Orchestrated Analytics Release 13.5

Data Service v3

Beta Release

User Guide

For internal & External use

Document Version: 1.0

IQVIA TECHNOLOGIES

Table of Contents

1. Data Service v3 Summary

Data Service v3 supports FLAT type of data. The configuration of this type of data is different from others like DataDM and DataDWH.

It does not have tables containing metadata, instead, the user will have to define the metadata using the Feature Designer app.

Database has only one table for each data source. Users themselves need to define what type of data columns are responsible for. There are no naming conventions in this type of table, columns can be named anything, for example: SALES $$, Am0unt % and etc. But certain conditions must be met in each table: there must always be at least one column for **Dimension**, one for **Time Period** and one for **Measure**, otherwise the table is considered invalid.

The main point is that the column names and number of columns can be different for each source table.

But there is a need to follow to type consistency. Each source table must include **Dimensions**, **Time Period** and **Measures**. Table can have more than 1 column for Dimensions or Measures.

Column for **Dimension** can have arbitrary name since it doesn't have any naming agreement. Dimension columns provides information about all available dimensions. One dimension can contain one or two columns with its code and description. Dimension Code is used to filter through the WHERE clause, Dimension Description is used to describe Dimension Value.

<DIMENSION_CODE_1>	<DIMENSION_DESCRIPTION_1>	<DIMENSION_CODE_2>	<DIMENSION_DESCRIPTION_3>
qwes23	Alphagan	124562	Spain
fghy51	Combigan	412567	Germany

Also, Dimension can have column for description, but it is not required. This column will be used for display on UI, but if table doesn't have description column for Dimension, then it will use the Dimension column for UI instead of the description column.

The column for **Measure** can has arbitrary name since doesn't have any naming agreement. Measure columns provide information about all available measures. Measure can be any numeric type.

MEASURE_1	MEASURE_1
2158.231	21545.22
12415.22	124125.222

The column for **Time Period** can have arbitrary name since doesn't have any naming agreement. Time period column provides information about all available time periods. For this column, as well

as for all, there is no naming convention, it can be called anything, for example: DAY $$, Month123 and so on. But the type should always be 'Date' because this is used for sorting (getting the last available month/day) and for calculating other time periods like week/year/quarter.

TIME_PERIOD
2017-08-01
2017-08-01
2016-11-01

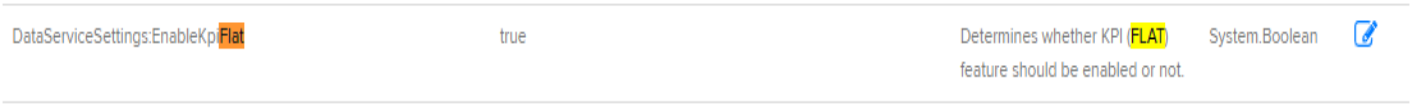
Column Name	Type	Nullable	Description
<DIMENSION_CODE_1>	INT is recommended but can be anything	NO	Dimension name code1
<DIMENSION_DESCRIPTION_1>	NVARCHAR(255) is recommended but can be anything	NO	Dimension description 1
<DIMENSION_CODE_2>	INT is recommended but can be anything	NO	Dimension code 2
<DIMENSION_DESCRIPTION_2>	NVARCHAR(255) is recommended but can be anything	NO	Dimension description 2
<DIMENSION_CODE…>	INT is recommended but can be anything	NO	Dimension code …
<DIMENSION_DESCRIPTION_…>	NVARCHAR(255) is recommended but can be anything	NO	Dimension description …
<TIME_PERIOD>	DATE	NO	Time period
<MEASURE_1>	DECIMAL is recommended but can be any numeric type	YES	Measure 1 Value
<MEASURE_2>	DECIMAL is recommended but can be any numeric type	YES	Measure 2 Value
<MEASURE_…>	DECIMAL is recommended but can be any numeric type	YES	Measure… Value

At the moment, FLAT type of data supports the following providers: MicrosoftSQL and Snowflake.

This is a Beta release of Data Service V3, and it's planned to bring more enhancements in the future release that takes place in July. One of the main concerns is to add support for Data Security, as for now Data Service V3 doesn't support this feature. Also, it's planned to add the 'Time Period Roll Up' feature support. Time Period Roll Up means the using of calculated period based on the base period. As we have Day as the only supported base period, this feature makes it available to use calculated periods like Quarter, Month, YTD etc., which are calculated by rolling up the base period, Day.

2. Configuring a Connection String

First of all, it's necessary to flag the system setting '**DataServiceSettings:EnableKpiFlat'** as **'true'** located on the 'System settings' page in Maintenance. After that, the value 'KPI (FLAT)' will be available for selection in the 'Database Type' dropdown.



