Connect for Analytics

Planon Software Suite

Version: L105

Planon
Building Connections

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About this Document

Intended Audience

This document is intended for *Planon Software Suite* users.

Contacting us

If you have any comments or questions regarding this document, please send them to: support@planonsoftware.com.

Document Conventions

Bold
Names of menus, options, tabs, fields and buttons are displayed in bold type.

Italic text
Application names are displayed in italics.

CAPITALS
Names of keys are displayed in upper case.

Special symbols

	Text preceded by this symbol references additional information or a tip.
	Text preceded by this symbol is intended to alert users about consequences if they carry out a particular action in Planon.

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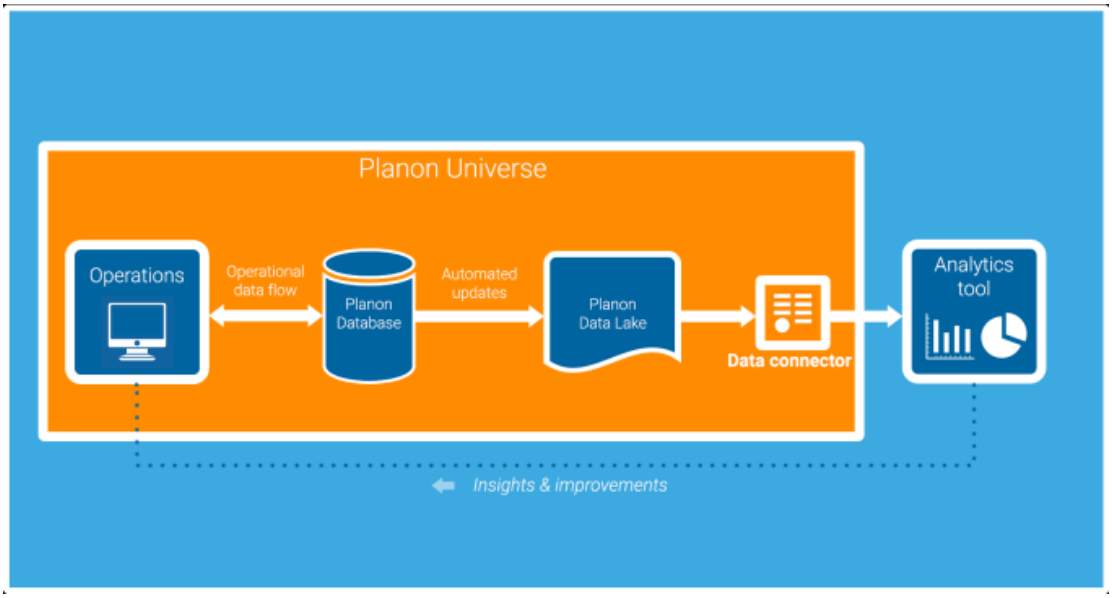
About Connect for Analytics

Connect for Analytics is a solution for creating powerful analytics flexibly and dynamically, combining the strength of the Planon application and the ease of use of external tooling.



Connect for Analytics extends the operational Planon system with a data lake and a data connector to external data analytics tools. This makes it easy to extract data for reporting, analytics and predictions with standard BI tools.

- In order to use **Connect for Analytics**, you require a specific data license (P00700).
- **Connect for Analytics** is available for Cloud- as well as for on-premise customers.

Costs

For using the data lake, you need to take into account costs incurred for:

- Hardware (the data lake itself)
- Data usage

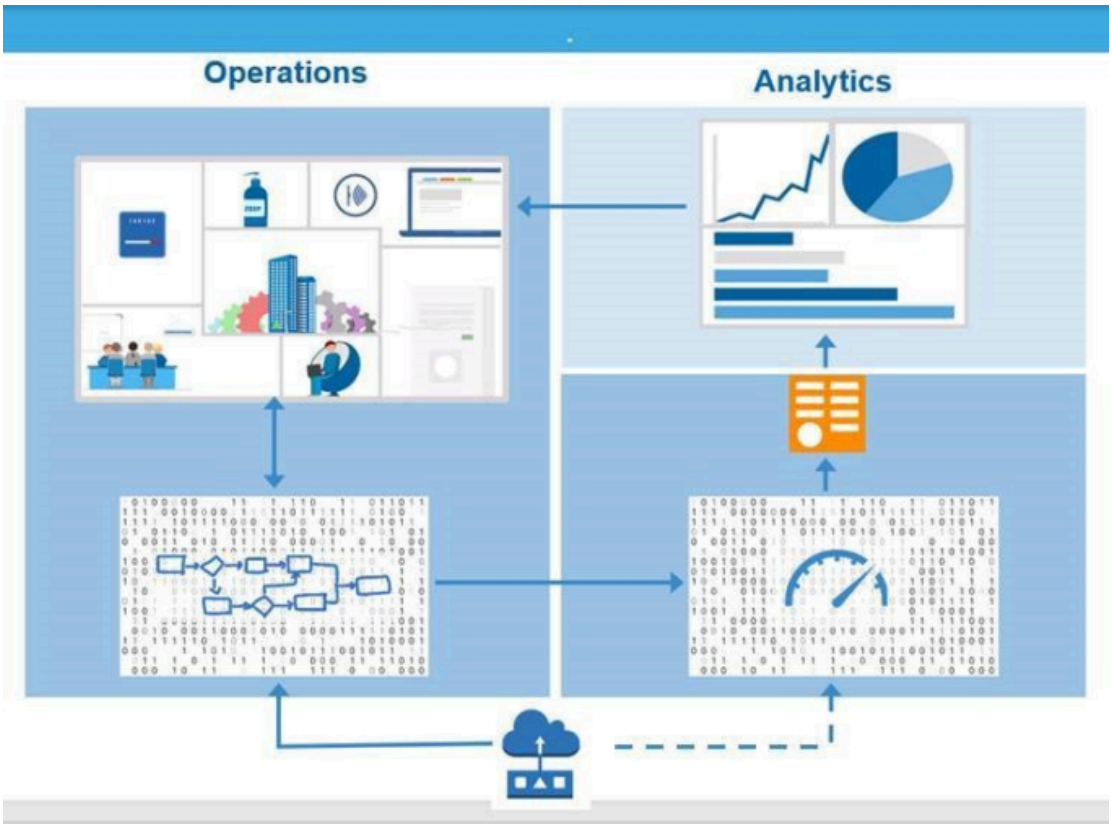
Configuring the Planon application (Cloud)

Configuring the Planon application (on premise)

Process

Connect for Analytics includes a number of components that together make it possible to use external business intelligence tooling for analyzing operational data (almost real-time) extracted from the Planon application.

The following image depicts the most important components:



1. On the left: the Planon operations side, producing operational data.
2. Bottom-right: the data lake and the connector.

   Storing the operational Planon data and providing an access point to BI tooling. Once a connection is established, the Planon application's operational data is kept in sync with the data lake automatically.
3. Top-right: the (customer's) BI tool used for analyzing the operational data.

Advantages

There are many advantages for using **Connect for Analytics**, it:

- Allows customers to create the best-of-class business intelligence reporting.
- Can be used by most BI tools as long as they support the OData protocol (version 4).

The added value here being that customers can use the tooling they are familiar with and have a license for.

- Is easy to set up - getting up and running only requires a few configuration steps. Also, the data exchange is fully automated and nearly real-time.
- Requires no further data transformation because data is formatted correctly.
- Includes data model relations that are automatically provided by the data connector.

  It is, therefore, easy to include fields of related business objects into the data set to be analyzed.
- Supports calculated fields.

  In the regular Planon application, it was not possible to report on calculated fields; now this is possible.
- Will have a positive effect on operational performance because the load for reporting on Planon's operational database is decreased.
- Allows customers to combine data lakes for creating management information.

  For example, by combining information from the Planon data lake with information from an ERP data lake in one report or dashboard.
- Implies less work for existing Planon Cloud customers who have implemented their own analytics solution by querying the data from the data lake, replacing and making Enterprise Talk data exports redundant.
- Enables customers who already have a data lake/warehouse to extend it by using Connect for Analytics to feed Planon data into this data lake/warehouse.

Connect for Analytics was developed to connect BI tools to Planon for reporting/analytics and is optimized for this type of use case.

Concepts

The following topics describe the concepts that are key to understanding the functionality.

Data lake

A system or repository of data stored in its natural format. A data lake is usually a single store of all enterprise data. For Planon, the data lake contains the operational data from Planon, which will almost real-time be kept in sync.

> The Planon Cloud will automatically provide a data lake for Planon customers who have the appropriate license.

Connector

A gateway between the data lake and the BI tool.

Customers can only access the data in the data lake via the connector, and currently only the OData protocol (version 4) is supported.

> The OData protocol is supported by most BI tools.

The BI connector ensures that:

- Access to the connector is authenticated.
- Data is formatted correctly (a date field is a real date, not a string).
- Data model relations are included.
- Calculated fields are included.

BI tool

Software designed to retrieve, analyze, transform and (graphically) report data for business intelligence. Planon is BI tool agnostic, which means that you can use any kind of BI tool as long as it supports the OData protocol.

> - For customers, this is an important asset because they will not have to invest in acquiring and learning a new tool.
> - Note that not all BI tools provide the same level of support for the OData protocol

Working with...

This section describes the various functions available.

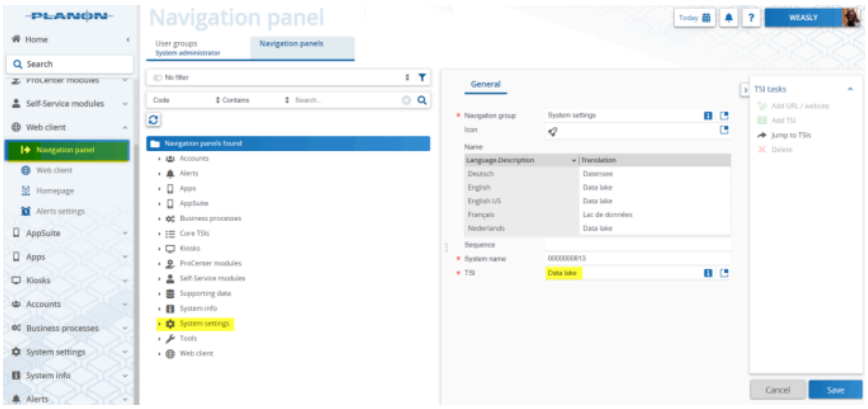
Getting started

The following topics will help you getting started using Connect for Analytics.

Configuring the Planon application (Cloud)

Procedure

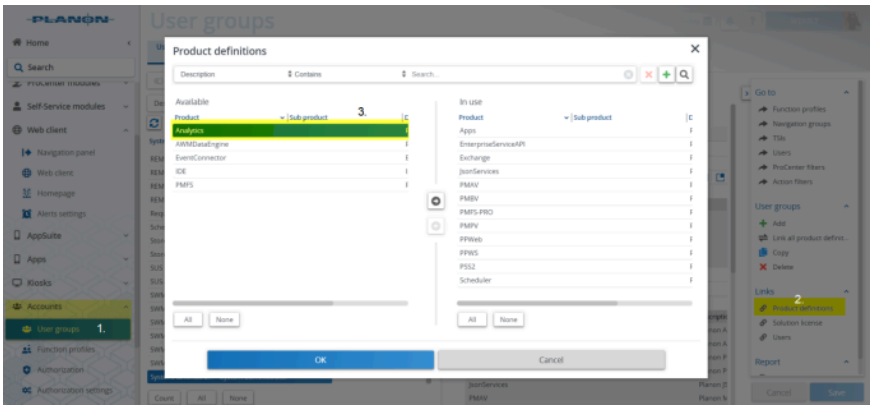
1. (* optionally) Add the Data lake TSI to your navigation panel and log out/log in.



* If you are using Accelerator, this step is not required.

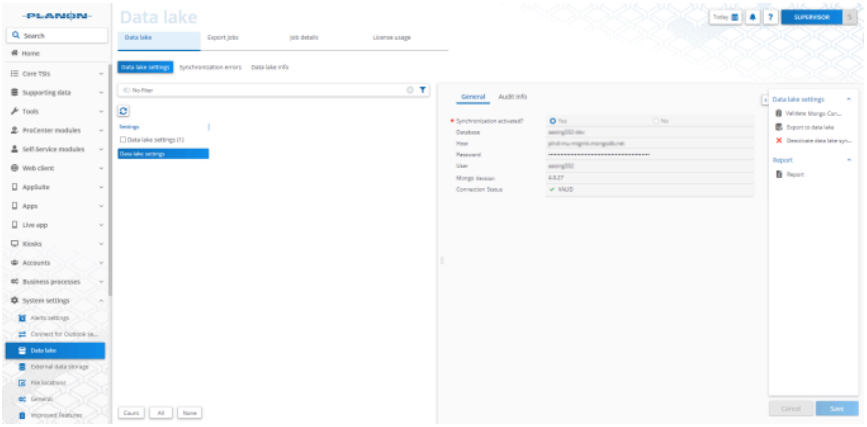
2. Give users access to the Analytics Connector.

a. Go to Accounts > User groups.
b. Select the user group of the users you want to give access
c. In the action panel, click Product definitions.
d. Link them to the *Analytics* product definition.
e. Click Save to apply your changes.



