OData Access to Data Sets

11.2

February 2026

DOCUMENT ACCESS

Public

DISCLAIMER

The contents of this document are under copyright of Critical Manufacturing S.A. it is released on condition that it shall not be copied in whole, in part or otherwise reproduced (whether by photographic, or any other method) and the contents therefore shall not be divulged to any person other than that of the addressee (save to other authorized offices of his organization having need to know such contents, for the purpose for which disclosure is made) without prior written consent of submitting company.

OData Access to Data Sets

Estimated time to read: 5 minutes

OData (Open Data Protocol) is an open standard protocol that enables simple and standardized access to data. **Data Platform** allows accessing the data in all data sets using this protocol.

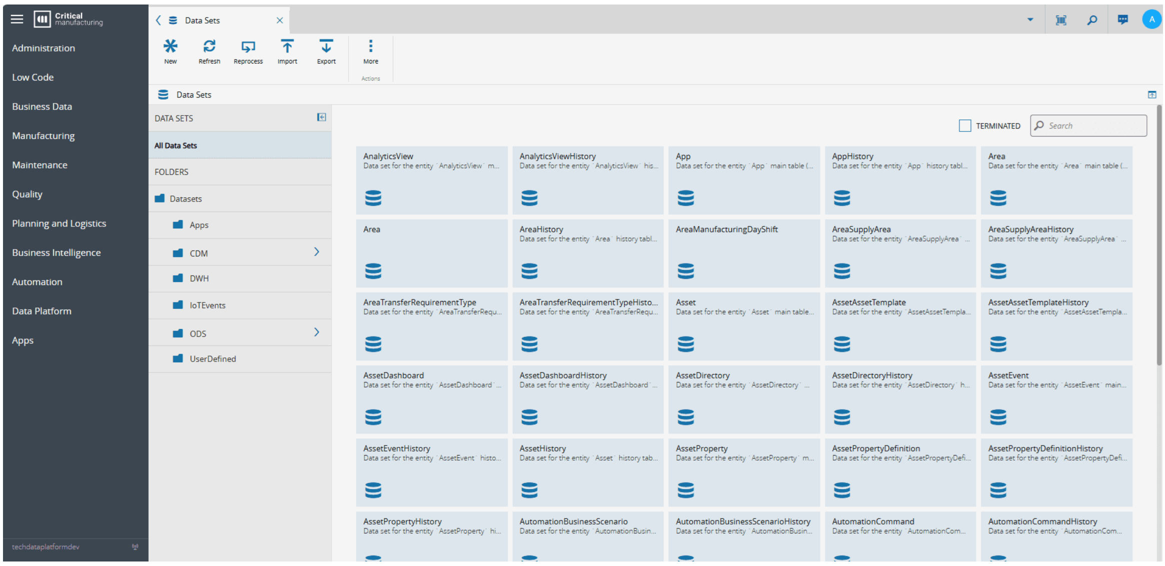
Overview

In this tutorial we describe how **OData** clients can easily access data in CM MES data sets stored in **Data Platform**.

Endpoints

Through **Data Platform**, all data sets can be accessed using the **OData** V4 protocol.

If you navigate to the **Data Sets** page in the **Data Platform** section, you can see that the data sets are organized in 6 root folders:



Each folder contains different types of data sets:

- **Apps** - folder for data sets created and used by MES Apps.
- **CDM** - folder for system data sets containing the **Canonical Data Model** (CDM) data.
- **DWH** - folder for data warehouse data sets containing aggregated data.
- **IotEvents** - folder for data sets associated with iot events.
- **ODS** - folder for data sets containing MES ODS data.
- **UserDefined** - folder for data sets manually created by CM MES users.

Each of these folders can be accessed independently via **OData**. For example, to list all available data sets in the **CDM** root folder, the OData client should use one of these endpoints:

- Service Document - `https://<hostname>/datamanager/odata/CDM`
- Metadata - `https://<hostname>/datamanager/odata/CDM/$metadata`

To access the data of data set `MaterialMovement` in the **CDM** root folder:

`https://<hostname>/datamanager/odata/CDM/MaterialMovement`

To access the data of data set ResourceLayout in the Resource folder (which is inside the CDM root folder):

`https://<hostname>/datamanager/odata/CDM/Resource.ResourceLayout`

Thus, to access data sets that are not in root folders, the path to the data set should be built using the dot separator.

