Special Documentation
SupplyCare Hosting API

Brief description of the API (Application Programming Interface) of the software application SupplyCare Hosting for the synchronization with third-party clients.

Endress+Hauser

People for Process Automation

Table of contents

1   Introduction

SupplyCare Hosting is a cloud-hosted software for inventory monitoring and supply chain management. Main purpose of the software is to collect, consolidate and visualize inventory data of tanks, silos and containers. The collected and processed inventory data include the inventory, demands, delivieries and consumption. It is a scalable solution from simple onsite monitoring up to complex supply chain management worldwide. Todays supply chains often require synchronization between different systems (i.e. ERP) and therefore SupplyCare offers a comprehensive API.

2   Scope

The scope of this document is to present a brief description and examples of the SupplyCare API services and the mechanisms by which a third-party client application and SupplyCare may exchange data.

The presented services will be:
- Measurement values
- Master data

In this document the main workflows of the interface are described as well as how to find detailed information on exchangeable data fields and technical definitions.

3   General comments
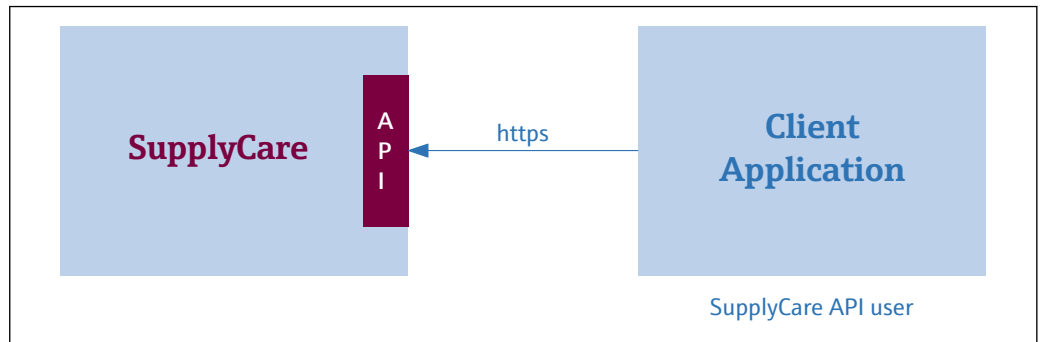
⊡ 1   *Client application accessing to SupplyCare API*

3.1   RESTful API

SupplyCare API services are based on HTTP REST and therefore the standard methods such as GET, POST, PUT, PATCH and DELETE are used.

3.2   Encryption

For security reasons any request to the API must be done encrypted via HTTPS. For compatibility reasons the API supports TLS versions from 1.2 on. We always recommend that third-party clients keep themselves up to date to the latest version for security reasons, but also to avoid any inconveniences when the supported TLS versions on API side may be updated.

3.3   Data format and encoding

The data serialization format used for any request to the API or responses from the API is JSON. The character encoding used for requests and responses is UTF-8. Timestamps are always provided in ISO 8601 format with reference to the UTC timezone. Generated texts that occur in responses like error messages are always displayed in English language.

3.4   API Versioning

The API uses a versioning mechanism to prevent incompatibility with third-party client applications that might be caused by future changes on SupplyCare API. The major version number is integrated as part of the URL path: …/api/external/**v1**/…

3.5   Header parameters

To access to the API, each request header must contain the following parameters:

Parameter name	Description
X-Tenant-Id	Must contain the "contract id" on which the request is triggered. This "contract id" can be obtained by the Endress+Hauser support.
Accept	application/json
Authorization	Bearer with the access token string (For details refer to "Authentication and Authorization")

3.6   Throttling of requests (Rate Limiting)

The number of requests to the API is limited for security reasons.

When the maximum limit is reached, the API will return the specific return code 429 Too many requests.

3.7   Response compression

The responses are compressed on server-side with "gzip" to reduce the amount of data transferred.

3.8   Pagination and sorting

For responses containing collections of results, the API will use a mechanism to return only a subset of the results. The client application can configure the maximum size of a response page via query parameters inside the URL. The query parameter "size" will limit the number of items inside the page. The query parameter "page" will allow to navigate between the pages.

GET /assets?page=3&size=50

Default value for "size" is 20 (maximum 1 000).