Users in the user group now have access to the Connector.

3. Go to the Data lake TSI



4. Optional, check the connection between the **Planon application** and the **Data lake**

To check if the connection between `the Planon application and the Data lake is working click on Validate Mongo connection.

If the connection is working, the version of MongoDB will be shown and the connection status will show **Valid** and a green check mark will be displayed.

If the credentials are invalid the version of MongoDB still will be shown but the connection status will be **Invalid, wrong credentials** and a yellow check mark will be displayed.

If no connection can be established, no information about MongoDB can be retrieved and the connection status will be invalid and a red check mark will be displayed.

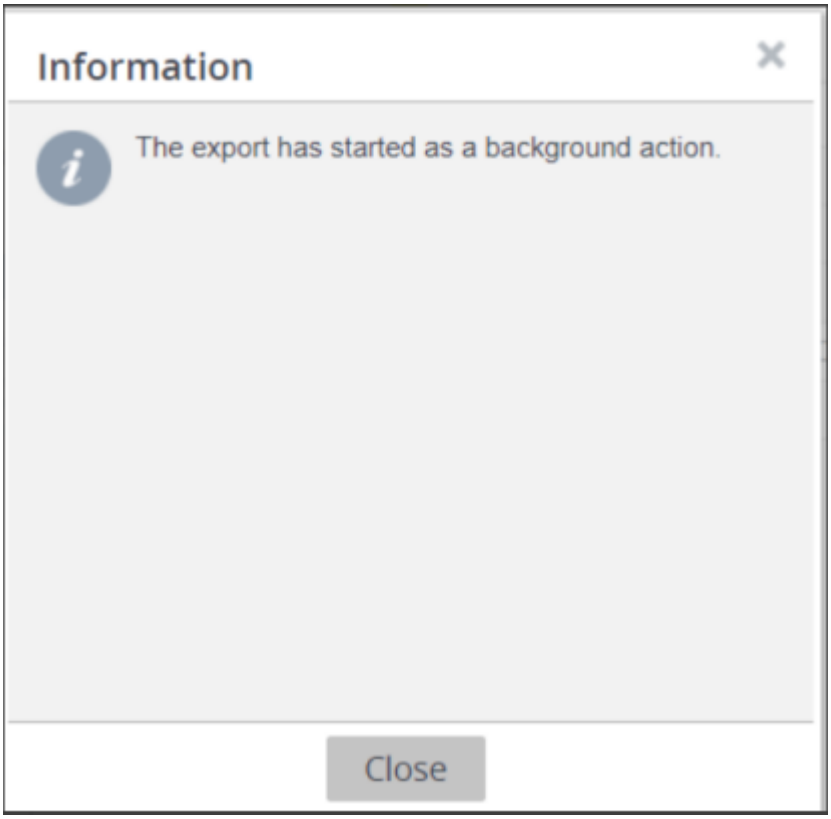
If the connection is checked when the Data lake is operational and the check fails, the synchronization will

automatically be stopped. Once the connection is restored the synchronization will commence again.

When encountering an invalid connection, please contact Planon Support to investigate and restore the cause of the connection failure.

5. Click Export to data lake

The export is started as a background action.



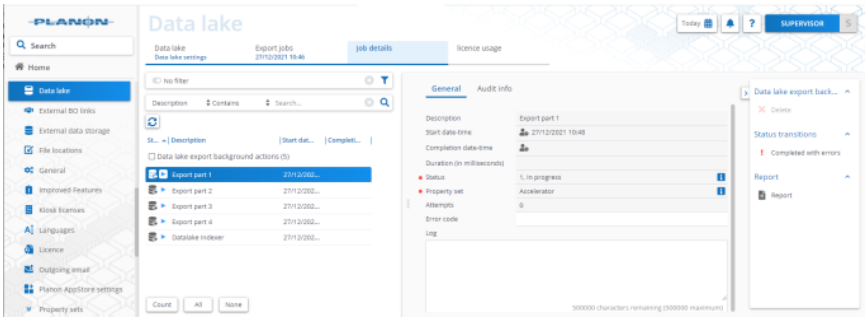
The initial export will now start by calculating the number of jobs needed to export the data to the data lake. When it is done calculating (about a minute), a dialog will appear saying that it is done creating background jobs to upload the data of Planon into the data lake.

During this time, any changes made to your Planon data will create synchronization "error" jobs. They can be resynchronized after the export to data lake is finished.

The system will synchronize these automatically, but just avoid this if you can.

You can follow the progress of the background jobs in the **Job details** step of the **Data lake** TSI. When this is done, all data between Planon and the data lake will be kept in sync

so updates in Planon will be reflected in the data lake with only a short time delay.



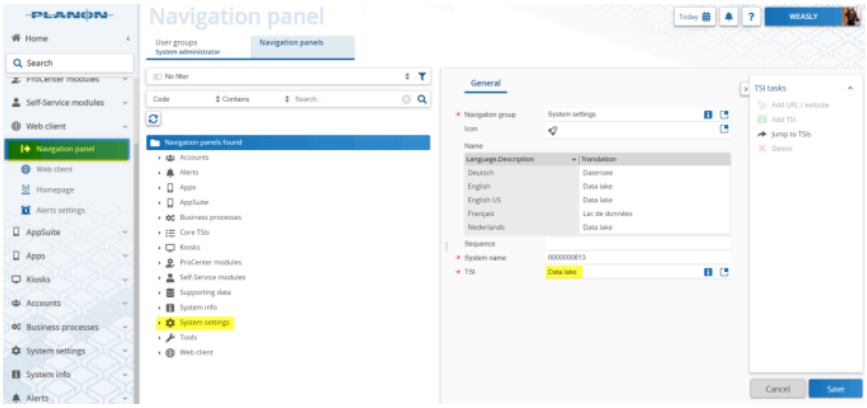
When done you can start using the connector.

About Connect for Analytics

Configuring the Planon application (on premise)

Procedure

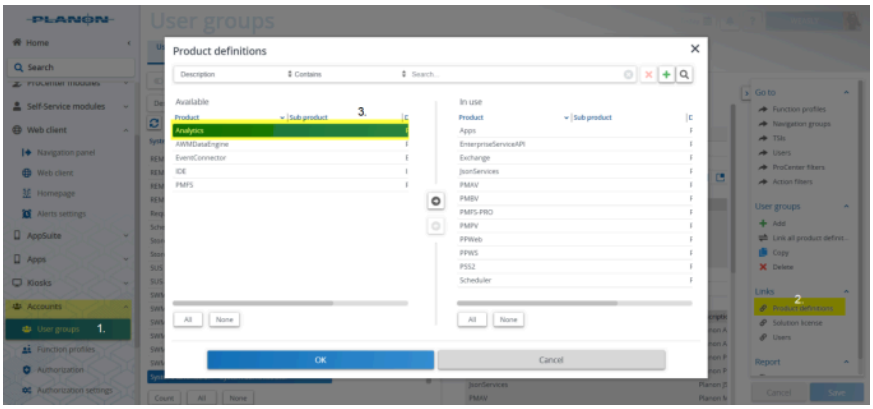
1. (* optionally) Add the Data lake TSI to your navigation panel and log out/log in.



* If you are using Accelerator, this step is not required.

2. Give users access to the Analytics Connector.

a. Go to Accounts > User groups.
b. Select the user group of the users you want to give access
c. In the action panel, click Product definitions.
d. Link them to the *Analytics* product definition.
e. Click Save to apply your changes.



Users in the user group now have access to the Connector.

3. Prepare the data lake.

a. Install a MongoDB instance that will host the data lake. You can download MongoDB from this location: https://www.mongodb.com/try/download/community.

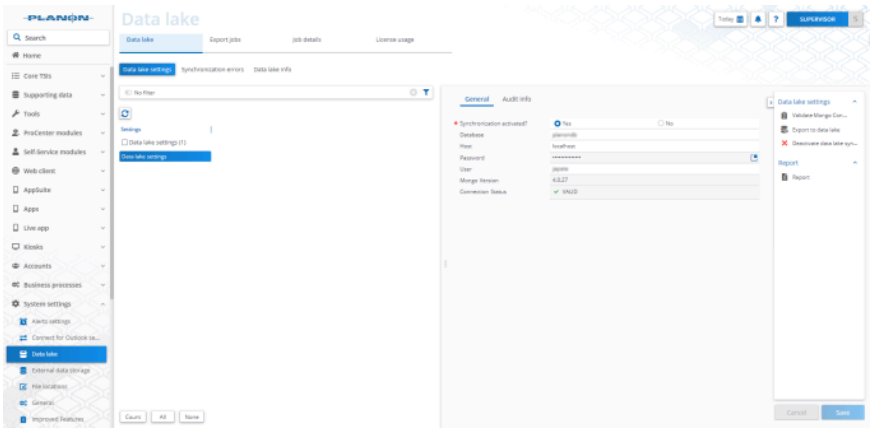
> It is good to note that the OData connector and the Mongo DB have a version dependency, see :Supported Configurations.

b. Create a user and a password in MongoDB that has appropriate authorization for creating and deleting databases, creating, updating and deleting collections.

4. Connect Planon to the data lake.

a. Go to the Data lake TSI and add the **Database**, **Host**, **User** and **Password.**

b. Verify whether you can make a connection by clicking on **Validate Mongo connection**.



If the connection is working, the version of MongoDB will be shown and the connection status will show Valid and a green check mark will be displayed.

If the credentials are invalid, the version of MongoDB still will be shown but the connection status will be **Invalid, wrong credentials** and a yellow check mark will be displayed. Check whether the **User** and **Password** are entered correctly and check the connection again.

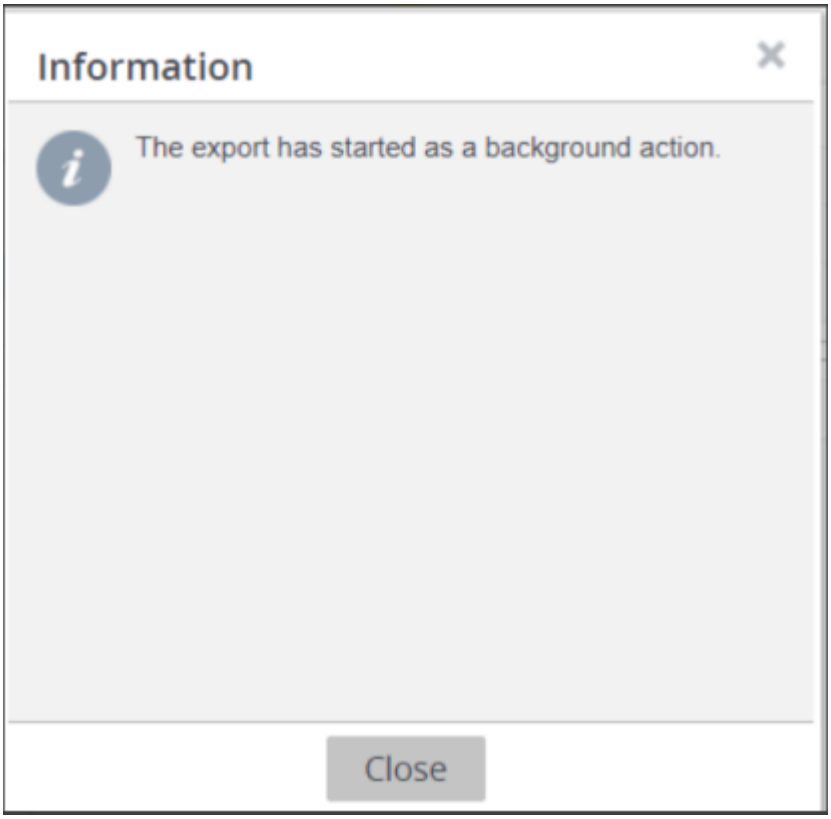
If no connection can be established no information about MongoDB can be retrieved and the connection status will be invalid and a red check mark will be displayed. Check if the entered **Database**, **Host**,

User and **Password** are correct and adjust if necessary. After that, test the connection again.

Only when the connection is valid the **Export to data lake** becomes available.

c. Click Export to data lake

The export is started as a background action.

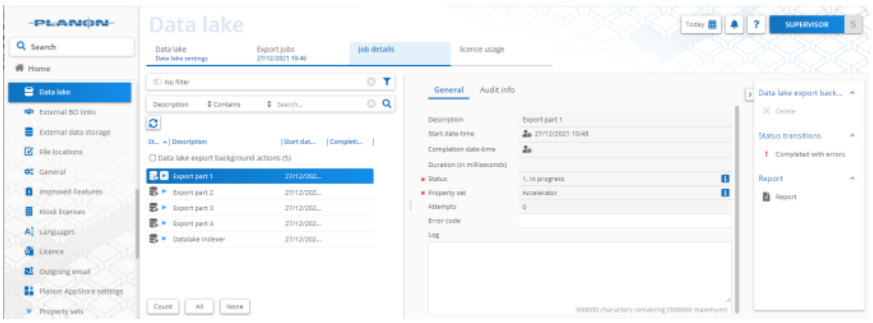


The initial export will now start by calculating the number of jobs needed to export the data to the data lake. When it is done calculating (about a minute), a dialog will appear saying that it is done creating background jobs to upload the data of Planon into the data lake.