Query Options

The standard OData query options are supported, plus a few extensions:

Query Option	Description	Example
$select	Pick the columns to get.	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$select=Enterprise_Name,Facility_Name,Area_Name,Step_Name,Material_Name,InProcessPrimaryQty`
$filter	Filter the data to get.	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$filter=contains(Material_Name,'Cookie') and Step_Name eq 'Mixing'`
$orderby	Columns to order the data.	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$orderby=Material_Name asc,Step_Name desc`
$top	Number of rows to get. If `$top` is not set, Data Manager will return up to the default maximum number of rows defined by the `DATAMANAGER_DEFAULT_MAX_ROWS` environment variable (set to 1000 by default).	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$top=50`
$skip	Number of rows to skip before returning the result.	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$skip=50`
$count	Add the total number of rows in the unfiltered data set to the reply.	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$count=true`
$apply	Group and/or aggregate data.	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$select=Area_Name,Material_Name,TotalTrackIns,TotalTrackOuts&$apply=groupby((Area_Name,Material_Name),aggregate(TrackInCount with sum as TotalTrackIns,TrackOutCount with sum as TotalTrackOuts))`

Query Option	Description	Example
$query	If the query needs to be sent via POST instead of a GET request (for example, the query is too long to be sent with a GET request), the `$query` option should be used, and the actual query sent as plain text in the body of the POST request.	`https://<hostname>/datamanager/odata/CDM/MaterialMovement?$query`, POST request body in plain text: `$select=Step_Name,Material_Name&$filter=Material_Name eq 'Cookie01'`
parameters	If the dataset is of type `Query` and the user-defined query string requires database parameters, they can be sent using the parameters option.	`https://<hostname>/datamanager/odata/UserDefined/MyDataset?` `parameters=var1=123,var2='example'`

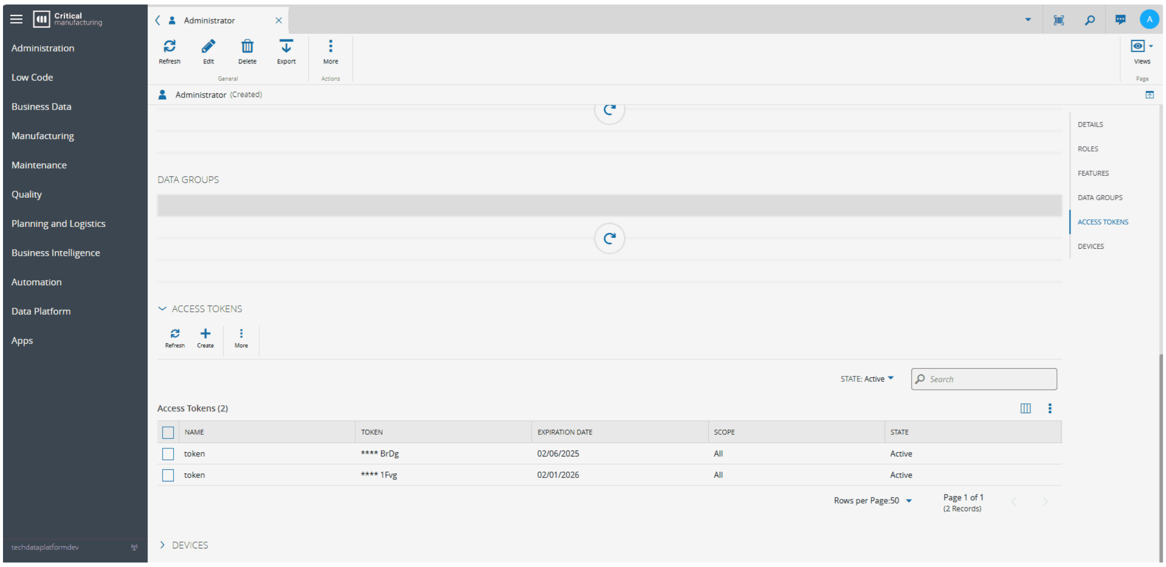
Note

All the options run server-side, so all OData queries should be as specific as possible to obtain the best performance.