The Connection String tab allows you to view and manage the connection strings used with Feature Designer. This way, it allows you to create a FLAT type connection string, so that you could configure a feature store and then load metadata.

To create a connection string, click on 'Add New Connection' and it will redirect you to the Add New Connection String page. This will allow you to establish a new database connection.

When adding a new connection these are the values that you can configure:

System Name: The name of the system you are connecting to

Source Type: The type of system you are connecting to

Reuse Metadata From: Selection of an existing connection string to download the same metadata without memory usage issues

Database Type: The type of database you are connecting to

Data Source: The URL of the database you are connecting to

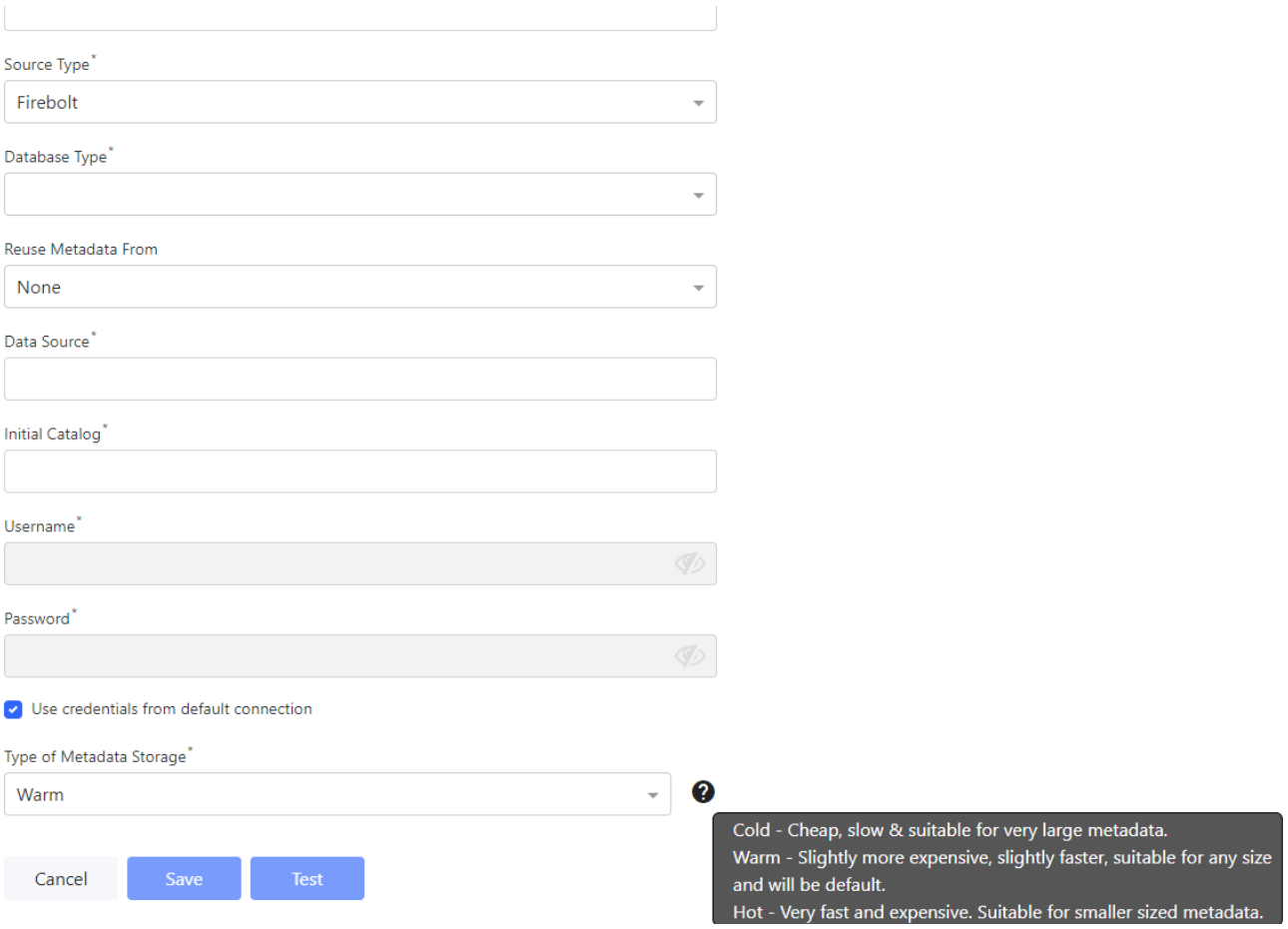
Initial Catalog: The Database in particular you want the connection string to connect to

Username: The username to access the database

Password: the password to access the database

Use Credentials From Default Connection: If checked system will declare credentials for connection

Type of Metadata Storage: Selection of a type of metadata storage



To start working with database FLAT type, you need to select the 'KPI (FLAT)' value in the 'Database Type' dropdown and, accordingly, you need to select the right provider in the 'Source Type' dropdown – MicrosoftSQL or Snowflake. All other obligatory fields must be completed as well.