The API also offers the possibility to sort items returned to the client application. Sorting is supported via another query parameter "sort".

GET /assets?sort= name,desc

Below a description of returned parameters that can be found inside the paged responses:

Returned parameter	Description
first	Boolean. For response containing the first resource element
last	Boolean. For response containing the last resource element
totalElements	Integer. Total number of available resource elements
totalPages	Integer. Total number of available pages
numberOfElements	Integer. Number of the resource elements in this response
number	Integer. Index of requested page, 0-based
size	Integer. Number of the requested resource elements per response

3.9   Filtering

The API offers the possibility to filter items. The filter parameters can be appended to the request URL via query parameters.

3.10   Swagger UI

The SupplyCare API provides a swagger UI under following path:

<SupplyCare root>/swagger-ui/index.html?urls.primaryName=External

4   Access

4.1   Authentication and Authorization

To access the SupplyCare API, for each call, a valid access token must be sent as bearer token using the "Authorization" request header. To obtain this token, the OAuth2 Resource Owner Password Flow is implemented.

To obtain an API user, please contact Endress+Hauser support. It must be noted that for each API user a valid e-mail address is required.

Initial password reset:

Initial credentials for the API will be received via the e-mail address defined for the user. For security purposes, the initial password received by e-mail must be reset to a new one before accessing to the API.

The initial password reset must be done via the SupplyCare GUI.

1.   Log in with e-mail address into SupplyCare GUI via your favorite web browser: https://inventory.endress.com

2.   System will ask for entering a new password.

After getting the confirmation that the password has been changed, you can leave the web browser again.

Initial acquisition of access token:

To obtain an access token, a request to the authorization server instance must be done.

Designation	Description
Authorization server	A POST request must be sent to following URL: https://myendress.b2clogin.com/myendress.onmicrosoft.com/B2C_1A_CROPC/oauth2/v2.0/token
Header	Following header element must be set: Content-Type: application/x-www-form-urlencoded
Body	grant_type=password client_id=0876b4ab-d587-4a92-9692-b3613080f511 scope=openid offline_access 0876b4ab-d587-4a92-9692-b3613080f511 username=**<your username>** password=**<your password in clear text>**

The response of the authorization server is of type application/json and will contain following elements:

Designation	Description
access_token	Contains the valid access token for future request to the SupplyCare API.
token_type	"Bearer"
expires_in	"3 600", value is in seconds.
refresh_token	Contains the valid refresh token to request new access token after expiration.

Acquisition of access after expiration:

An access token is typically valid for a short period of time, usually one hour. To acquire a new access token without sending the password again, it is strongly recommended to use the refresh token that was received alongside with the access token in the initial request

which has a longer validity, e.g. 14 days. The following example is how the request looks like:

Designation	Description
Authorization server	A POST request must be sent to following URL: https://myendress.b2clogin.com/myendress.onmicrosoft.com/B2C_1A_CROPC/oauth2/v2.0/token
Header	Following header element must be set: Content-Type: application/x-www-form-urlencoded
Body	grant_type=refresh_token client_id=0876b4ab-d587-4a92-9692-b3613080f511 scope=openid offline_access 0876b4ab-d587-4a92-9692-b3613080f511 refresh_token=**<the valid refresh token for your user>**

The response of the authorization server is of type **application/json** and will contain following elements:

Designation	Description
access_token	Contain the valid access token for further requests to the SupplyCare API.
token_type	"Bearer"
expires_in	"3 600", value is in seconds.
refresh_token	Contain a new refresh token.
refresh_token_expires_in	"1 209 600", value is in seconds.

When the token has expired SupplyCare API will respond with return code "401 – Unauthorized".

Change password:

The password for an API user can be changed at any time if required by using the SupplyCare GUI.

1. Log in with e-mail address into SupplyCare GUI via your favorite web browser:
   ↳ https://inventory.endress.com
2. Click on "Forgotten your password".
3. System will send via the user configured e-mail address a verification code.
4. Verification code must be entered in the SupplyCare login web page.
5. Click on verify.
6. System will ask for entering a new password. Click on "continue" to enter SupplyCare GUI.