Accessing Data Sets With an OData Client

Any OData client can connect to **Data Platform**. However, the client will need an **Access Token** to retrieve the data.

To create an **Access Token** go to your user page, scroll down to the **Access Tokens** section and **Create** a new **Access Token**:

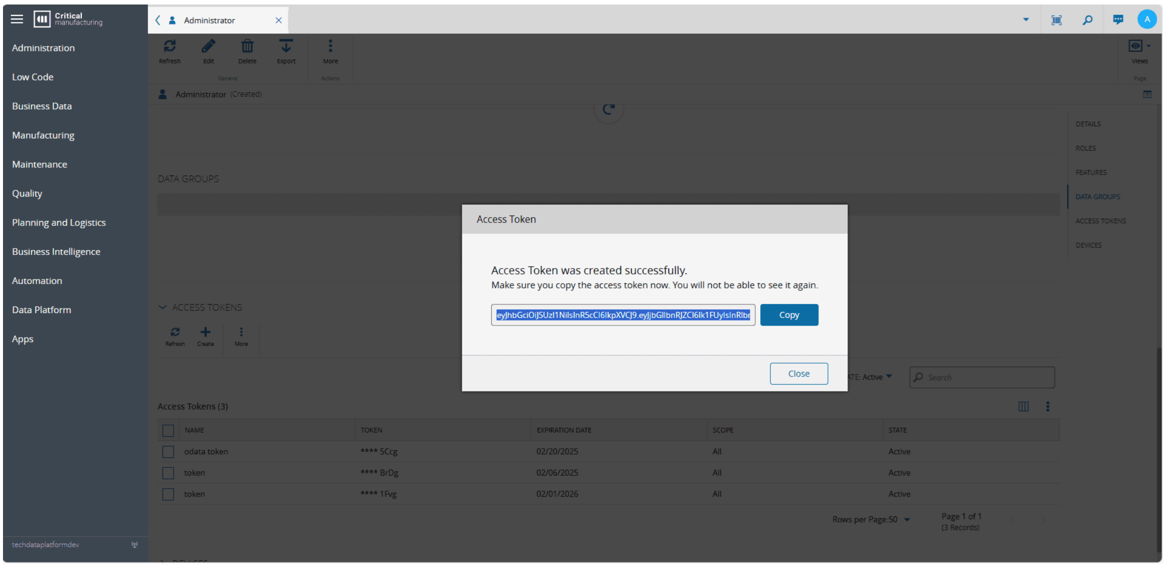


Access Tokens (2)

NAME	TOKEN	EXPIRATION DATE	SCOPE	STATE
token	**** BrDg	02/06/2025	All	Active
token	**** 1Fvg	02/01/2026	All	Active

Rows per Page:50 Page 1 of 1 (2 Records)

Save the token, so that it can be used in the OData Client to access the data:



Access Token

Access Token was created successfully.
Make sure you copy the access token now. You will not be able to see it again.

eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9.eyJjbGllbnRJZCI6Ik1FUyIsInRlb