Connection String > Add New Connection String

System Name*

Source Type*

Microsoft SQL Server

- Firebolt
- **Microsoft SQL Server**
- Oracle
- SMART
- Snowflake

Initial Catalog*

Username*

Password*

Connection Timeout*

Connection String > Add New Connection String

System Name*

Source Type*

Microsoft SQL Server

Database Type*

KPI (FLAT)

- KPI (DM)
- KPI (DWH)
- **KPI (FLAT)**

Initial Catalog*

Username*

Password*

Connection Timeout*

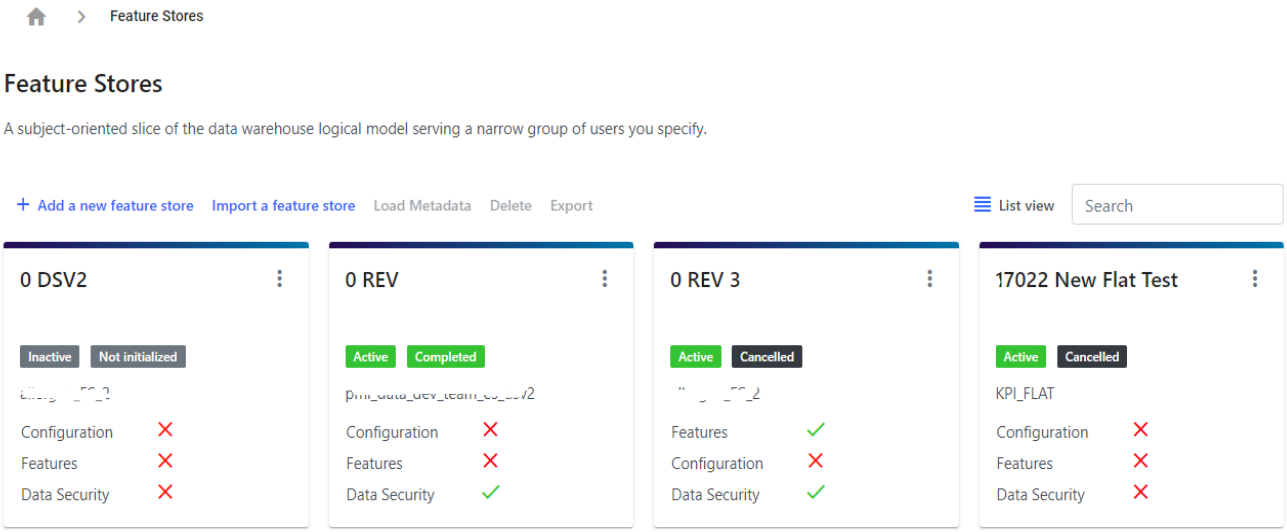
3. Configuring a Feature Store

3.1 Definition

To add and configure a New Feature Store for FLAT connection:

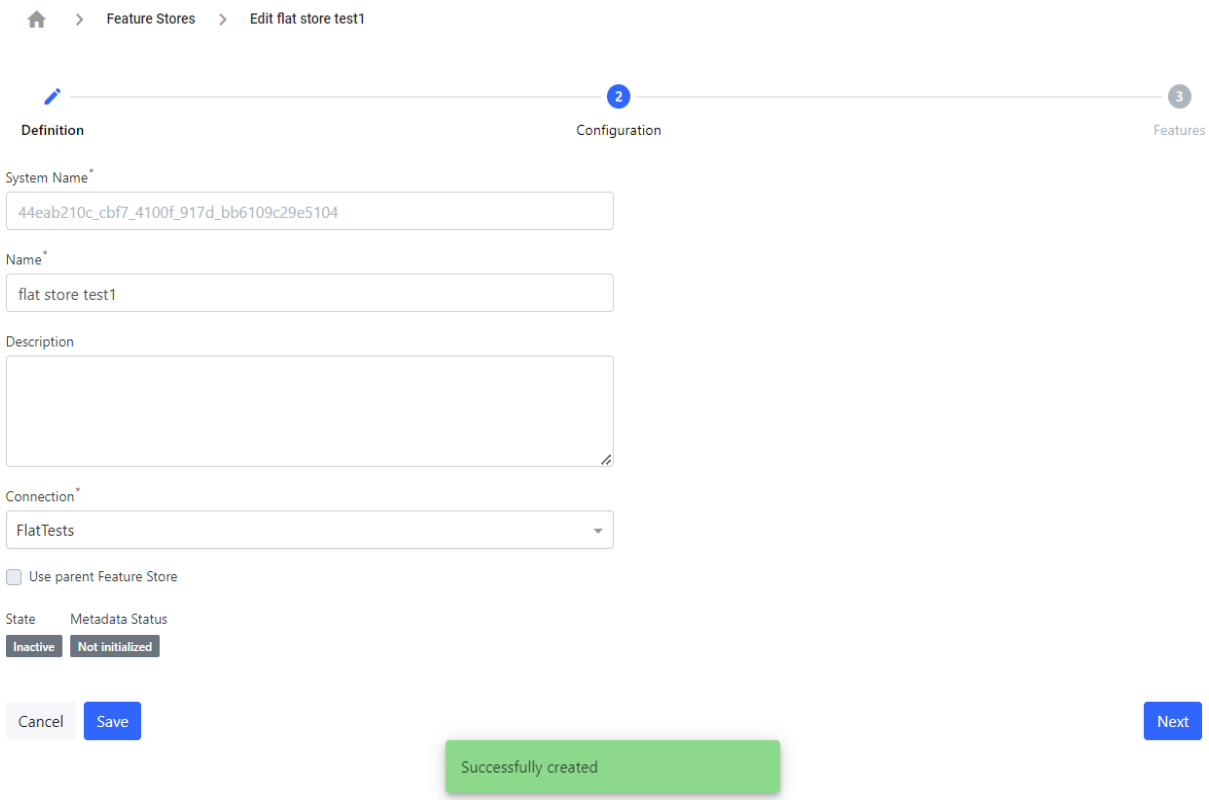
Open the Feature Designer application

To add a new Feature Store, click the 'Add a new feature store' Button



The page you are directed you will ask you to define the Feature Store that you want to create. Fields marked with * are mandatory and must be filled before progressing. This includes details such as the System Name, Feature Store Name, and Description of the Feature Store. The Connection dropdown refers to the connection you will use to configure the Metadata Tables, and Status dictates whether the Feature Store is active or not. For configuring a feature store of FLAT connection type, you need to select the corresponding connection string.

Once you have filled in all your details, click the 'Save' button.



Once you saved the configuration of the 'Definition' step, the system displays the configuration steps for configuring of a FLAT connection feature store.

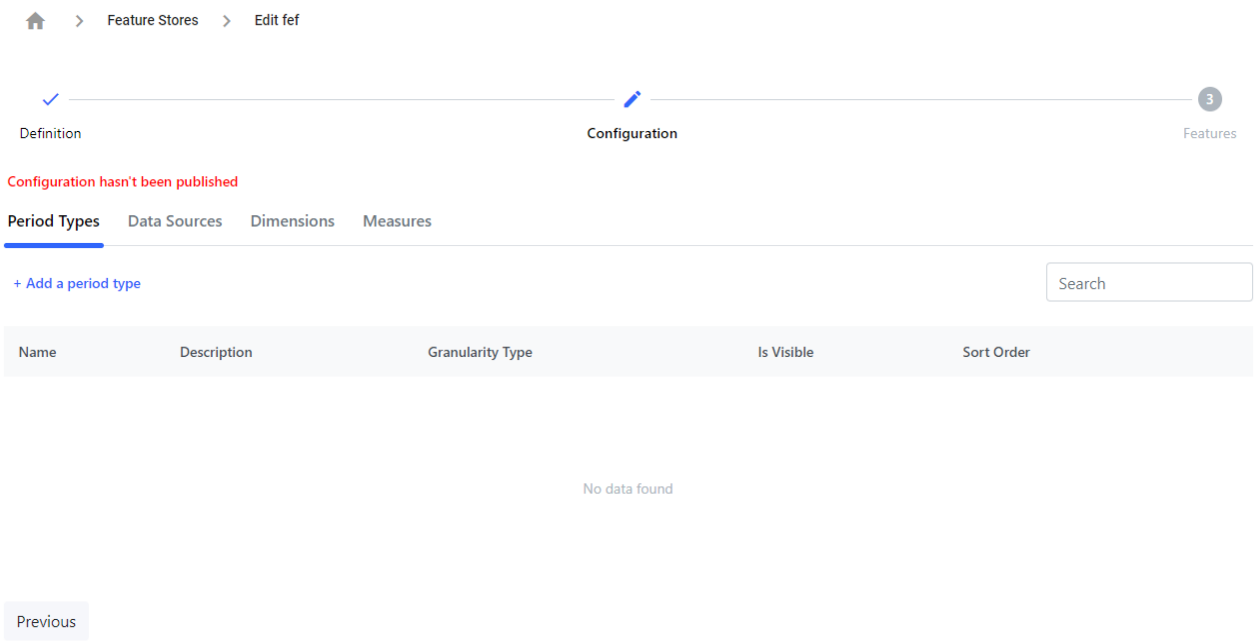
After the confirmation, click the 'Next' button to proceed to the configuration stage.