During this time, any changes made to your Planon data will create synchronization "error" jobs. They can be resynchronized after the export to data lake is finished.

The system will synchronize these automatically, but just avoid this if you can.

You can follow the progress of the background jobs in the **Job details** step of the **Data lake** TSI. When this is done, all data between Planon and the data lake will be kept in sync so updates in Planon will be reflected in the data lake with only a short time delay.



When done you can start using the connector.

About Connect for Analytics

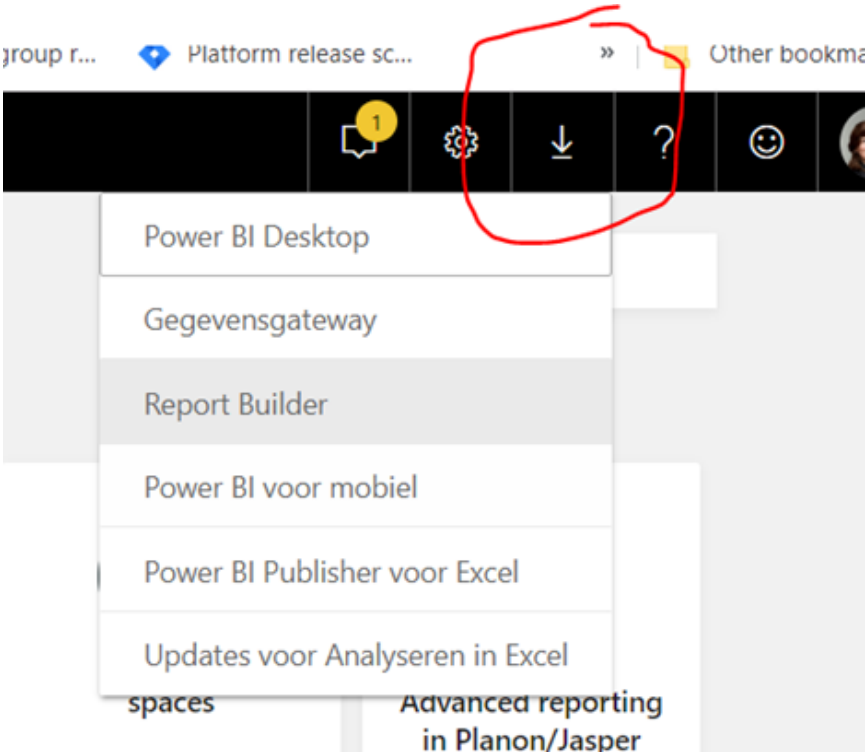
Basic Settings PowerBI

If you are using PowerBI as your tool of choice, please apply the following recommended settings.

1. Install PowerBI...

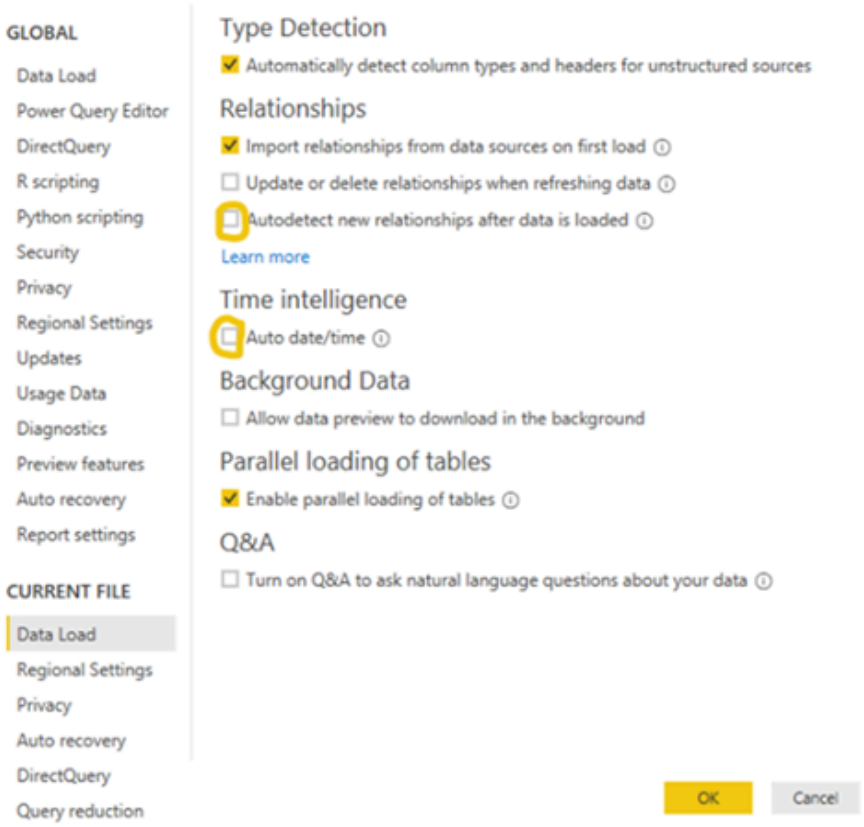
a. Go to https://www.office.com/ and log in with your (company) Microsoft account.

b. In All apps, search for PowerBI and download the desktop version.



2. For each new **PowerBI** file (.pbix) you must reset these settings:

Deselect the Autodetect new relationships after data is loaded and Auto date/time check boxes. These slow down data loading and are not required.



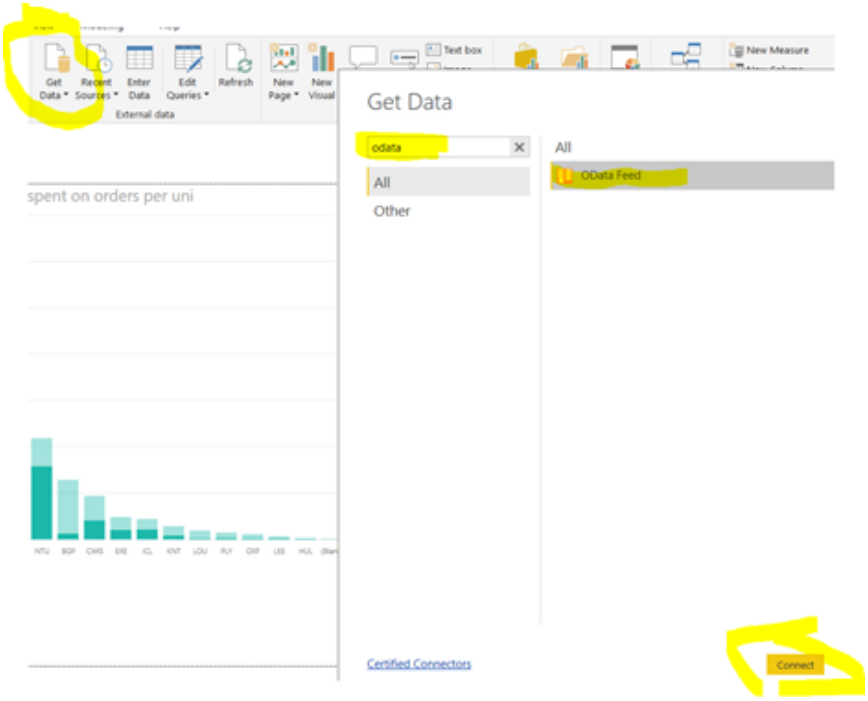
Using PowerBI - Tips and Tricks

Getting data

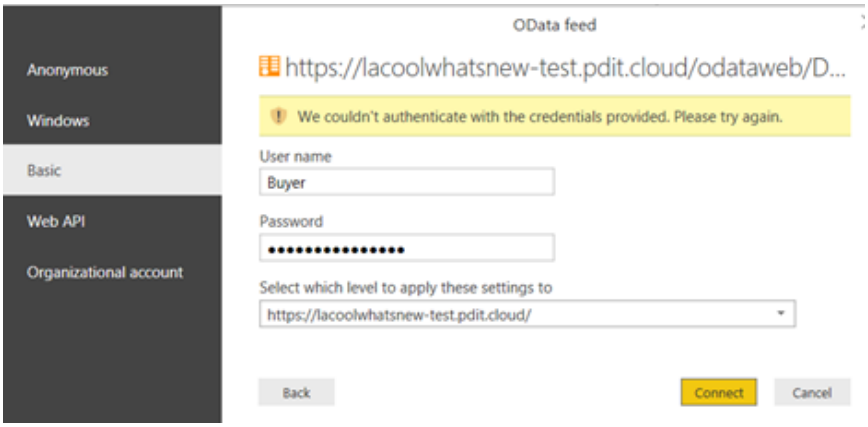
When you have configured the Planon application, you can proceed to retrieve data in your BI tool.

- When starting out, **Filter your data** to a limited set. Each time you edit your queries in your BI tool, it will be refreshed through the BI Connector. Consequently, if you are still deciding what columns you want in your dataset, it is good practice to work with a small set of data (faster and cheaper).
- Start with just one table, the related data can be automatically retrieved in the next steps.

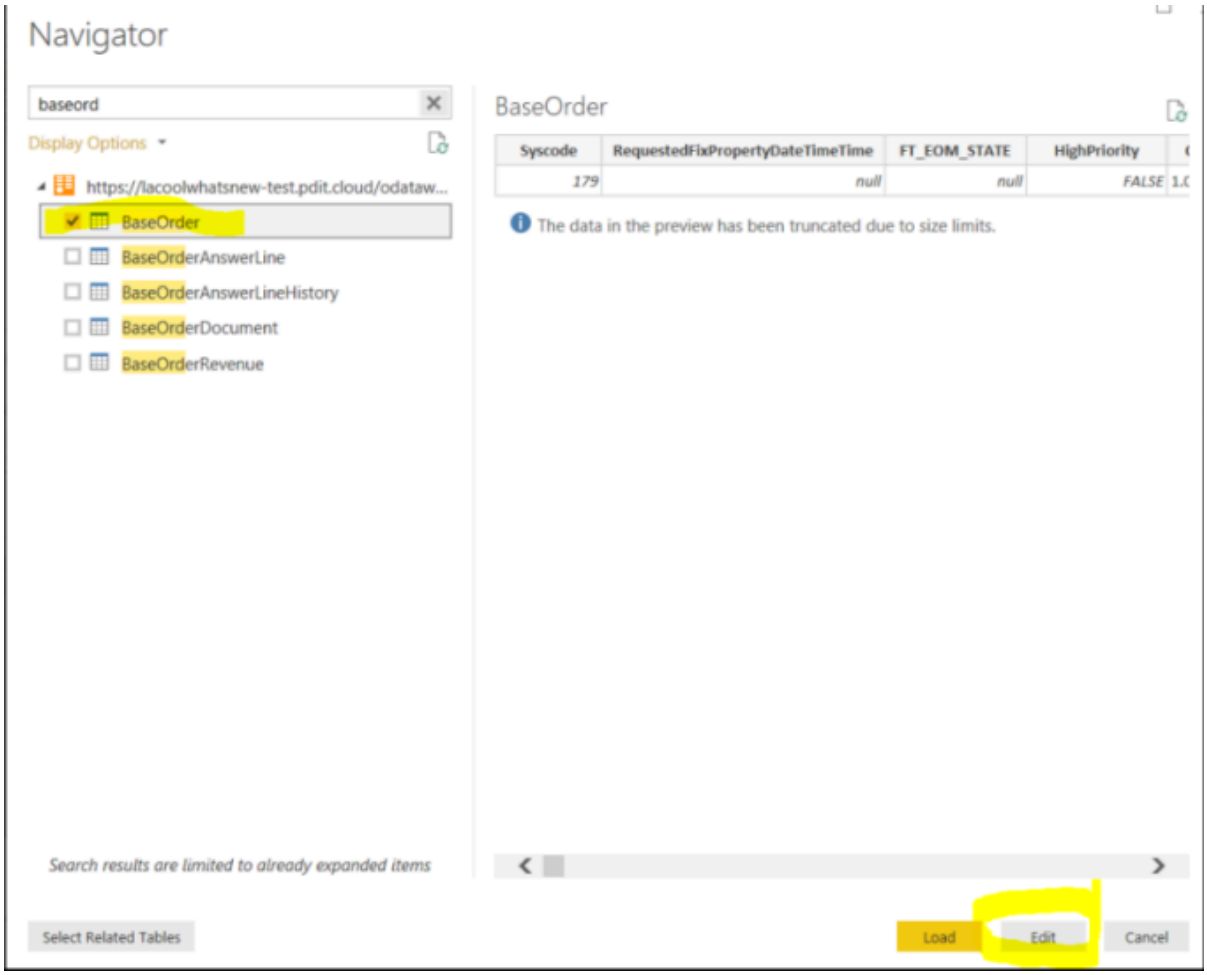
1. Select Get Data, select the OData Feed and click Connect.