Copy

Close

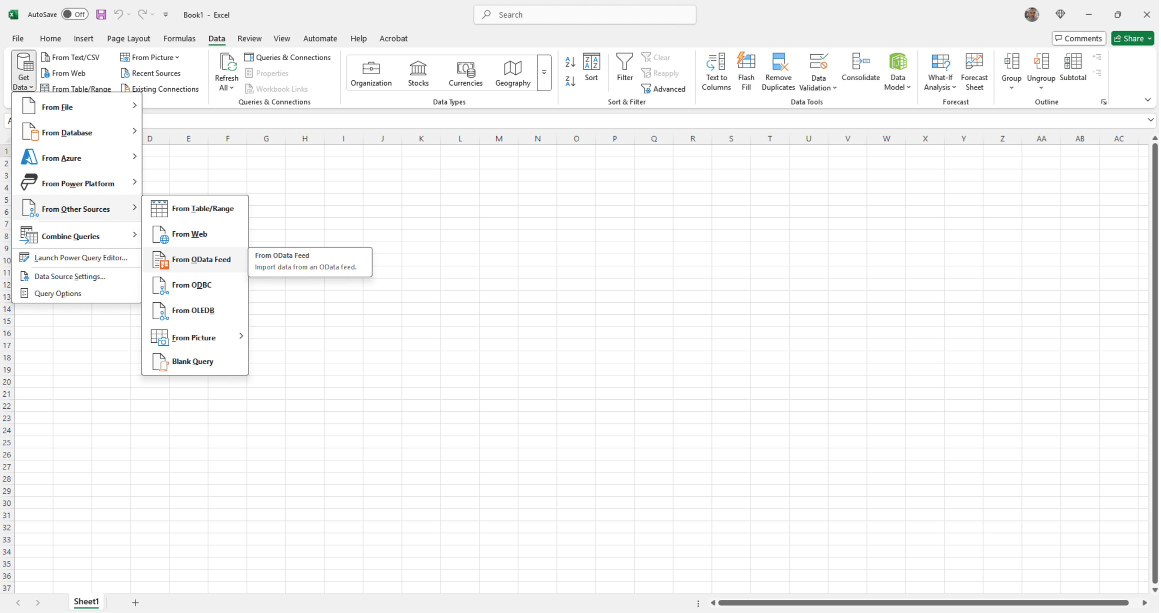
Access Tokens (3)

NAME	TOKEN	EXPIRATION DATE	SCOPE	STATE
odata token	**** 5Ccg	02/20/2025	All	Active
token	**** BrDg	02/06/2025	All	Active
token	**** 1Fvg	02/01/2026	All	Active

Rows per Page:50 Page 1 of 1 (3 Records)

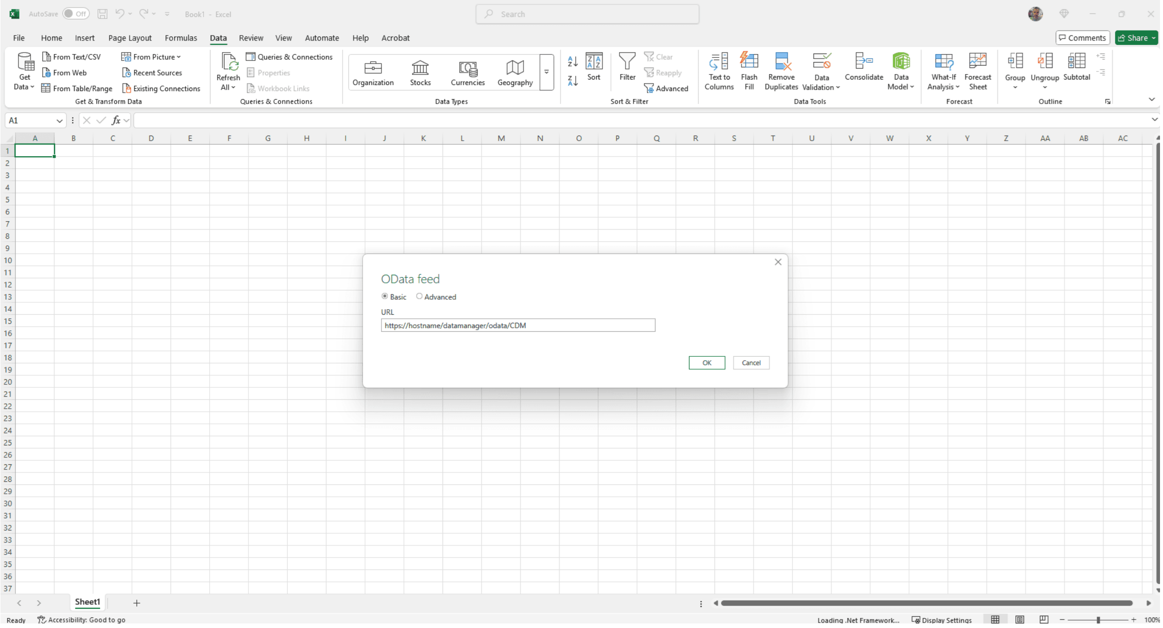
Data Sets in Excel

To retrieve data sets in **Excel** go to **Data > Get Data > From Other Sources > From OData Feed**:



From OData Feed
Import data from an OData feed.