3.2 Configuration

This section will outline all the configurations available in Feature Designer. After all the configurations are complete, you can click on publish, which will create and populate the respective metadata tables.

3.2.1 Period Types

The next configuration you are able to modify is the Period Types. This Configuration lets you add a period type.



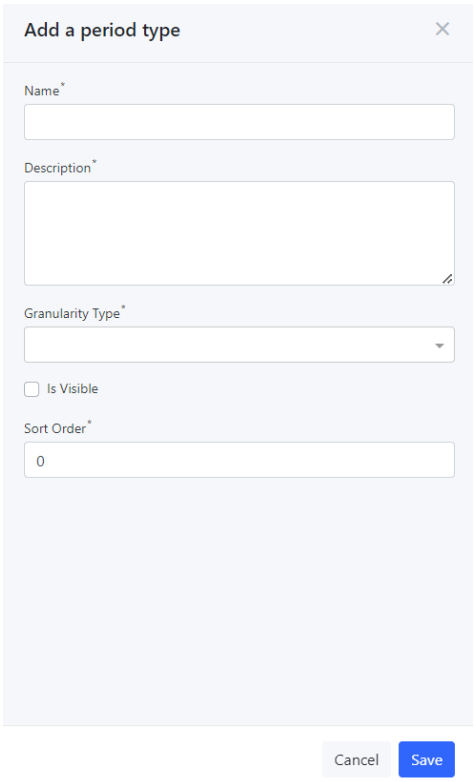
Name: The name of your Period Type

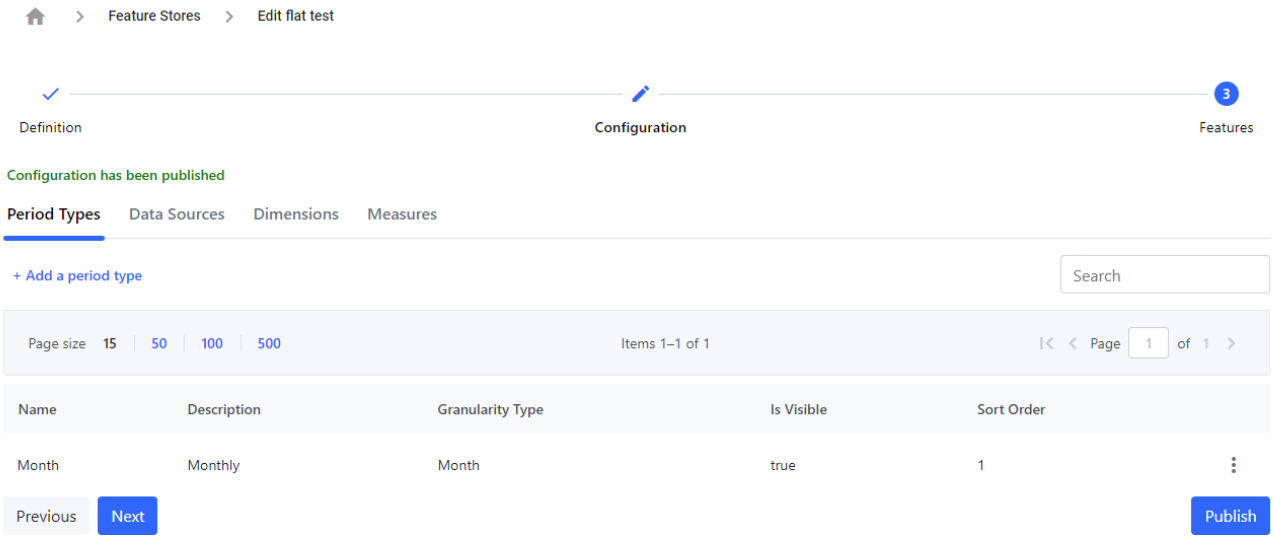
Description: A short description of your current period type