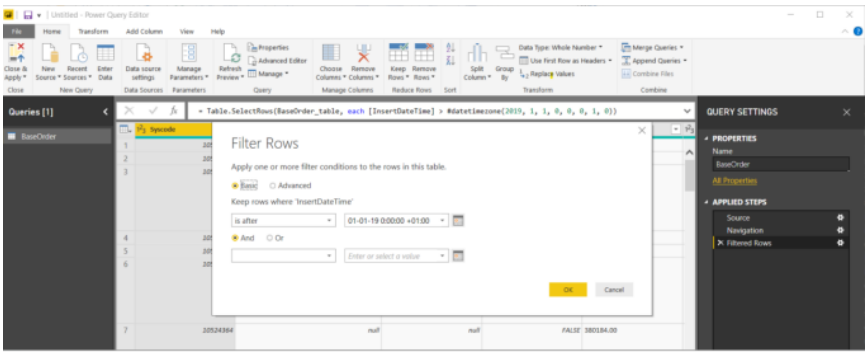
2. Enter the BI Connector URL <your Planon URL>/datalake/odata
3. Select Basic authentication.
4. Log in with your Planon user credentials, this account needs to be in the group you linked to the BI product definition earlier. If you forgot to do this, you will get an error.



5. Select a table, e.g. BaseOrders. Click Edit (do not click ENTER...if you do, click Cancel).

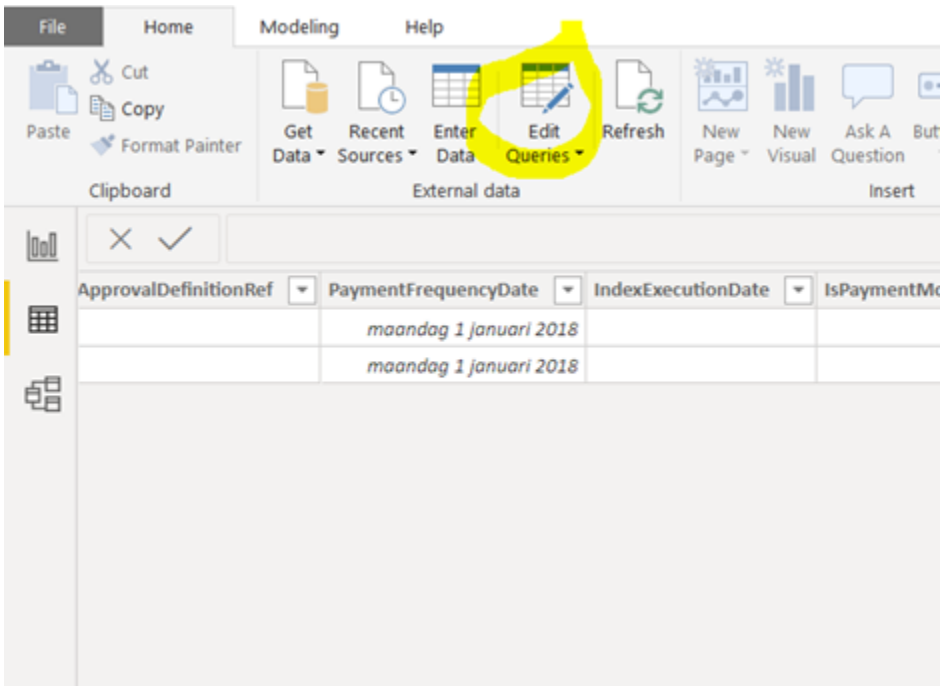


6. Click on the column headers and make selections that you know will limit your result set to a small set. For example, filter on start date to select a certain time period (use e.g. InsertDateTime).



Modeling your data

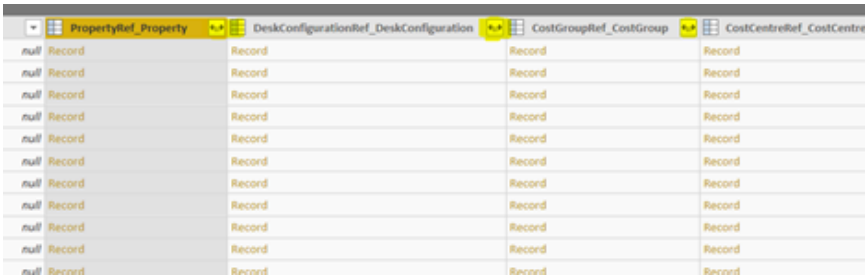
1. First select Edit queries in the main ribbon and select a table.

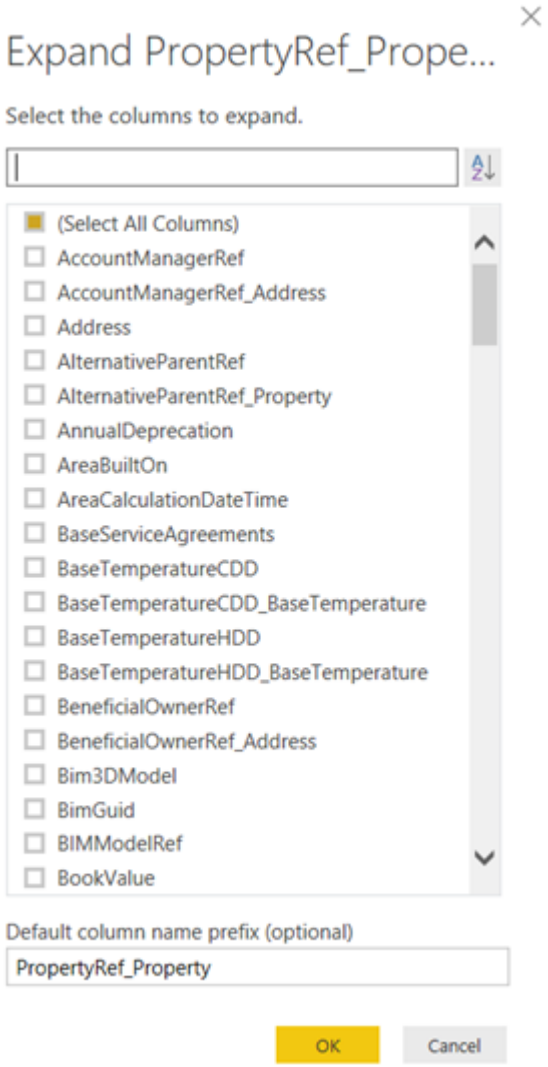


2. Scroll to the right of the table and notice all the yellow columns.

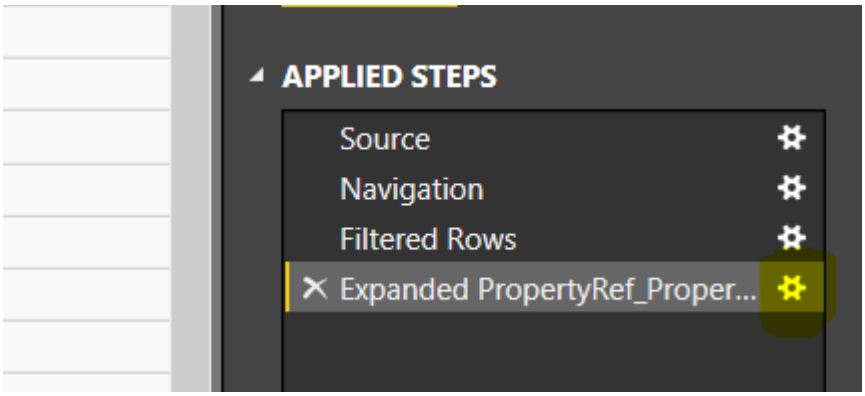
These are all the references of your order, for example the order property, requestor etc. You can include fields from these references in your order table. E.g. property code and name, or cost group name.

3. Click on the Expand button ( ) and select the fields you want to include and click OK

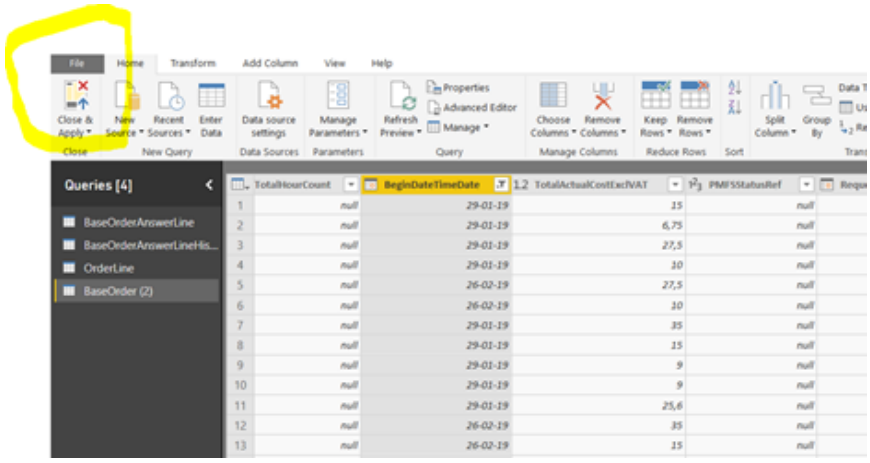




If you made a mistake or want to change the *prefix* of your expanded columns, you can change these/redo it by clicking the **Settings** icon in **Applied steps.**



When you are done, click Close and apply.



The data will be loaded shortly.

Supported field types

The synchronization mode for fields can be specified on the field definition. By default, all fields are exported, *except* the following:

- Proxy views (m:n and regular)
- Filters
- Images
- Byte arrays
- Multi-select free fields
- Passwords
- Some NLFC fields from life cycle aware business objects

See also Synchronizing life cycle data.

Exporting data to the data lake

The data lake settings are preconfigured. You can immediately export the data from the Planon application to the data lake.

Before exporting data, make sure the **Data lake** TSI is added to the **System Settings** navigation group.

For more information about the data lake settings, see Data lake fields.

Procedure

1. Go to Data lake > Data lake settings step and click Export to data lake.

A message appears informing that the export is started as a background action.

The data is assessed and the application calculates the number of jobs required to export the data to the data lake.

While the application is performing the analysis and executing the background jobs, any changes made to the Planon data will cause synchronization errors. The issues causing these errors can be resynchronized manually after the export to data lake.
Note that putting business objects *Under construction* will cause the export to data lake to fail.

Two things happen:

- Jobs are created that run as a background action.
- The jobs synchronize the data from the Planon database to the data lake.

2. Go to Export jobs level to monitor the jobs' progress.

For more information about the jobs, select one and go to Job details level.

Click Refresh to update the list.

After the jobs have completed, all data between Planon and the data lake is kept in sync. Updates in the Planon application will subsequently be reflected in the data lake with only a short time delay.

Recovery

Note that the Planon data lake does not have the same recovery policy as the Planon operational database.

The Planon data lake only contains information that is available in the operational database, so it can be restored from the operational database.

This means that in case of a restore of the operational database (for whatever reason), the data lake needs to be recreated as if you are starting with Planon Connect for Analytics for the first time, requiring a full initial synchronization. The time this takes depends on the amount of data in the operational database, it can be several hours.

Synchronization disabled

Synchronization is disabled if the data lake is unreachable for longer than 1 hour or if the number of BO changes while the data lake is unreachable is greater than 1000. When synchronization is disabled, an event log is created to notify the system administrator. To enable the data lake functionality again, a new data lake export needs to be executed.

Synchronization errors

If synchronization errors occur, these will be listed on the **Synchronization errors** step.

On this step, you can also **Delete** the listed errors or click **Retry synchronization** to sync the data lake.

A new or updated data lake synchronization will remove the synchronization errors from the former synchronization since they are no longer valid.

Performing an incremental export only

Whenever there are minor updates in your data configuration, you would want to only export the changes to the data lake rather than having to re-export all.

This could be the case, for example, when:

- Planon
  - adds a new field to an existing business object
  - adds a new business object.
- Customer
  - changes a field to in use/not in use
  - configures a new free field
  - changes field type
  - changes userpnname

To perform an incremental export only, proceed as follows.

Procedure

1. Whenever there is an initial synchronization of a root business object to the data lake, a record is created on the Data lake info step.

For each business object changes that comply with the ones described earlier, will automatically be detected. The status of the business object is then changed to *Has updates*.

2. For business objects having the status *Has updates* you can click Update in the action panel.

A dialog box appears listing all business objects that have updates.

3. Click OK to start a new export job for the selected business objects.

Only the business object that appear in the list will be exported. To check this:

- The **Full export?** field on export jobs will be set to **No** so that you can identify this export as an update only.
- There will be a list of business objects to be synchronized in the field **Business objects to export** (**Data lake settings**)

If for some reason an export fails without being completed, the export job is marked as *Failed*.
But, instead of marking ALL BOs in the **Data lake info** step to *Has updates*, only those BOs that are in the *Updating* or *Need indexing* statuses will be rolled back to *Has updates*. Then, instead of doing full export, this allows you to do an update only for all those **Data lake info** BOs that have the *Has updates* status.