Type the URL for the root folder you want to access, or an OData query to access a specific data set with query options, and select **OK**:



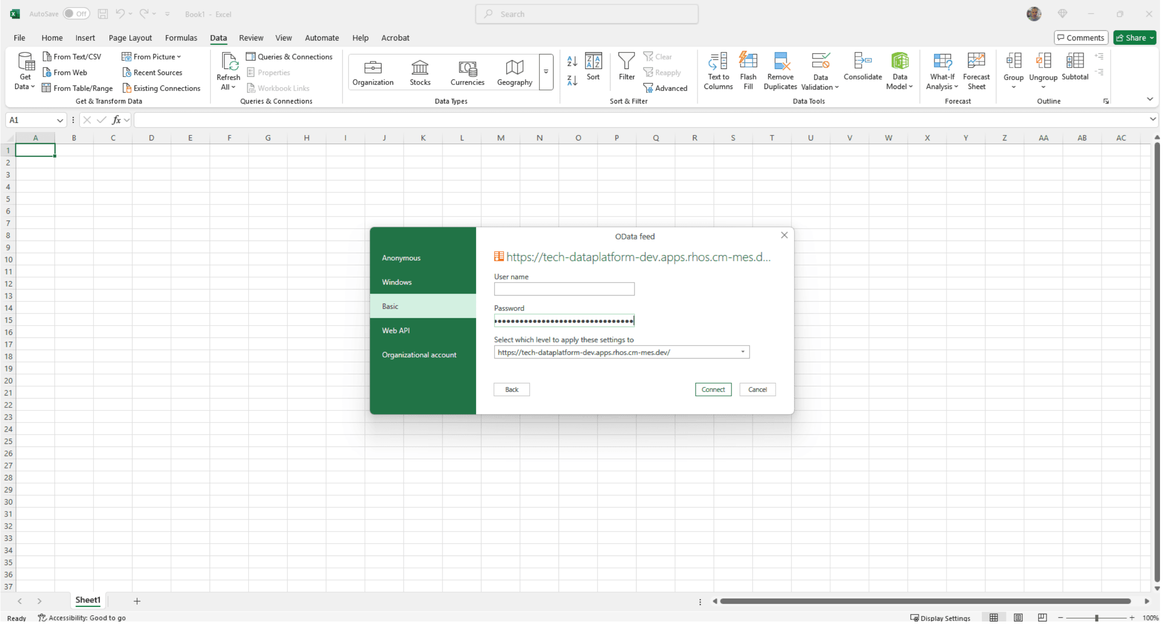
OData feed

● Basic ○ Advanced

URL

https://hostname/datamanager/odata/CDM

An authentication window will pop-up. Select **Basic**, paste your **Access Token** in the **Password** field and select **Connect** (you can leave the **User name** field empty):



OData feed

https://tech-dataplatform-dev.apps.rhos.cm-mes.d...