Is Visible: Defines whether to hide / show etc

Sort Order: Affects the sort order in KPI Admin dashboard

Granular Type: The granularity type of the period types

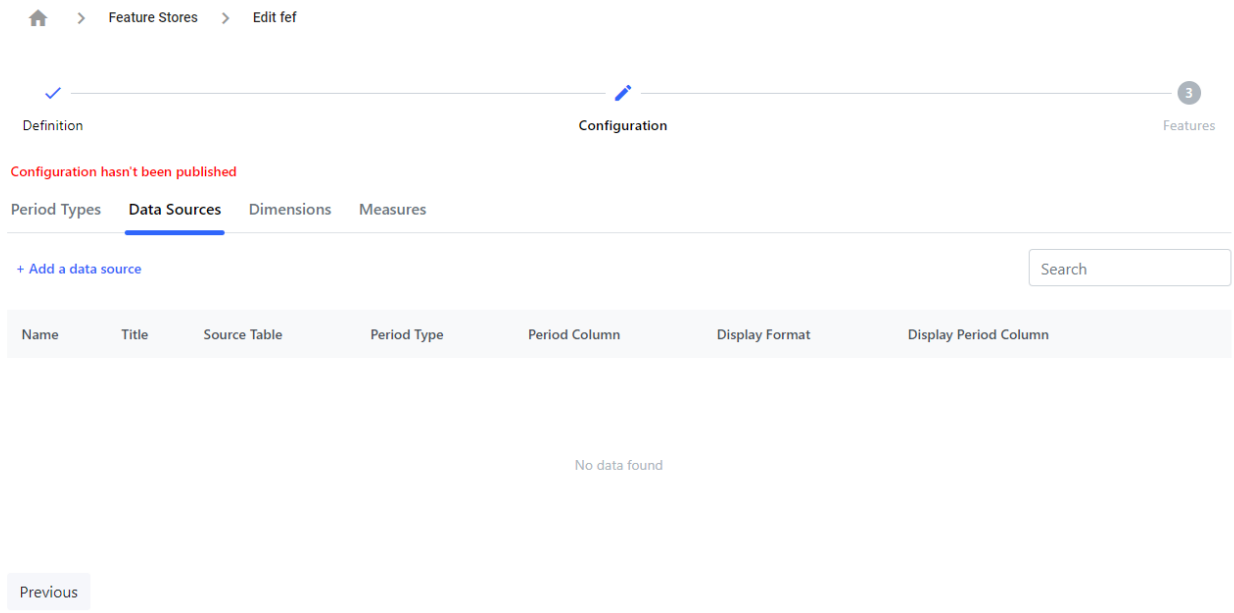


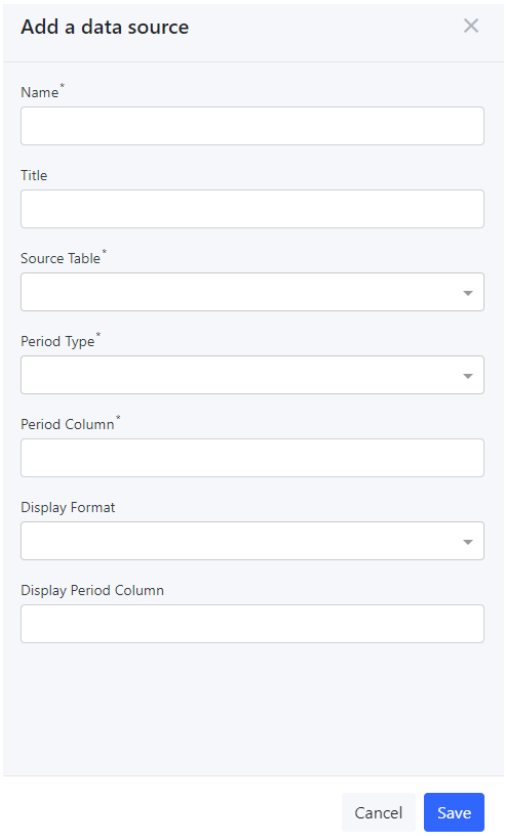


Once created period types will appear in the table below and can be edited or deleted using the Ellipsis icon at the right of the row.

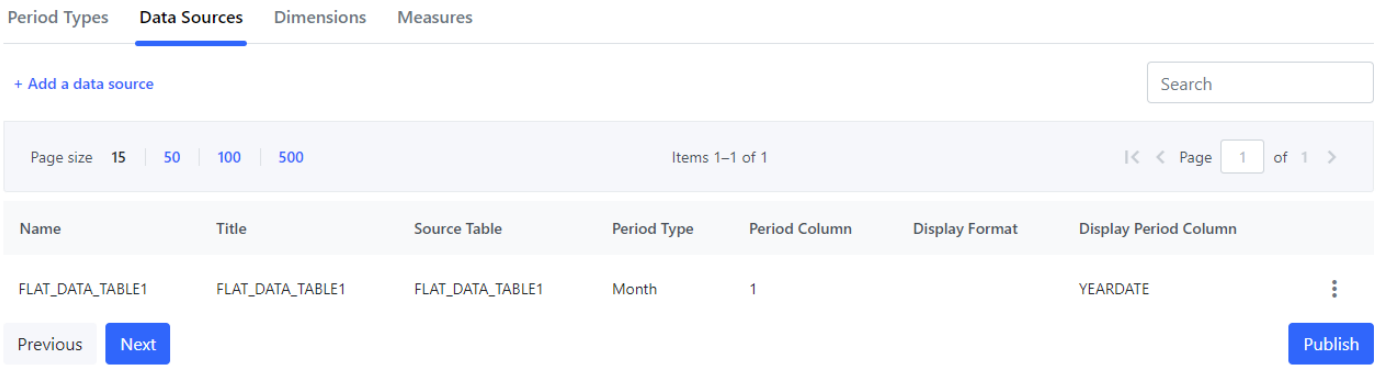
3.2.2 Data Sources

The next configuration you can modify is the Data Sources. To add a new data source, you must click ‘Add a data source’ button.