Synchronizing life cycle data

Life cycles of all Planon business objects that are life cycle aware (Contracts, Contract lines, Rentable units etc.) are also available in Connect for Analytics.

For each life cycle aware business object, there are two tables:

1) The *Now* table (e.g. BaseContract). This contains the contract values of 'today' (updated daily by a scheduled action). All changes during the day will also be updated in this table, so it is an up-to-date view of the life cycle business object for *today*. All business objects that refer to this life cycle aware BO, will refer to this table.

2) The *Life cycles* table (e.g. BaseContractLifecycle). This contains all the life cycles for the contract and contains the life cycle aware fields and a reference to the '*Now* table (BaseContractRef).

For example: for contracts, the BaseContract - contains the *Now*.

For life cycle BOs, we do not export the **IsPivotLifecycle** field and the non-life cycle reference field (Syscode_NLFC) because these do not contain meaningful data for a BI user. Note that all the non-lifecycle fields are in the *Now* table.

There is a scheduled task (to be configured as a daily task) that will update *now* data of life-cycle-aware business objects with the values of the life cycles of *today*.

Procedure

1. Go to System Settings > Scheduled tasks and look for SYSUPDATE_LFC_SNAPSHOT_DATALAK in the list.
2. Make sure the status is set to Active.

The scheduler will synchronize the data with the data lake as specified.

Viewing the data usage

The data usage costs by customers is incurred by the amount of MBs 'consumed'.

The amount of MBs is monitored and displayed on the **Licence usage** level.

Procedure

1. Go to License usage level.

   This level has three steps:

   - **Hits/MBs today**

     This step displays the amount of MBs incurred on the current day. At the end of each day, this list will be emptied and a new count is started.

   - **Daily summary**

     This step displays the a list of daily counts.

- **Total license usage**

  This step displays a yearly summary of all daily counts and shows the maximum vs. the total consumed amount of MBs. Here, you can also set a **Threshold**, which is a percentage that you can set and which can be used for notifications (alerts).

Understanding the consumption of hits

To understand how the incurrence of hits works, it is good to know which actions count against consuming hits and which do not.

- What counts against consuming hits?
  - When you make a connection with a third-party product such as Tableau, Excel, PowerBI and download data as part of that request.
  - Refreshing a query, this will keep on drawing data down from the data lake.
  - Using the data lake to populate your own data warehouse.
- What does not consume hits?
  - Synchronizing the data lake from the environment.

Deleting the data lake

If you no longer wish to use the data lake, there is a process in place to delete it.

1. Go to Data lake settings and click Deactivate data lake synchronization on the action panel.

This will stop data synchronization between Planon and the data lake. No new data will be added to the data lake. However, data still exists in the data lake.

(If you would like to cancel this operation and resume synchronization, click **Export to data lake** again).

2. To delete this data as well, get in touch with Planon Support and inform them that the data lake and its data should be deleted.

Upon receiving this notification, the necessary steps will be taken to delete the data lake and its data.

Using multiple application servers

When using multiple application servers, there is a need for alignment that makes sure the data is correctly synchronized with the data lake.

This requires a seamless coordination of processes. While specifying the design, the choice was made to opt for an *open model*, which means that no locking is used.

All data lake processes will be allowed to run at the same time, allowing multiple synchronization resulting in multiple exports or synchronization during exports.

Ultimately, the application server that has the last data change will equalize the situation.

Running multiple exports at the same time might result in either one to fail and may cause the process to be slower, but the end result will be correct.

Finding Planon data in the data lake

For Connect for Analytics we are using PNnames as column headers. This can be considered as inconvenient, because end users see translated names in their interface which do not match with the PNnames.

Using system names as our API was a deliberate decision. Because these names are fixed, they do not change.

This means that if you would can change the translated name of fields in Planon, it will not break your dashboards.

The following topics explain how the find the correct Planon data in the data lake.

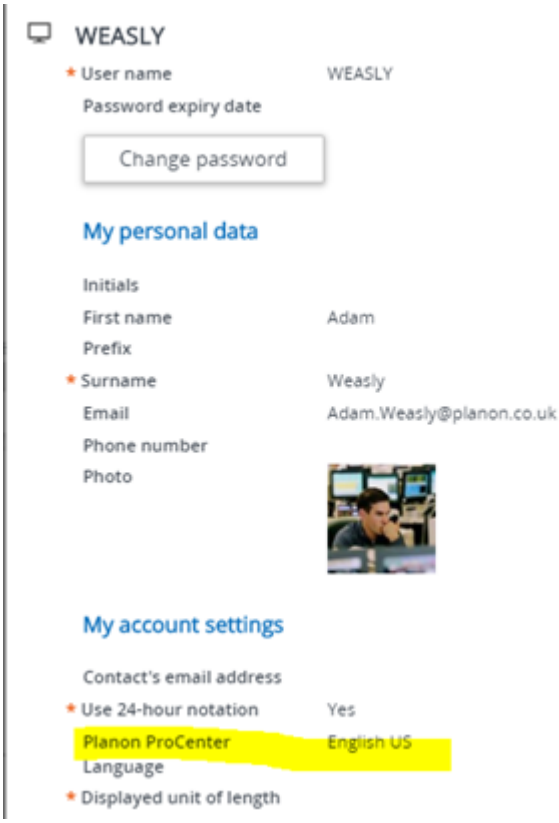
Finding your language code

The language code is the acronym of the language that is linked to your account in the Planon application.

Because it is a translation, you need to know which language you are using.

1. In the top-right, click **My account**.

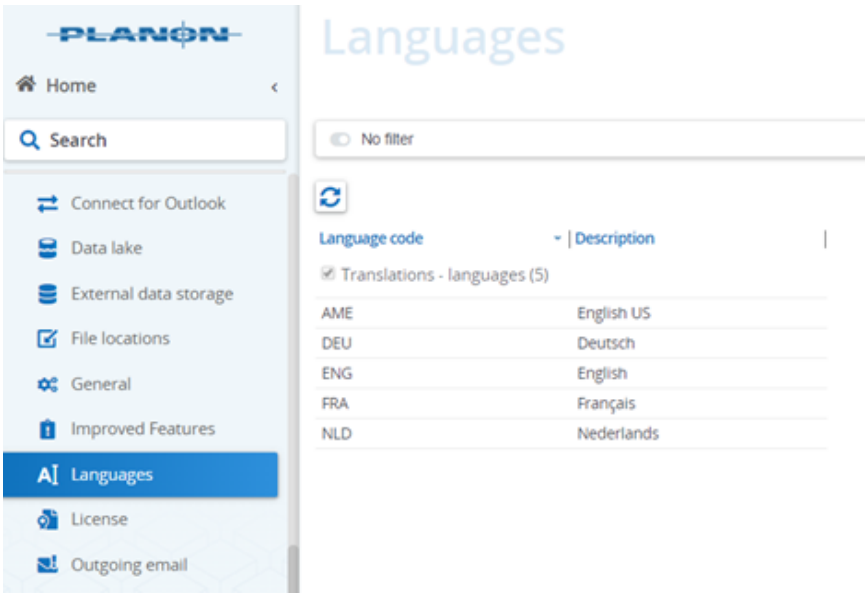
This is where you can find your language.



Here you can see that English US is the language.

2. Go to the Languages TSI.

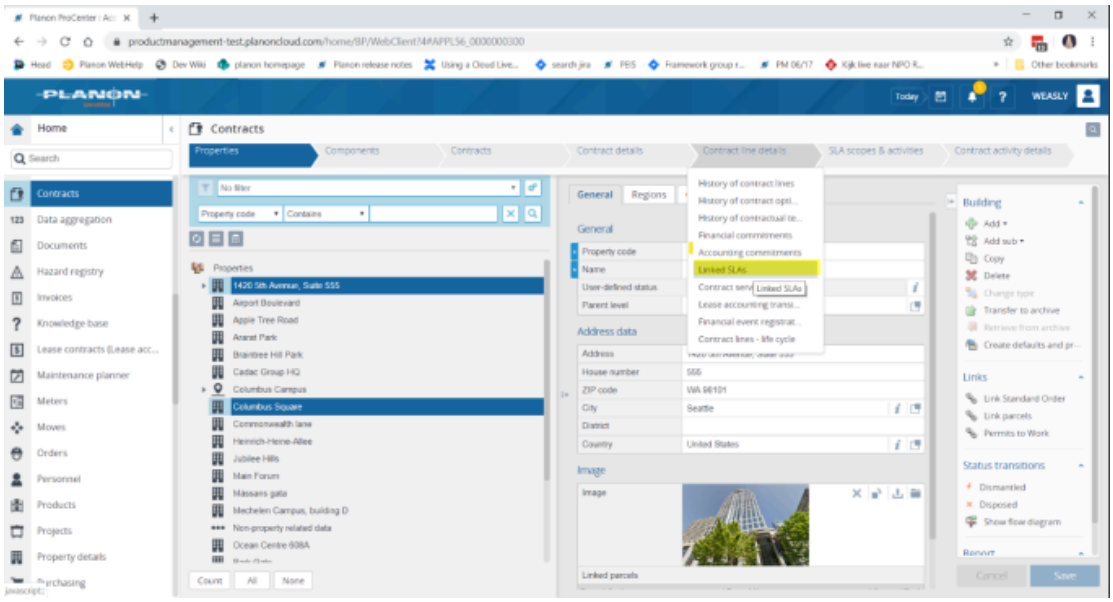
Here, you can see that the Code for this language is AME.



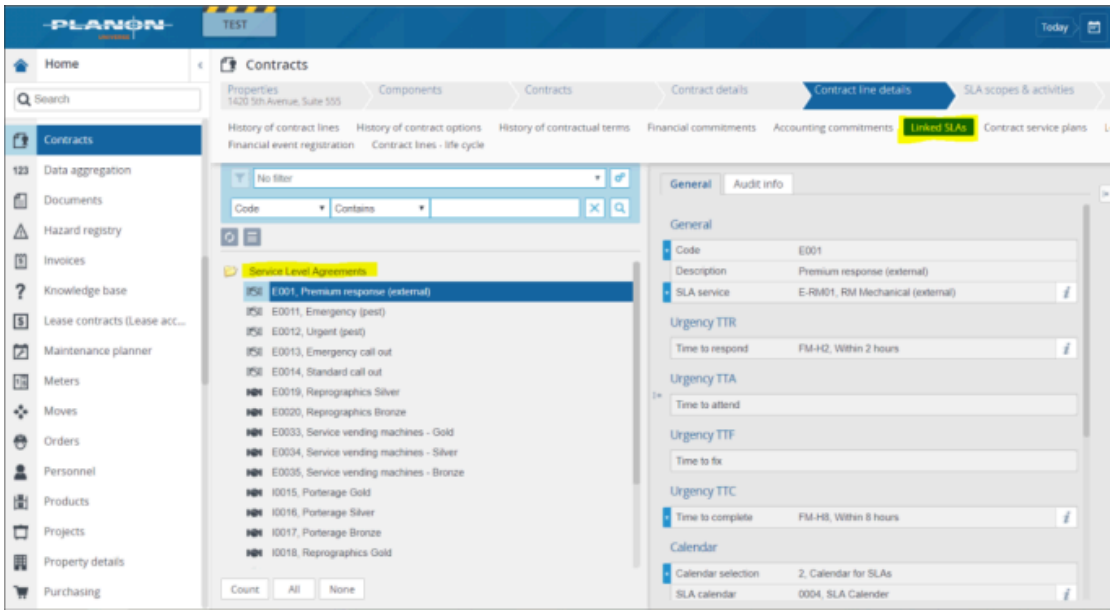
Finding the translated name

The next step is to find the translated name of the business object.

If you want to make a report e.g. for Linked SLAs, how do you find the right table in the data lake?



1. First, go to the **Linked SLA** step



The text you see at the top node of the element list is important. “Service Level Agreements” is the translated name of the "root" business object of the elements that are shown.

Finding the Planon system name (PNname)

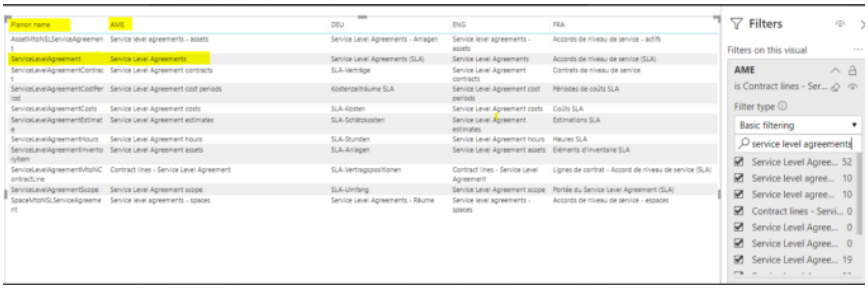
In the data lake…

- BaseBODefinition table stores the translations of business objects.
- BaseBOFieldDefinition table contains the field translations.
- BaseBOState table contains the status translations.

1. In the business objects, look up the translation for *Service level agreements*.

Here you will find that the Planon name (PNname) is ServiceLevelAgreement.