User name

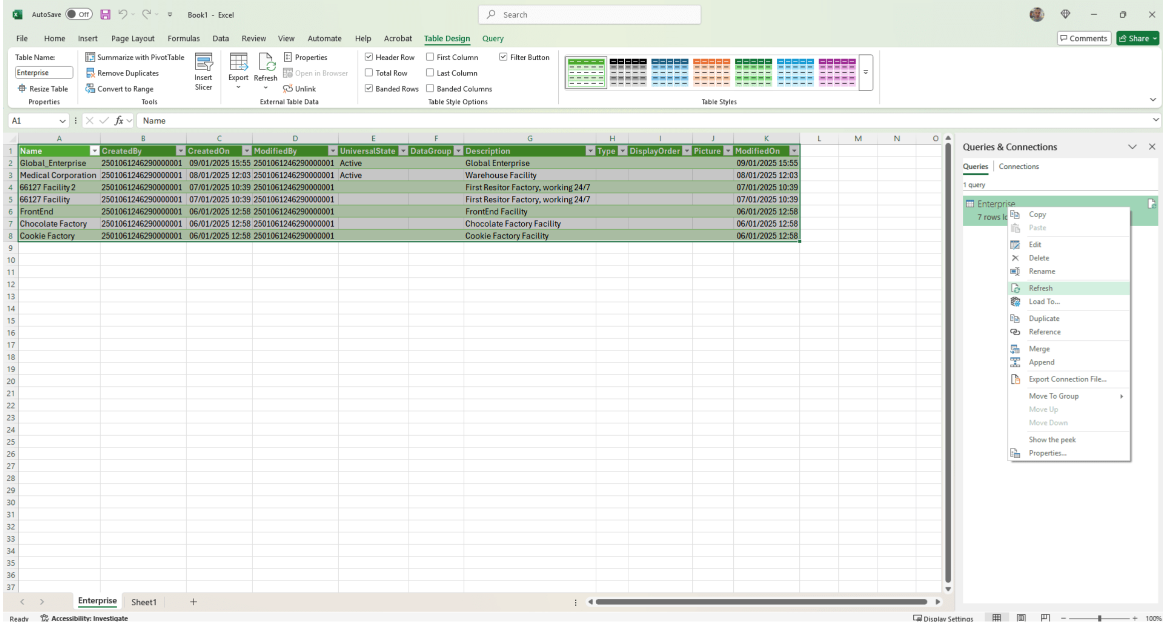
Password

••••••••••••••••••••••••••••••••

Select which level to apply these settings to

https://tech-dataplatform-dev.apps.rhos.cm-mes.dev/

You should now have access to the data in the data set, or to the list of data sets if you gave it an URL to a root folder (in which case you can pick the data set from the list). The data is now available to be processed and refreshed in **Excel**:



Name	CreatedBy	CreatedOn	ModifiedBy	UniversalState	DataGroup	Description	Type	DisplayOrder	Picture	ModifiedOn
Global_Enterprise	2501061246290000001	09/01/2025 15:55	2501061246290000001	Active		Global Enterprise				09/01/2025 15:55
Medical Corporation	2501061246290000001	08/01/2025 12:03	2501061246290000001	Active		Warehouse Facility				08/01/2025 12:03
66127 Facility 2	2501061246290000001	07/01/2025 10:39	2501061246290000001			First Resitor Factory, working 24/7				07/01/2025 10:39
66127 Facility	2501061246290000001	07/01/2025 10:39	2501061246290000001			First Resitor Factory, working 24/7				07/01/2025 10:39
FrontEnd	2501061246290000001	06/01/2025 12:58	2501061246290000001			FrontEnd Facility				06/01/2025 12:58
Chocolate Factory	2501061246290000001	06/01/2025 12:58	2501061246290000001			Chocolate Factory Facility				06/01/2025 12:58
Cookie Factory	2501061246290000001	06/01/2025 12:58	2501061246290000001			Cookie Factory Facility				06/01/2025 12:58