4.2   API calls with access token

The client application can access the SupplyCare API via following root URL:

Designation	Description
SupplyCare API	Root URL to access SupplyCare API: https://supplycare.endress.com/SupplyCareServices/api/external/v1/
Header	Following header elements must be set: X-Tenant-Id: **<SupplyCare contract id>** Accept: application/json Authorization: **Bearer <the access token value>**

The contract id for SupplyCare can be obtained by contacting Endress+Hauser support.
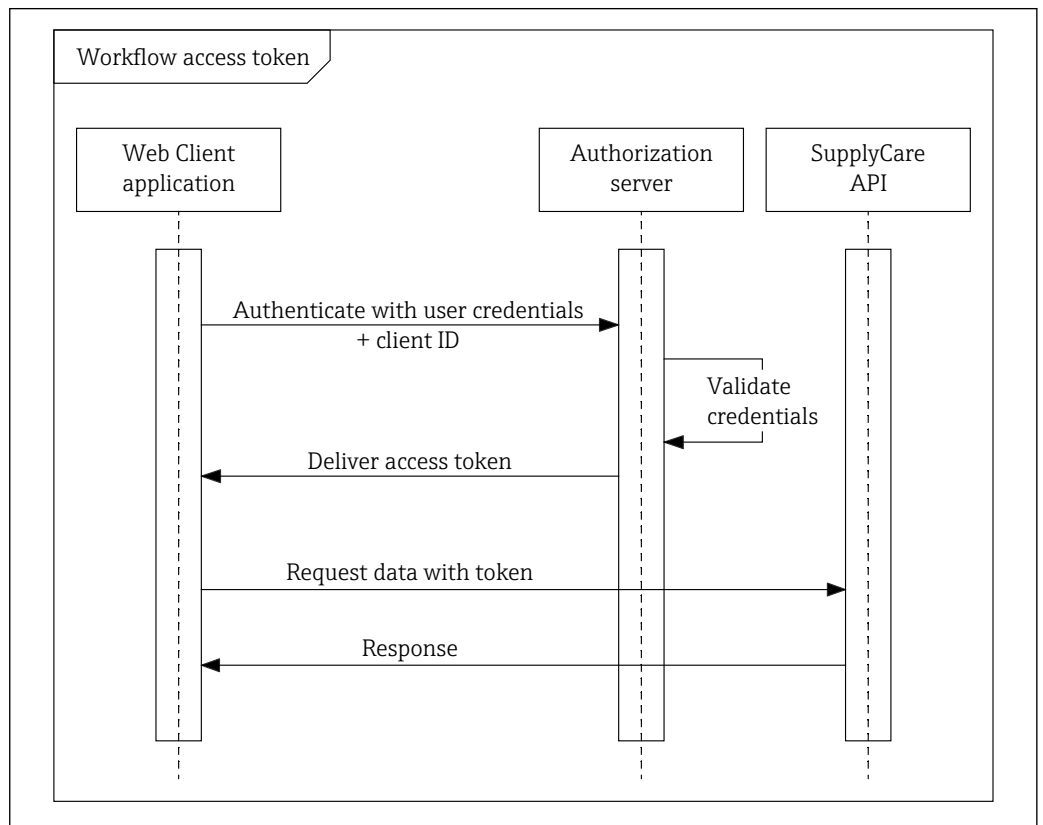
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4.3   API response codes

The application may return following return codes:

Return code	Significations
200	OK: Response to a successful GET, PUT, PATCH or DELETE. Can also be used for a POST that doesn't result in a creation.
201	Created: response to a POST that results in a creation.
202	Accepted: the request has been accepted but the action behind it is not yet completed, e.g. used for asynchronous processing.
204	No Content: response to a successful request that won't be returning a payload.
304	Not Modified: used when HTTP caching headers are in use.
400	Bad Request: the request is malformed. A detailed error message should be returned in the payload.
401	Unauthorized: when no or invalid authentication details are provided.
403	Forbidden: when authentication succeeded but authenticated user doesn't have access to the resource, or the action is for other reasons not allowed.
404	Not found: when a non-existent resource or an unknown path is requested. Can also happen in case a feature toggle for a certain endpoint is disabled, e.g.: because of licensing.
405	Method Not Allowed: when the used HTTP method isn't allowed for the requested resource.
410	Gone: indicates that the resource at this endpoint is no longer available, e.g.: because of a no longer supported API version.
415	Unsupported Media Type: If an invalid or non-supported content type was provided as part of the request.
429	Too many requests: when a request is rejected due to rate limiting

5 Measuring values

5.1 Current measuring values

SupplyCare API enables you to manage the current values [1] from tanks.

