence

The “LOG IN & START INIT” button



MATS API Sample app Control Board - COMPANYS01API

Auction Sessions	Delivery Periods	Markets	Bidding levels	Linear Orders	Block Orders	Public Market Results	Aggregated Results	Linear Orders Results	Block Orders Results	Trade Results
Connection		Requests / Responses			Push Notifications		Participants		Portfolios	

User Name:

Password: Expiry:

Certificate:

REST API:

Push:

Buttons: 1. Request a 2FA RESET email, 2. Reset Pwd (with token), Modify Password, LOG IN & START INIT

MATS API Login status:

Log messages:

```
2025/07/22 19:48:01.908ms: MATS API sample app start.
2025/07/22 19:48:02.090ms: MATS_API_Config.properties file: API URL = https://mats-simu-api.epexspot.com ; userName=COMPANYS01API ; password=*****34
2025/07/22 19:48:02.130ms: -
2025/07/22 19:48:02.131ms: Use one of the above PASSWORD MANAGEMENT buttons, or click on the 'LOG IN & START INIT' button to retrieve configuration data as per your user permissions.
```

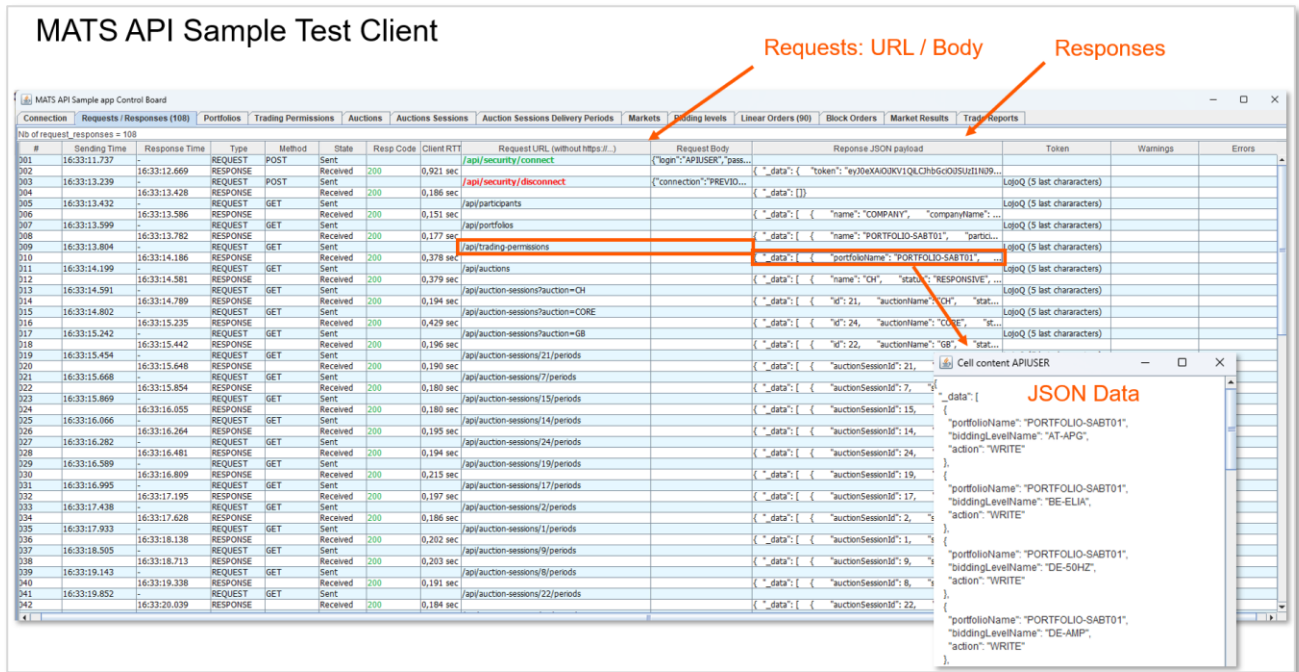
The *Initialization/starting sequence* performs the following actions:

1. Login: Connect
 - If already connected: Disconnect previous session
2. Request Participant info
3. Request Portfolios
4. Retrieve Trading permissions
5. Retrieve Auctions
6. Retrieve Auctions sessions
 - For each auction session, retrieve Delivery Periods
7. Retrieve Markets
8. Retrieve Bidding Levels

Each request/response can be visualized in the dedicated tab:

MATS API Sample Test Client

Requests: URL / Body Responses



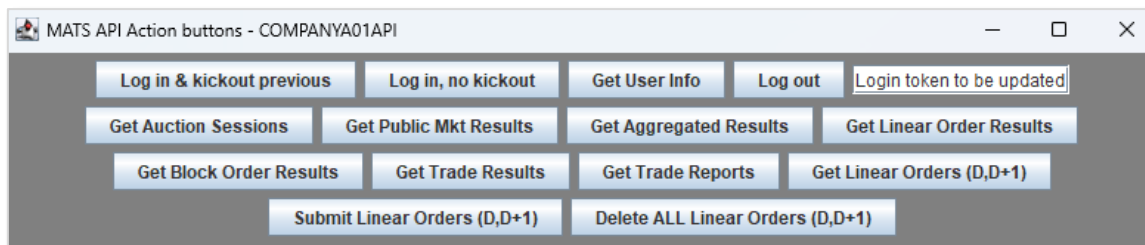
The screenshot displays the MATS API Sample Test Client interface. The top navigation bar includes tabs for Connection, Requests/Responses (108), Portfolios, Trading Permissions, Auctions, Auction Sessions, Auction Sessions Delivery Periods, Markets, Bidding Levels, Linear Orders (90), Block Orders, Market Results, and Trade Reports. The 'Requests/Responses (108)' tab is active, showing a table of requests and responses. A red box highlights a specific request, and a red arrow points to the 'Responses' tab. A red box also highlights the 'JSON Data' section of the response.

11.2.4 Action Buttons board

The button board enables to:

- Explore manually the impacts or connecting / disconnecting with their different option (combined with a "Test request" that will succeed or failed depending on whether or not your user has an active token)
- Access other functionalities related to:
 - different results retrievals,
 - linear order management:
 - retrieve your linear orders
 - submit a sample linear orders on all open auction sessions and bidding levels your user is assigned to
 - delete all linear orders your user can access.

MATS API Action buttons - COMPANIA01API



The screenshot displays the MATS API Action buttons board. The board contains buttons for various actions: Log in & kickout previous, Log in, no kickout, Get User Info, Log out, Login token to be updated, Get Auction Sessions, Get Public Mkt Results, Get Aggregated Results, Get Linear Order Results, Get Block Order Results, Get Trade Results, Get Trade Reports, Get Linear Orders (D,D+1), Submit Linear Orders (D,D+1), and Delete ALL Linear Orders (D,D+1).

11.2.5 Linear orders tab update

In the 1.4 API package app version, it becomes possible to directly manage orders from the “Linear orders” tab.

You can submit sample linear orders, then select a specific row and click on one of the “selected” available buttons:

- MODIFY selected : increases the price,
- DELETE selected,
- ALL VERSIONS of selected : send a retrieve all version for this order. The outcome is displayed in the Requests/Responses tab.

MATS API Sample app Control Board - COMPANYN01API																										
Auction Sessions (464)		Delivery Periods (984)		Markets (79)		Bidding Levels (91)		Linear Orders (10)		Block Orders		Public Market Results		Aggregated Results		Linear Orders Results		Block Orders Results		Trade Results		Trade Reports				
Connection			Requests / Responses (308)			Push Notifications (13)			Participants			Portfolios (1)			Trading Permissions											
			Search			All			All			Get Linear Orders (D,D+1)			Submit Linear Orders (D,D+1)			MODIFY selected			DELETE selected			ALL VERSIONS of selected		
#	Order Id	Auction Session Id	Auction Name	auction Session Date TL	Portfolio	Bidding Level	Duration	Status	Version	User name	settled															
1	100000000035099	1147	30-call-GB	2025-02-25T15:30:00.00...	COMPANYA-T02	GB-NG-30min	30	ACTIVE	1	COMPANYA01API																
2	100000000035100	1134	30-call-GB	2025-02-24T15:30:00.00...	COMPANYA-T02	GB-NG-30min	30	ACTIVE	1	COMPANYA01API																
3	100000000035101	811	CH	2025-02-25T10:00:00.00...	COMPANYA-T02	CH-SGD	60	ACTIVE	1	COMPANYA01API																
4	100000000035102	1146	CH-IDA1	2025-02-25T16:40:00.00...	COMPANYA-T02	CH-SGD-IDA1	60	ACTIVE	1	COMPANYA01API																
5	100000000035103	1131	CH-IDA1	2025-02-24T16:40:00.00...	COMPANYA-T02	CH-SGD-IDA1	60	ACTIVE	1	COMPANYA01API																
6	100000000035104	1145	CH-IDA2	2025-02-25T09:30:00.00...	COMPANYA-T02	CH-SGD-IDA2	60	ACTIVE	1	COMPANYA01API																
7	100000000035105	809	CORE	2025-02-25T13:00:00.00...	COMPANYA-T02	AT-APG	60	ACTIVE	2	COMPANYA01API																
8	100000000035106	809	CORE	2025-02-25T13:00:00.00...	COMPANYA-T02	BE-ELIA	60	ACTIVE	1	COMPANYA01API																
9	100000000035107	809	CORE	2025-02-25T13:00:00.00...	COMPANYA-T02	DE-50HZ	60	ACTIVE	1	COMPANYA01API																
10	100000000035108	809	CORE	2025-02-25T13:00:00.00...	COMPANYA-T02	DE-AMP	60	ACTIVE	1	COMPANYA01API																