Queries & Connections

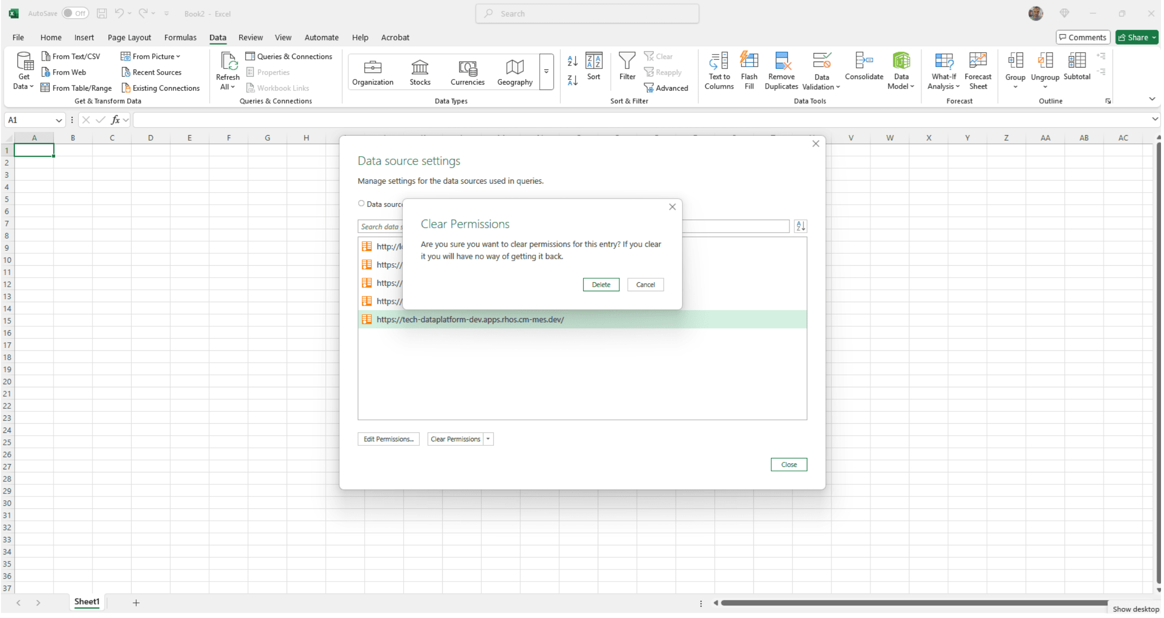
Queries | Connections

1 query

Enterprise

7 rows lo

Excel caches the access tokens. Thus, if you are having trouble accessing the data (for example, your token expired) you should go to **Get Data > Data Source Settings** and select **Clear Permissions**, select the permissions you want to clear and **Delete** them:



Data source settings

Manage settings for the data sources used in queries.