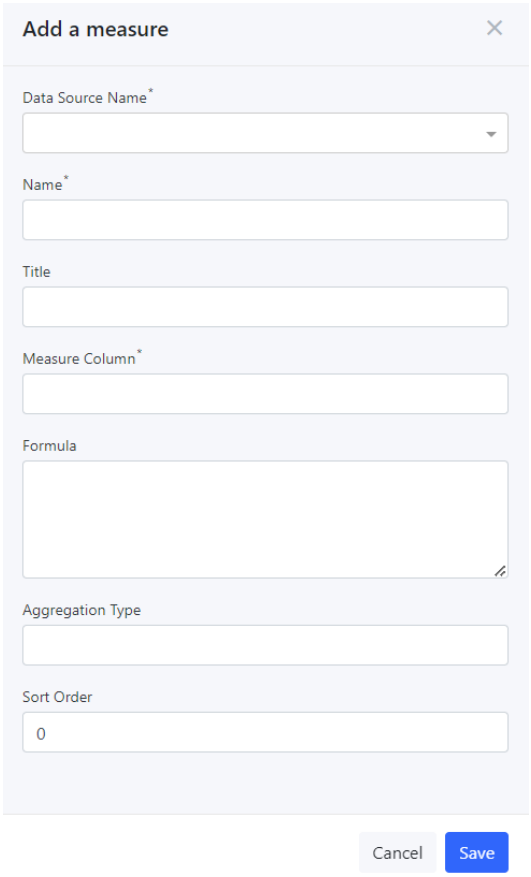
Name: System name of your data source
Title: Data source name on UI
Source table: Name of a physical table
Period Type: Allows you to select from Period Types you have created on the previous step
Period Column: Name of a physical column within a table
Display Format: Date format corresponding to a table
Display Period Column: Name of a physical column within a table



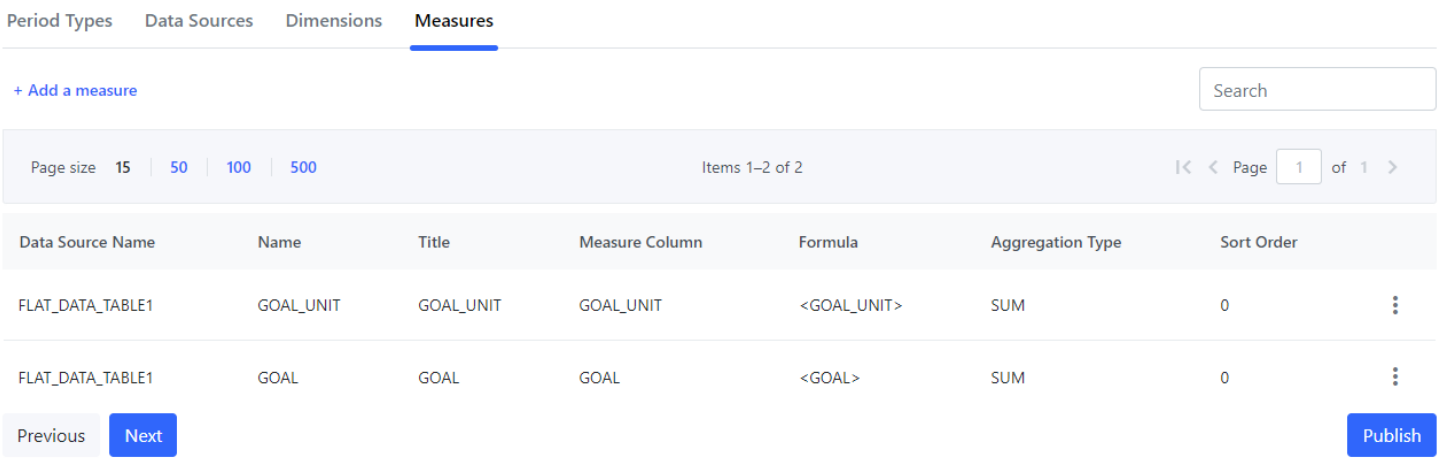
Once created data sources will appear in the table below and can be edited or deleted using the Ellipsis icon at the right of the row.