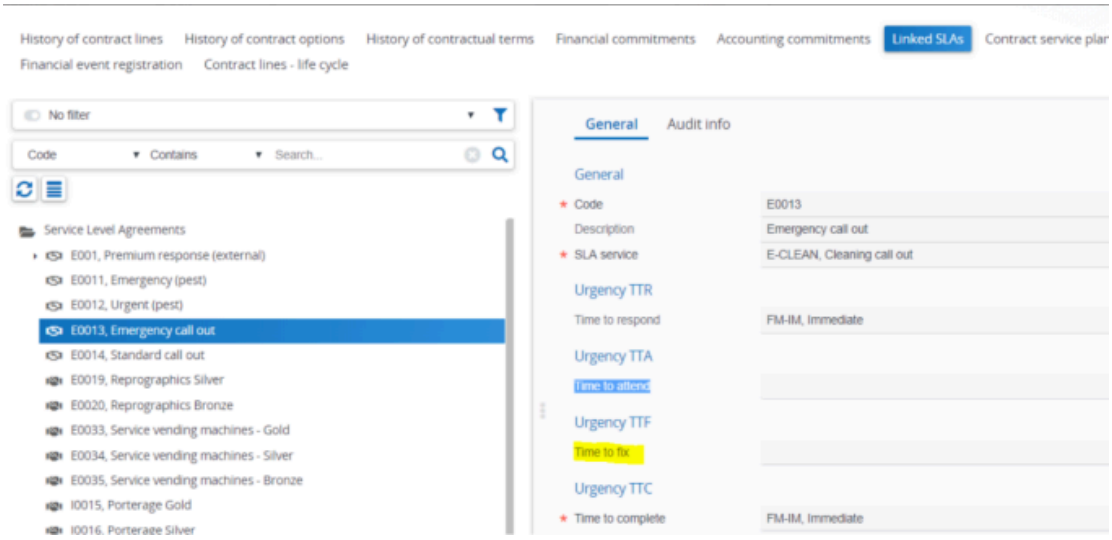
Consequently, the table you are looking for in the data lake is *ServiceLevelAgreement*.



2. When loading data, select the table **ServiceLevelAgreement**.

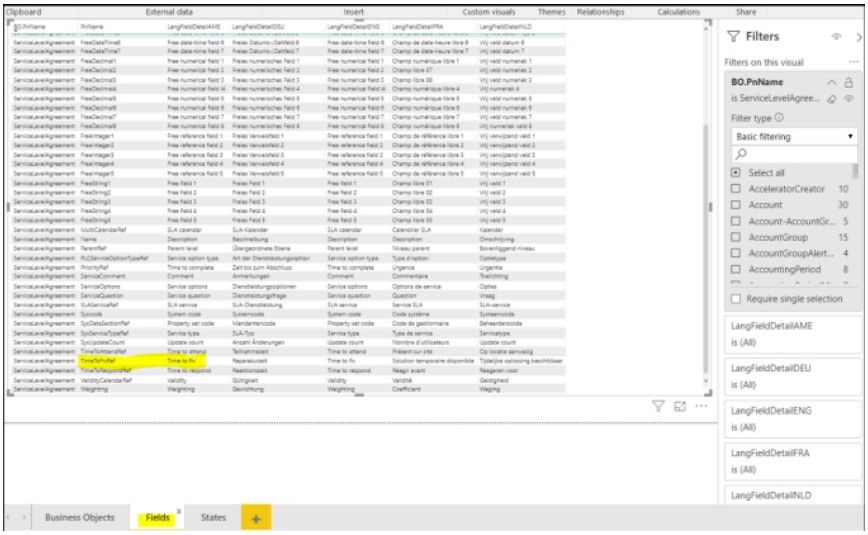
Finding the right column

Suppose you are interested in the field **Time to fix,** which column should you use?



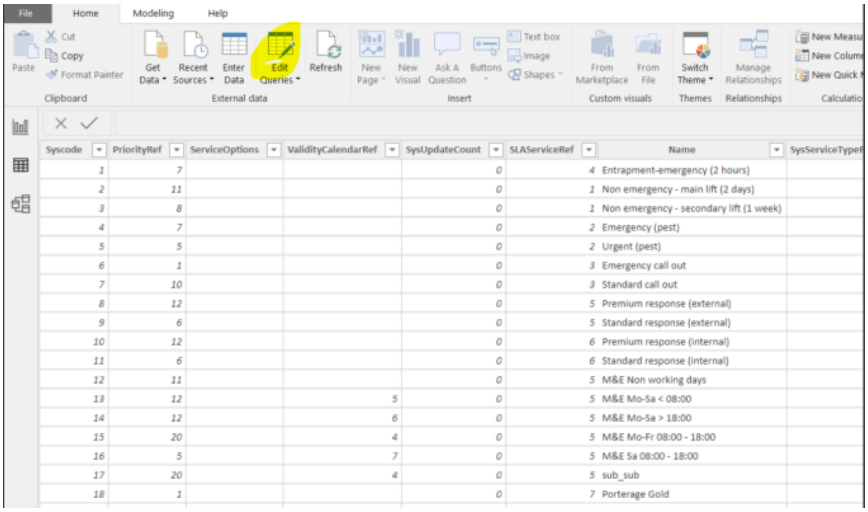
The BaseBOFieldDefinition table stores all the field translations.

1. In the following sample PowerBI chart, go to the Fields tab and filter on BO PNname "ServiceLevelAgreement" and find "Time to fix" in the AME column



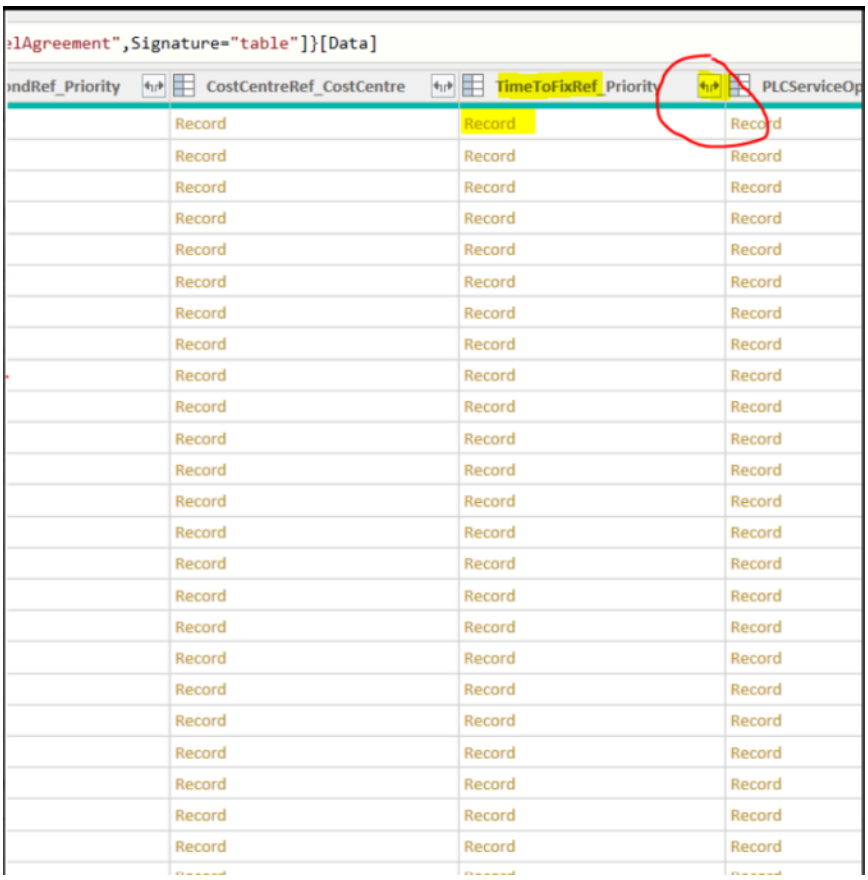
The PNname of the field is TimeToFixRef. This means it is a reference to another table, which you will need to find.

2. Click Edit queries.

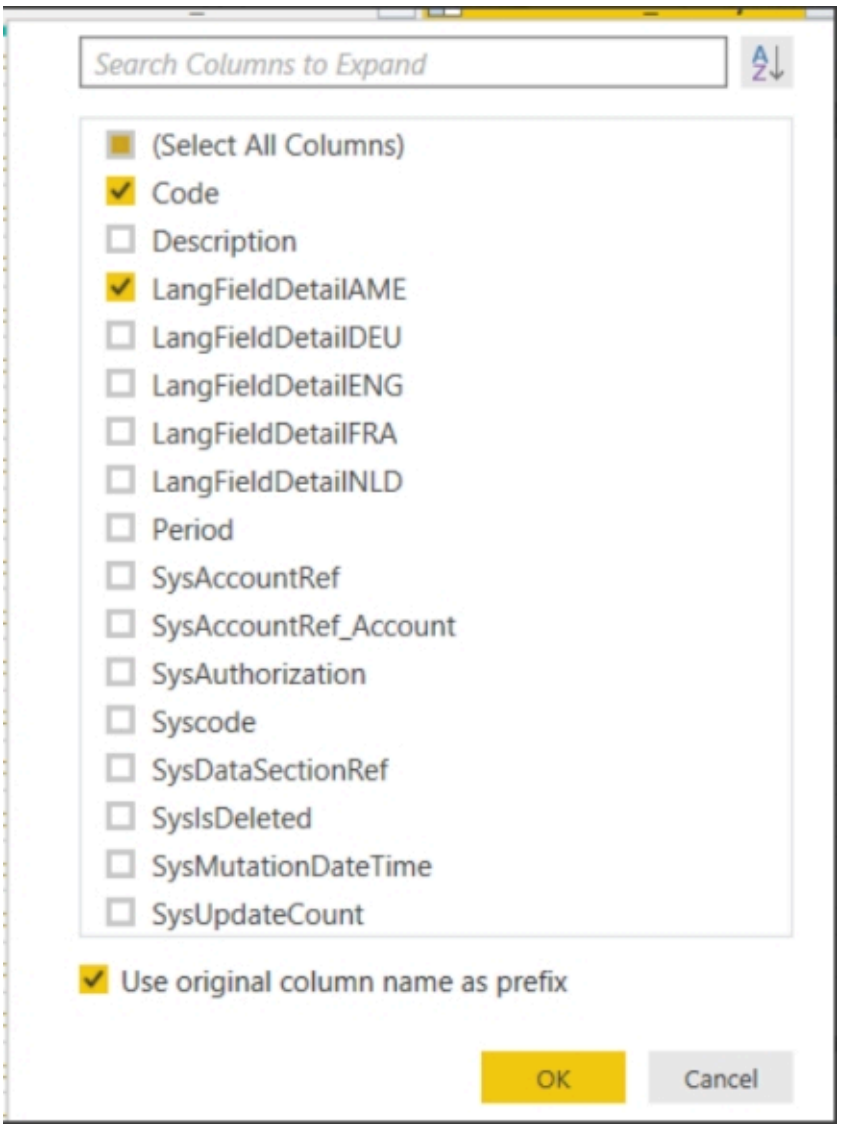


Syscode	PriorityRef	ServiceOptions	ValidityCalendarRef	SysUpdateCount	SLAServiceRef	Name	SysServiceTypeR
1	7			0	4	Entrapment-emergency (2 hours)	
2	11			0	1	Non emergency - main lift (2 days)	
3	8			0	1	Non emergency - secondary lift (1 week)	
4	7			0	2	Emergency (pest)	
5	5			0	2	Urgent (pest)	
6	1			0	3	Emergency call out	
7	10			0	3	Standard call out	
8	12			0	5	Premium response (external)	
9	6			0	5	Standard response (external)	
10	12			0	6	Premium response (internal)	
11	6			0	6	Standard response (internal)	
12	11			0	5	M&E Non working days	
13	12		5	0	5	M&E Mo-Sa < 08:00	
14	12		6	0	5	M&E Mo-Sa > 18:00	
15	20		4	0	5	M&E Mo-Fr 08:00 - 18:00	
16	5		7	0	5	M&E Sa 08:00 - 18:00	
17	20		4	0	5	sub_sub	
18	1			0	7	Porterage Gold	

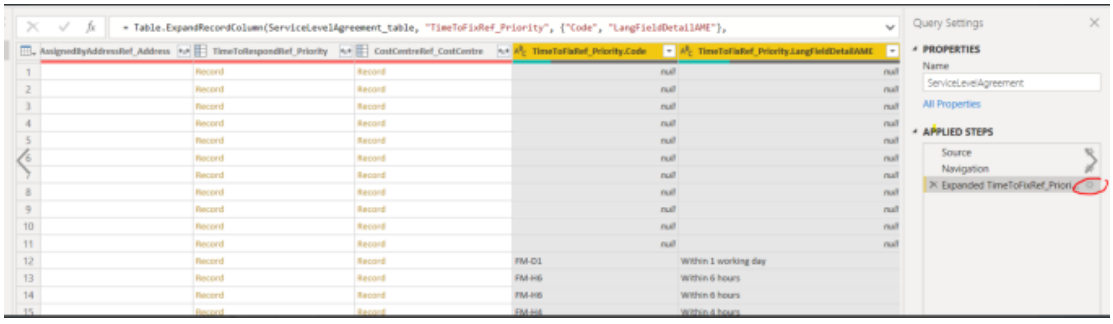
3. Scroll to the right until you find a column that contains "records" that starts with "TimeToFixRef".