12. Timeout and recovery procedure

When an external client app experiences a timeout, in 99% of situations, the root cause is one (or a combination) of the following elements:

1. **Transport time between the client app and the MATS backend server:**
 - Factors such as network latencies, Internet speed can affect the transport time.
2. **Processing time at backend server level:**
 - Unmarshalling , marshalling (not linear) mainly depends on message size.
3. **MATS backend server Processing time**, which depends on the default MATS timeout:

« default MATS backend server » timeout is always = 30 seconds:

- a) **If the processing time < 30 seconds, then a success response is sent back** to the client app within these 30 seconds (as soon as available)
- b) **If > 30 seconds**, then the timeout is reached and a **generic failure response** is sent back to the client app ("**Internal Error**" : see below). The request processing is cancelled and no partial integration or modification or deletion of data is performed on MATS API side.

```
{
  "_notification": {
    "errors": [{
      "code": "500",
      "message": "Internal Error: {error id}. Please contact support, and provide error id.",
      "details": null
    }]
  }
}
```

Note : we will customize this generic error message in an upcoming release (to explicitly refer to a timeout issue) and communicate about this change when implemented.

12.1 Time out and message size recommendation

We recommend you to setup a 60 seconds timeout at client API application level.

Messages size of the API request body should not exceed 4 Mb.

If exceeded, then system will reject the request and sent back an error message. Please refer to **02a-MATS REST API Errors & Warnings.xlsx** for more details.

12.2 Time out recovery procedure recommendation

Your API application should get an answer in 99% of situations, but in case your API app sends a request and does not receive any response after having waited for 60 seconds, we recommend the following:

1. [Raise an internal warning and inform EPEX](#) so that we can investigate what happened
2. [Check the state of your technical HTTPS connection](#) and recreate one if necessary
3. [Your application is responsible for checking whether or not the request that timed out has been processed:](#)
 - a. **If a retrieval request timed out:**
 - it is of course enough to just resend it (there was no other expected result than a response)
 - b. **If an order management request timed out:**
 - you must retry by sending a new order management request as system does not continue processing the request which has been already received if time out is exceeded
4. If your new request times out again:
 - a. Logout and log back in (API: *Connect* resulting in a new token)
 - b. Repeat the same steps:
 - i. Either the issue is solved
 - ii. Or the same issue remains
 - c. In any case please inform EPEX so that we can investigate what happened

13. Handling of server error and retry mechanism

Due to any unexpected situation if the trading system is unavailable (in such cases you can expect a HTTP status code: 5xx), we recommend the following:

1. [Raise an internal warning and inform EPEX](#) so that we can investigate what happened
2. [Implement a retry mechanism](#) for REST API requests that encounter 5xx server errors.
3. [Limit the maximum number of retries to avoid indefinite loops](#) and optionally, based on your operational business process and impacts, after the maximum limit of retries reached fall back to the back-up process (if any) at customer side for the business continuity.
 - a. Recommended value of maximum of retry attempts = 5 or higher
4. Incorporate [an exponential backoff strategy](#) to introduce progressively longer delays between each retry attempt.

$$delay = initialDelay * factor^{retryAttempt}$$

Where:

- *initialDelay*: is the initial delay value. Recommended value is 2 seconds or higher.
- *factor*: is the value resulting in a doubling of delay with each retry. Recommended value is 2.
- *retryAttempt* is the retry attempt number starting from 0