Following use cases are supported:
Read current values

Details regarding supported services and their respective parameters can be found under the following swagger-ui url:

https://supplycare.endress.com/SupplyCareServices/swagger-ui/index.html#/tankvalues

Details on parameter definition can be found on the page described above, inside the "schema" section.

When executing search queries, the following query parameters can be used to filter results in order to improve the efficiency of the expected response.

Filters table:

Designation	Description
name	Filter tanks by name (partial search, case insensitive)
exactName	Filter tanks by name (Equals, case sensitive)
location.name	Filter tanks by tank location name (partial search, case insensitive)
type.name	Filter tanks by tank type name (partial search, case insensitive)
product.name	Filter tanks by product name (partial search, case insensitive)
buyer.name	Filter tanks by buyer company name (partial search, case insensitive)
seller.name	Filter tanks by seller company name (partial search, case insensitive)
description	Filter tanks by description (partial search, case insensitive)
additionalData1	Filter tanks by Data 1 (partial search, case insensitive)
additionalData2	Filter tanks by Data 2 (partial search, case insensitive)
additionalData3	Filter tanks by Data 3 (partial search, case insensitive)

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1) Read current values of an existing tank

6   Master data

6.1   Tanks

SupplyCare API enables you to manage tanks, including their respective details.

Following use cases are supported for tanks:
- Create a new tank
- Read details about existing tanks
- Update an existing tank
- Delete a tank

Details regarding supported services and their respective parameters can be found under the following swagger-ui url:

https://supplycare.endress.com/SupplyCareServices/swagger-ui/index.html#/tanks

Details on parameter definition can be found on the page described above, inside the "schema" section.

When executing search queries, the following query parameters can be used to filter results in order to improve the efficiency of the expected response.

Filters table:

Designation	Description
name	Filter tanks by name (partial search, case insensitive)
exactName	Filter tanks by name (Equals, case sensitive)
location.name	Filter tanks by tank location name (partial search, case insensitive)
type.name	Filter tanks by tank type name (partial search, case insensitive)
product.name	Filter tanks by product name (partial search, case insensitive)
buyer.name	Filter tanks by buyer company name (partial search, case insensitive)
seller.name	Filter tanks by seller company name (partial search, case insensitive)
description	Filter tanks by description (partial search, case insensitive)
additionalData1	Filter tanks by Data 1 (partial search, case insensitive)
additionalData2	Filter tanks by Data 2 (partial search, case insensitive)
additionalData3	Filter tanks by Data 3 (partial search, case insensitive)

6.2   Products

The SupplyCare API enables you to manage products, including their respective details.

Following use cases are supported for products:
- Create a new product
- Read details about existing products
- Update an existing product
- Delete a product

Details regarding supported services and their respective parameters can be found under the following swagger-ui url:

https://supplycare.endress.com/SupplyCareServices/swagger-ui/index.html#/products

Details on parameter definition can be found on the page described above, inside the "schema" section.

When executing search queries, the following query parameters can be used to filter results in order to improve the efficiency of the expected response.

Filters table:

Designation	Description
name	Filter products by name (partial search, case insensitive)
exactName	Filter products by name (Equals, case sensitive)
identifier	Filter products by identifier number (Equals, case sensitive)
identifierAgency	Filter products by identifier agency (Equals, case sensitive)
consistency	Filter products by consistency (Equals; supported one of following choices: LIQUID, SOLID, UNKNOWN)

6.3   Locations

SupplyCare API enables you to manage locations, including their respective details.

Following use cases are supported for locations:
- Create a new location
- Read details about existing locations
- Update an existing location
- Delete a location

Details regarding supported services and their respective parameters can be found under the following swagger-ui url:

https://supplycare.endress.com/SupplyCareServices/swagger-ui/index.html#/locations

Details on parameter definition can be found on the page described above, inside the "schema" section.

When executing search queries, the following query parameters can be used to filter results in order to improve the efficiency of the expected response.

Filters table:

Designation	Description
name	Filter products by name (partial search, case insensitive)
exactName	Filter locations by name (Equals, case sensitive)

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