You will find that the column is called TimeToFixRef_Priority. This means it is a reference to the Priority table. You do not need to load the Priority table, you can click the "expand button" to the right of the column.



4. Select the fields of the Priority table you need.



Now you have the **Time to fix** fields you wanted to report on.

Finding communication logs

In the Planon relational database, communication logs are stored differently than in the data lake.

In the relational database, all communication logs are stored in one table: *PLN_COMLOG*

The link between the business object (e.g. *Order X*) and the comlogs of that order, are stored in the table

PLN_COMLOGBUSINESSOBJECT table (apart from Assets, see below).

This intermediate table has three important fields:

- A reference to the comlog object in PLN_COMLOG
- A reference to the BO definition in PLN_BASEBODEFINITION, so that we know to which BO type the comlog belongs.
- A reference to the actual BO, in this case *Order X*.

Instead of having this intermediate table, the data lake stores the communication logs in a table per BO definition, they are named *CommunicationLog<BOname>*.

For assets, the intermediate table is in PLN_COMLOGASSETS and the comlogs in the data lake are in CommunicationLogAsset.

Importing data in a BI tool

The data exported to the data lake can be viewed in any BI tool, as long as it supports OData (version 4).

As this part is external to the Planon application, we will provide only the basic steps for importing the data from the data lake.

Procedure

1. Open your BI tool of choice (PowerBI, Tableau, Qlic, Excel, ...).
2. Get data from OData feed.
3. Log on:

Log on using **Basic Authentication** (not Windows Authentication nor Anonymous)!

a. URL: enter the URL of your Planon environment and extend it with: /datalake/odata

Some tools require you to further add the 'collection names' of the data to be shown. These 'collection names' are listed in the Data lake > Data lake settings step.

b. User name and password: enter the credentials of the Planon account

The data will be loaded. You can now visualize the data as required.

For information on data visualization, check the information that is provided by the vendor of your BI tool.

Refreshing data

Note that retrieving refreshed data is not free of charge. The BI tool determines how up-to-date the data in the tool is. Be smart with your refresh rate and only retrieve data you are interested in and only refresh as needed.

Retrieving specific data

By amending the "service root URL", you can specify which data to display.

The ***<your root url>/datalake/odata*** is your service root URL. You can extend this URL to retrieve specific information.

Example

- To retrieve an *entity set* (which is a Planon table) such as base orders, your URL would be: ***<your root url>/datalake/odata/baseorder***

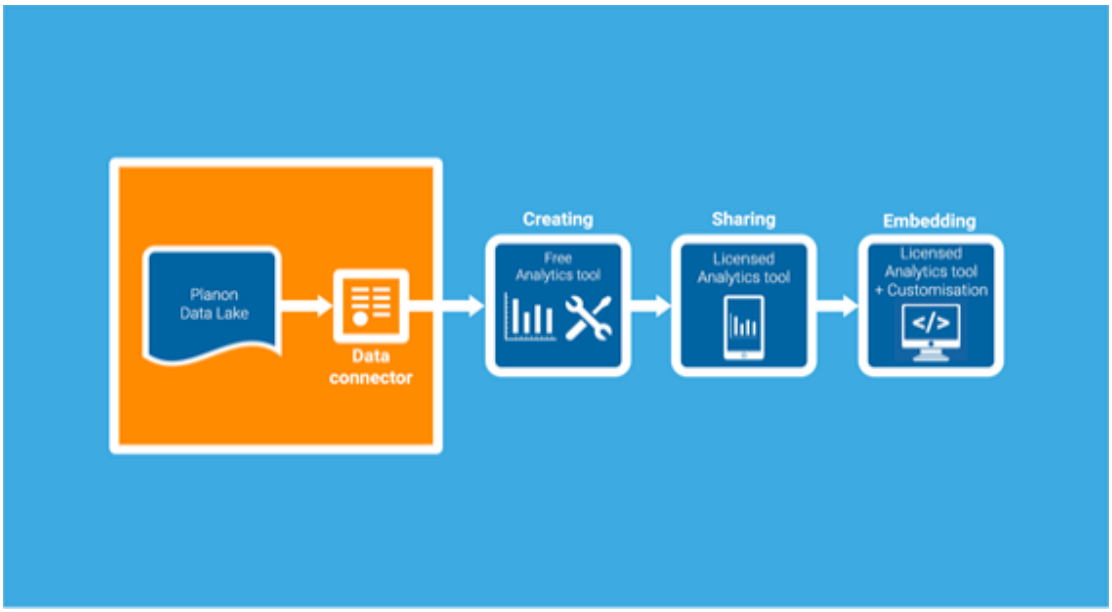
  To know which entity sets there are, you can look them up by either typing ***<your root url>/datalake/odata/*** or look up the list on the Data lake > Data lake settings step.
- Typing <your root url>/datalake/odata/$metadata will give you all the fields of the entity sets.

For more information, see:
http://docs.oasis-open.org/odata/odata/v4.0/odata-v4.0-part2-url-conventions.html (not all features described here are supported).
For an overview of supported OData features, see: OData support.

Sharing reports and dashboards

By using your BI tool, you can create reports and dashboards to share with the right people for analysis and management information.

There are multiple ways of sharing this content:



- Include them in email
  - The data that is shared is static.
- Include links into your portal via the BI tools
  - The data can be refreshed based on a schedule.
  - This functionality depends on the BI tool and may cost extra.
- Embed the report/dashboard into Planon
  - By requiring authentication, access to the report can be authorized from the BI tool.
  - The data can be filtered, for example, based on the logged on user.
  - The data can be embedded in a gadget on your portal/homepage.
  - Further customizations can be applied.

OData support

Connect for Analytics supports specific OData types and a subset of the OData protocol.

OData Types

Connect for Analytics supports both *XML* and *JSON* formats and uses the following OData types:

When using tools such as PowerBI, we recommend to use *JSON* format (default for PowerBI).

- Edm.Int32
- Edm.String
- Edm.Decimal
- Edm.Boolean
- Edm.DateTimeOffset
- Edm.Date
- Edm.TimeOfDay
- Edm.GeographyPoint (only supported for JSON format.)

OData Protocol

In addition, **Connect for Analytics** supports a subset of the OData protocol:

- Only **reading** data is possible, **Not** creating or updating.
- $filter queries of the form

```
/BaseOrder?$filter=PropertyRef eq 4
```

- Filtering on navigation properties is **Not** supported. For example a query of the form will throw an error:

```
/BaseOrder?$filter=PropertyRef_Property/Name eq 'Columbus Square'
```

- When using $select queries such as:

```
/BaseOrder?$select=OrderNumber,OrderGroupRef,PropertyRef
```

  Or

```
/BaseOrder?$select=*
```

  The second query will select all fields of BaseOrder. If no $select option is specified, all fields will be returned.

- $expand queries with or without $select. Nested expands are supported, but performance might suffer with increasing number of nested expands. For example a query of the form:

```
/BaseOrder?$expand=PropertyRef_Property($select=Name)
```

is supported, as well as:

```
/BaseOrder?$expand=PropertyRef_Property($select=Name;
$expand=ParentRef_Property($select=Name))
```

Within $expand, we support the system options $select and $expand.

- $count which can also be used in combination with $filter. For example, a query of the form

```
/BaseOrder?$filter=PropertyRef eq 4&$count=true
```

will return the number of orders where the PropertyRef field has the value 4.

- $orderby- by default, results are sorted by Syscode (primary key field) ascendingly. The sorting can be changed by specifying a field name in the $orderby option. When no asc or desc option is specified, ordering is done ascendingly.

```
/BaseOrder?$orderby=OrderNumber desc
```

- $skip,$skiptoken and $top. For example, queries of the form:

```
/BaseOrder?$top=1000

/BaseOrder?$skiptoken=1*2000

/BaseOrder?$skip=1000
```

are all supported. Note that every OData response will contain at most 2000 entries (prior to L54, this was 1000), and, if necessary, a link to the next page of results which will contain a $skiptoken option.

- Supported String and Date filter functions are as follows:

String filter functions	DateTimeOffset / Date / TimeOfDay filter functions
contains	year
endswith	month
startswith	hour
length	second
concat	

More Information

For more information on the OData v4 standard specification see:
- http://docs.oasis-open.org/odata/odata/v4.01/odata-v4.01-part1-protocol.html
- http://docs.oasis-open.org/odata/odata/v4.0/os/part3-csdl/odata-v4.0-os-part3-csdl.html
- http://docs.oasis-open.org/odata/odata/v4.0/odata-v4.0-part2-url-conventions.html.

Using PowerBI - Tips and Tricks

Connect for Analytics is BI-tool-agnostic. This means you can use your BI tool of preference. Since many customers are using PowerBI, the following section provides some useful tips.

For more resources on building queries, see also:

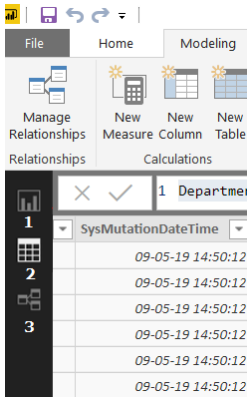
- https://www.sqlbi.com/
- https://daxstudio.org/

The OData connector does not support 'query folding'. This means that when working with large data sets (depending on how the report is set up), it could take a long time to calculate such a dashboard.

Basic Settings PowerBI

Views

PowerBI features three main views, featured in the left panel.



1. **Report** view: where you use queries to build visualizations.
2. **Data** view: where you see the data in your report in data model format (much like Excel). Here you can add new columns and caculations.
3. **Relationships** view: where you get a graphical representation of the relationships that have been established in your data model.

In The **Data** view, you can use the **edit query** mode, which is how you can model the data retrieved from Planon. The query language used here is slightly different. When you add a filter in **edit query** mode, it is "fixed" and will be applied every where and each time you refresh your data. If you add a fitler in **Data** view, it is only applied in that view.

Filter on syscode

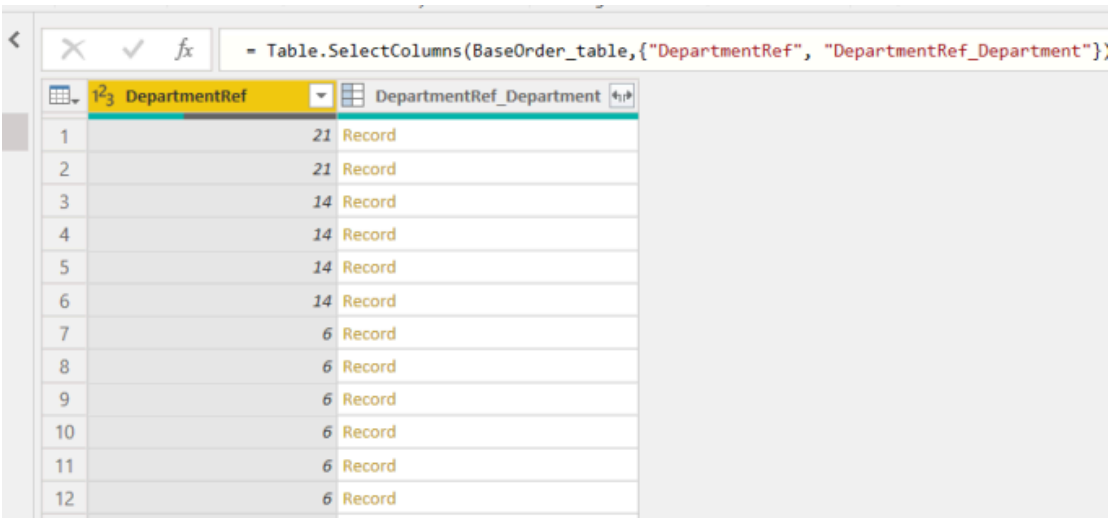
By being able to filter on the syscode instead of having to join two tables, the search will be much quicker.

If a business object (BO) has a reference, we implemented 2 columns:

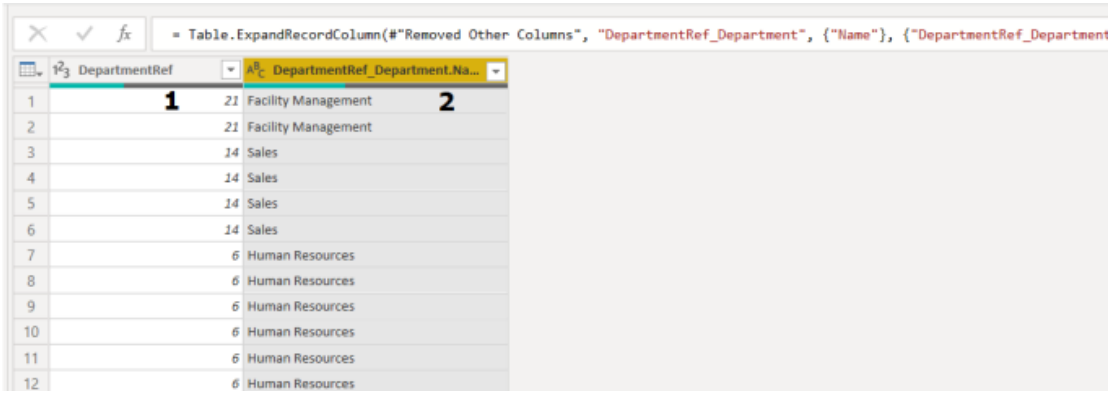
- The <BOsystemname>Ref field, that contains the syscode value of the row in the referenced table.
- The <BOsystemname>Ref_ BOsystemname> column, where you can expand the referenced BO to include the fields you need to show.