○ Data sourc

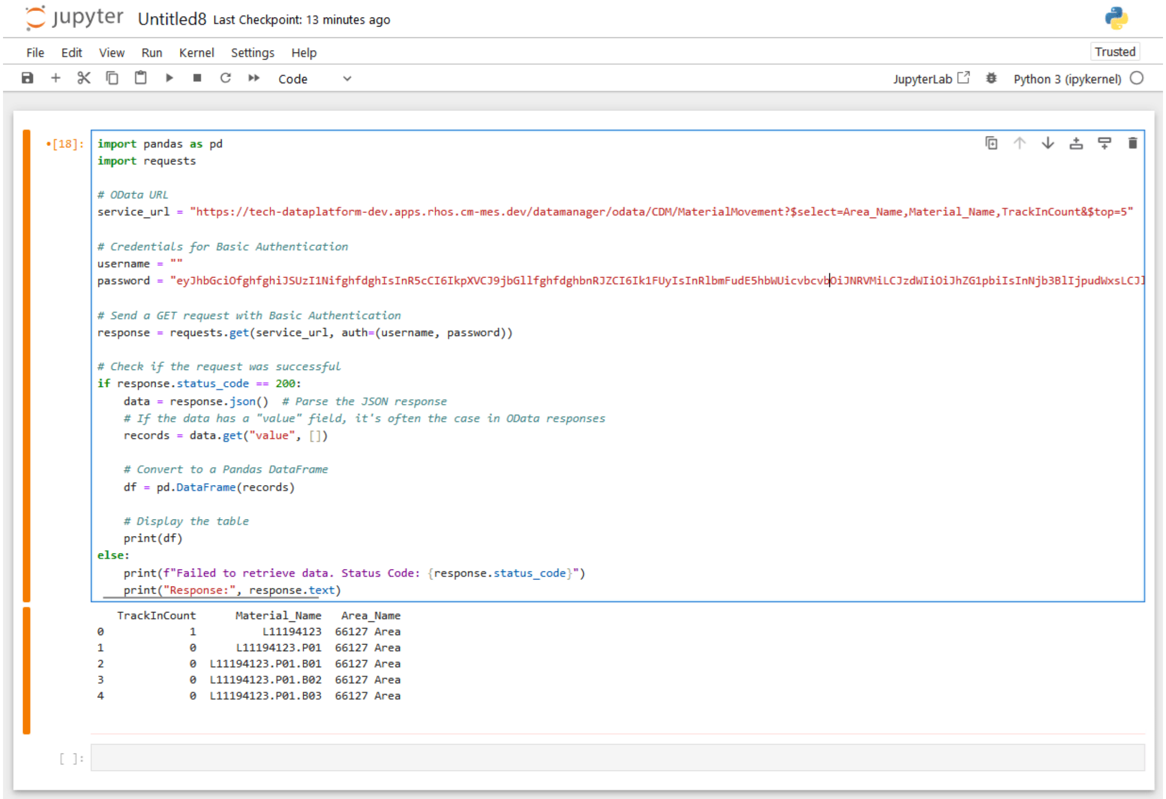
Clear Permissions

Are you sure you want to clear permissions for this entry? If you clear it you will have no way of getting it back.

Next time you try to connect to the data set, **Excel** will ask for the token again.

Data Sets in Jupyter Notebook

There are several ways to access **OData** data sets in **Jupyter Notebook**. For example, with a regular HTTP request with an OData query:


jupyter Untitled8 Last Checkpoint: 13 minutes ago
File Edit View Run Kernel Settings Help
Trusted
Code
JupyterLab
Python 3 (ipykernel)
•[18]:
[ ]:

```
import pandas as pd
import requests

# OData URL
service_url = "https://tech-dataplatform-dev.apps.rhos.cm-mes.dev/datamanager/odata/CDM/MaterialMovement?$select=Area_Name,Material_Name,TrackInCount&$top=5"

# Credentials for Basic Authentication
username = ""
password = "eyJhbGciOfghfghiJSUzI1NifghfdghIsInR5cCI6IkpXVCJ9jbGllfghfdghbnRJZCI6Ik1FUyIsInRlbmFudE5hbWUicvbcvbOiJNRVMiLCJzdWIiOiJhZG1pbiIsInNjb3BlIjpudWxsLCJ

# Send a GET request with Basic Authentication
response = requests.get(service_url, auth=(username, password))

# Check if the request was successful
if response.status_code == 200:
    data = response.json()  # Parse the JSON response
    # If the data has a "value" field, it's often the case in OData responses
    records = data.get("value", [])

    # Convert to a Pandas DataFrame
    df = pd.DataFrame(records)

    # Display the table
    print(df)
else:
    print(f"Failed to retrieve data. Status Code: {response.status_code}")
    print("Response:", response.text)
```

```
   TrackInCount       Material_Name   Area_Name
0             1           L11194123  66127 Area
1             0       L11194123.P01  66127 Area
2             0   L11194123.P01.B01  66127 Area
3             0   L11194123.P01.B02  66127 Area
4             0   L11194123.P01.B03  66127 Area
```

Just make sure to use **Basic Authentication** in the request, and setting your **Access Token** as the password.

Legal Information

Disclaimer

The information contained in this document represents the current view of Critical Manufacturing on the issues discussed as of the date of publication. Because Critical Manufacturing must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Critical Manufacturing, and Critical Manufacturing cannot guarantee the accuracy of any information presented after the date of publication. This document is for informational purposes only.

Critical Manufacturing makes no warranties, express, implied or statutory, as to the information herein contained.

Confidentiality Notice

All materials and information included herein are being provided by Critical Manufacturing to its Customer solely for Customer internal use for its business purposes. Critical Manufacturing retains all rights, titles, interests in and copyrights to the materials and information herein. The materials and information contained herein constitute confidential information of Critical Manufacturing and the Customer must not disclose or transfer by any means any of these materials or information, whether total or partial, to any third party without the prior explicit consent by Critical Manufacturing.

Copyright Information

All title and copyrights in and to the Software (including but not limited to any source code, binaries, designs, specifications, models, documents, layouts, images, photographs, animations, video, audio, music, text incorporated into the Software), the accompanying printed materials, and any copies of the Software, and any trademarks or service marks of Critical Manufacturing are owned by Critical Manufacturing unless explicitly stated otherwise. All title and intellectual property rights in and to the content that may be accessed through use of the Software is the property of the respective content owner and is protected by applicable copyright or other intellectual property laws and treaties.

Trademark Information

Critical Manufacturing is a registered trademark of Critical Manufacturing.

All other trademarks are property of their respective owners.