For example, Order has a reference to a Department. There are 2 fields:

- DepartmentRef
- DepartmentRef_Department



To include, for example, the Department name in the Asset table, you can expand it to include the column DepartmentRef_Department.Name.

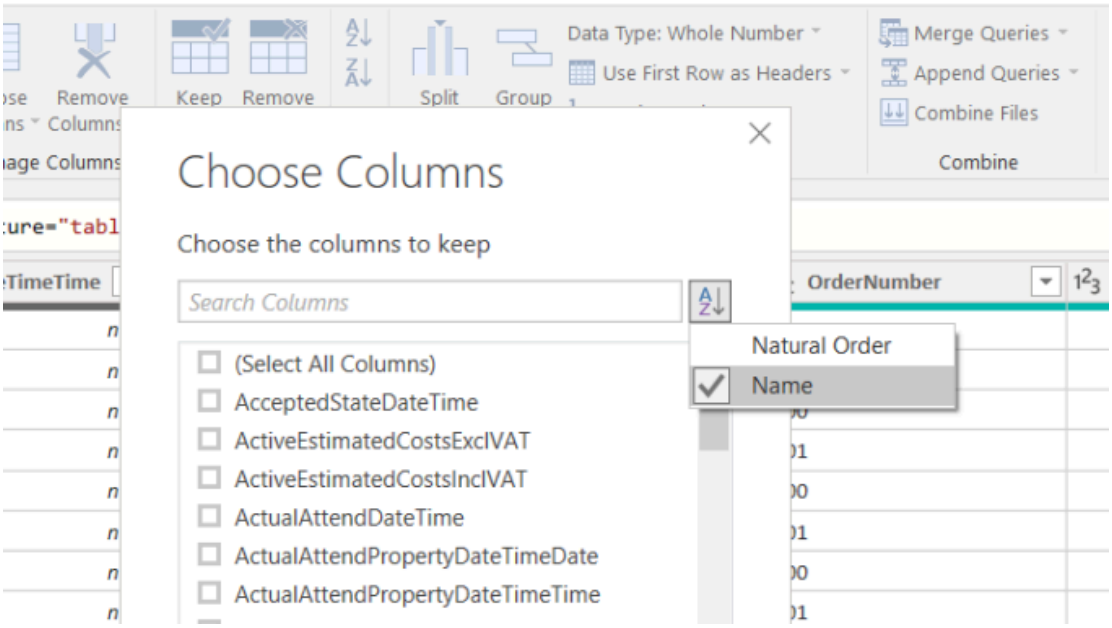


Now, you can build a filter that, for example, only shows the HR department. You can build it on the syscode (column 1) or on the name column (2).

Filtering on the syscode column will be faster because the tool does not need to join 2 tables for your filter, it only has to search in one table.

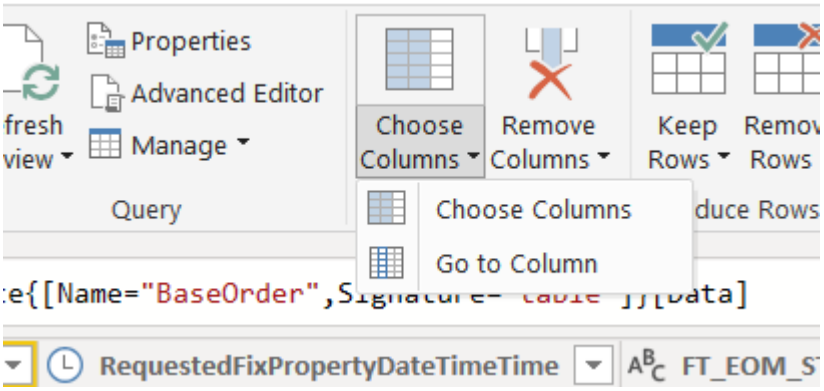
Sorting fields alphabetically

Press the AZ button next to a search field and the fields will be listed alphabetically.



Go to column

Having many columns results in heavy scrolling. In the 'edit query' mode you can select **Go to Column** in order to navigate to it directly.



Hierarchy

To perform an analyses at the top level of a hierarchy, proceed as follows.

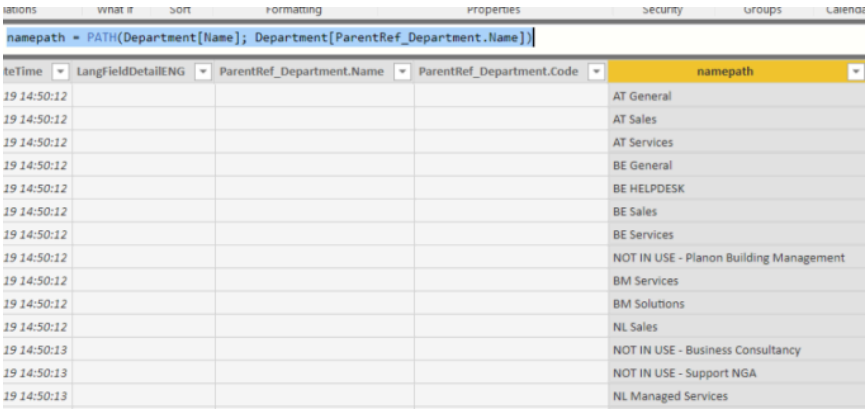
For this example, we are using Departments.

Procedure

1. Select the Department table.
2. Add a column (modelling, new column)

3. enter namepath = PATH(Department[Name]; Department[ParentRef_Department.Name])

This will give you a string that represents the whole "hierarchy path " of the field "department name" of this row, based on the relationship parentref.



teTime	LangFieldDetailENG	ParentRef_Department.Name	ParentRef_Department.Code	namepath
19 14:50:12				AT General
19 14:50:12				AT Sales
19 14:50:12				AT Services
19 14:50:12				BE General
19 14:50:12				BE HELPDESK
19 14:50:12				BE Sales
19 14:50:12				BE Services
19 14:50:12				NOT IN USE - Planon Building Management
19 14:50:12				BM Services
19 14:50:12				BM Solutions
19 14:50:12				NL Sales
19 14:50:13				NOT IN USE - Business Consultancy
19 14:50:13				NOT IN USE - Support NGA
19 14:50:13				NL Managed Services

4. Add a new column for each level you have.

Department (lvl1) = PATHITEM(Department[namepath];1)

Department (lvl2) = PATHITEM(Department[namepath];2)
etc.

5. When you are done with this, you can make a hierarchy in your visualisation view by dragging the fields into a hierarchy.

If you now use this hierarchy as an X axis, you can zoom into lower levels of the hierarchy.

Reference date aware/time filters

To filter on data data is relevant **today**, you need to fill in a begin date/end date.

> This topic is about Planon reference data aware BOs (for example: Space usages, Accounts). Note that this excludes lifecycle aware BOs such as Contracts (these are treated differently).

Typically, Planon leaves the end date empty.

Fill the end date with a date in the future: in the data model view (3) you add a column with this functionEnddate replace empty values

```
= Replacer.ReplaceValue(Logical.From([EndDate]),null, Date.AddYears(DateTime.LocalNow(), 50))
```

Now you can filter on values between begin date and end date.

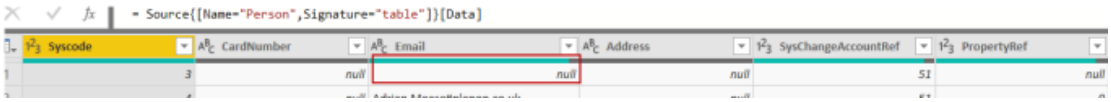
PowerBI also features a lot of relative date filters built in which you can use.

Turn off fields/columns without data

There is a visual indication that directly shows if a column contains any values.

If you click 'edit query', you will see colors in the headers:

- green: has a value
- grey: emtpy

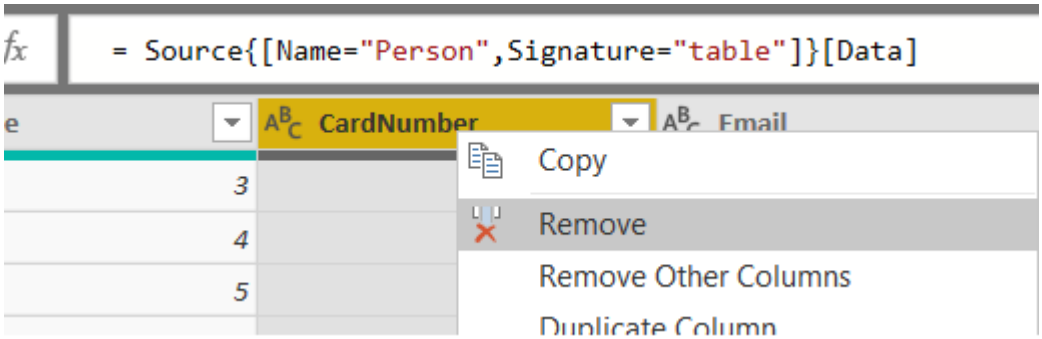


If the bar is totally grey, the column is empty *for the first 1000 records*.

It does not query the whole table, so it is possible there are values in this column, but it is an indication.

If you have fields that do not contain data, you can do 2 things

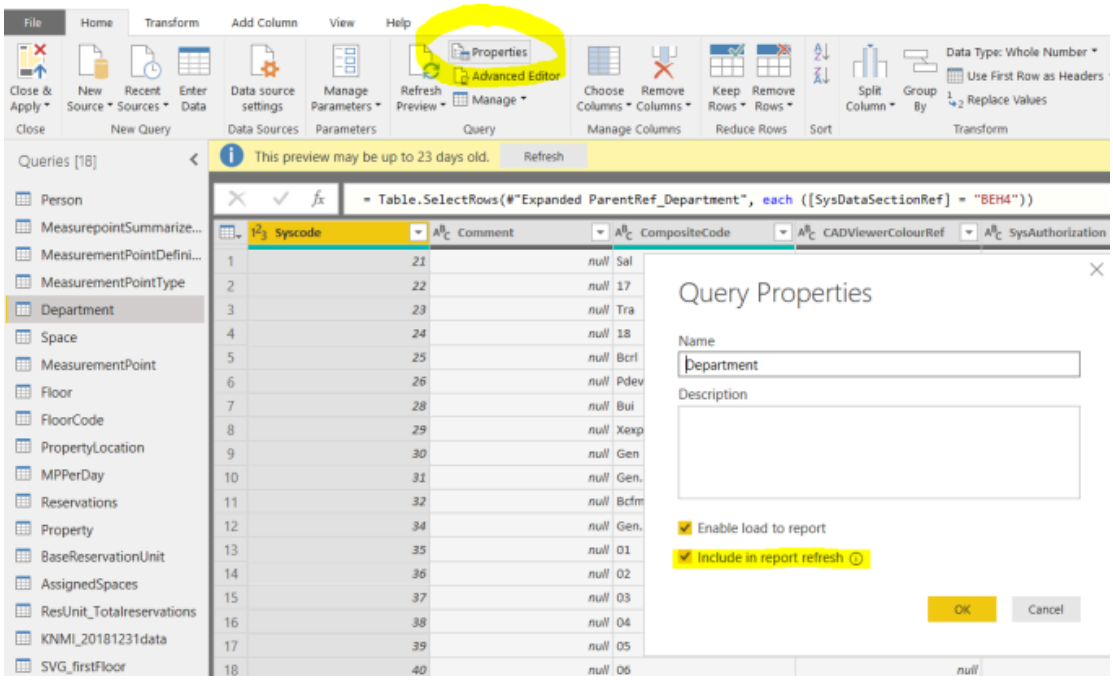
1. Do not put them "in use" in **Field definer**. If you do not put them in use, they will no longer be synced to the data lake and will automatically no longer appear.
2. Remove them from PowerBI (as shown in the following image).



Data that is not updated often

You can configure PowerBI so that it does not refresh data that does not change often.

A dashboard is configured to show orders by department. The orders are updated often, but departments do not change often. So, for this report indicate that you do not want to update the departments, only the orders as shown in the following image:



Field descriptions

The following section(s) describe(s) the fields, their purpose and meaning.

Data lake fields

Field	Description
Synchronization activated	When **Export to data lake** has been clicked in **System Settings**, this setting is set to **Yes** to indicate that the synchronization between the Planon application and the data lake is enabled.
Database	Displays the location of the data lake database.

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