3.2.3 Measures

When adding a measure these are the values you can configure:



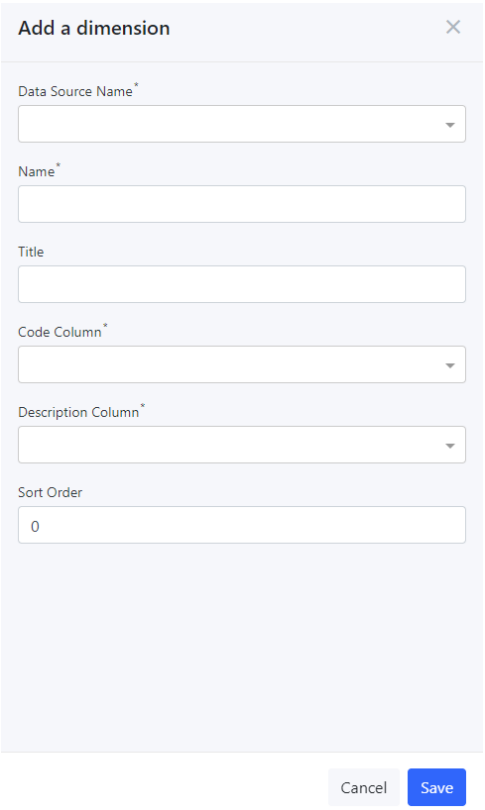
Data Source Name: The list of names of the data sources.
Name: The name of the measure you are adding
Title: The title of the measure
Measure column: The measure column in a table
Formula: The Custom formula of the measure
Aggregation Type: The aggregation type. Metadata service will support following aggregation functions:
[SUM, MIN, MAX, AVG, COUNT]
Sort order: Affects the sort order in KPI Admin dashboard



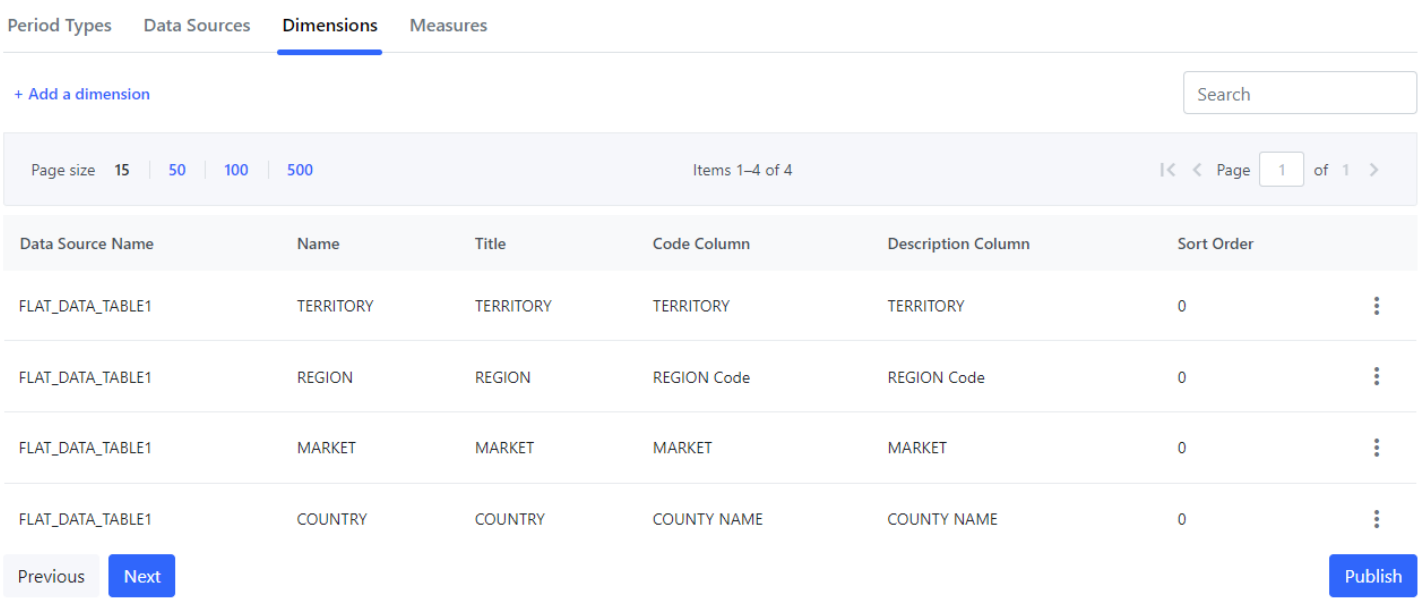
Once created new measures will appear in the table below and can be edited or deleted using the Ellipsis icon at the right of the row.

3.2.4 Dimensions

When adding a dimension these are the values you can configure:



Data Source Name: The list of names of the data sources.
Name: The name of the measure you are adding
Title: The title of the measure
Code Column: The dimension column in a table
Description Column: The dimension description column in a table
Sort Order: Affects the sort order in KPI Admin dashboard



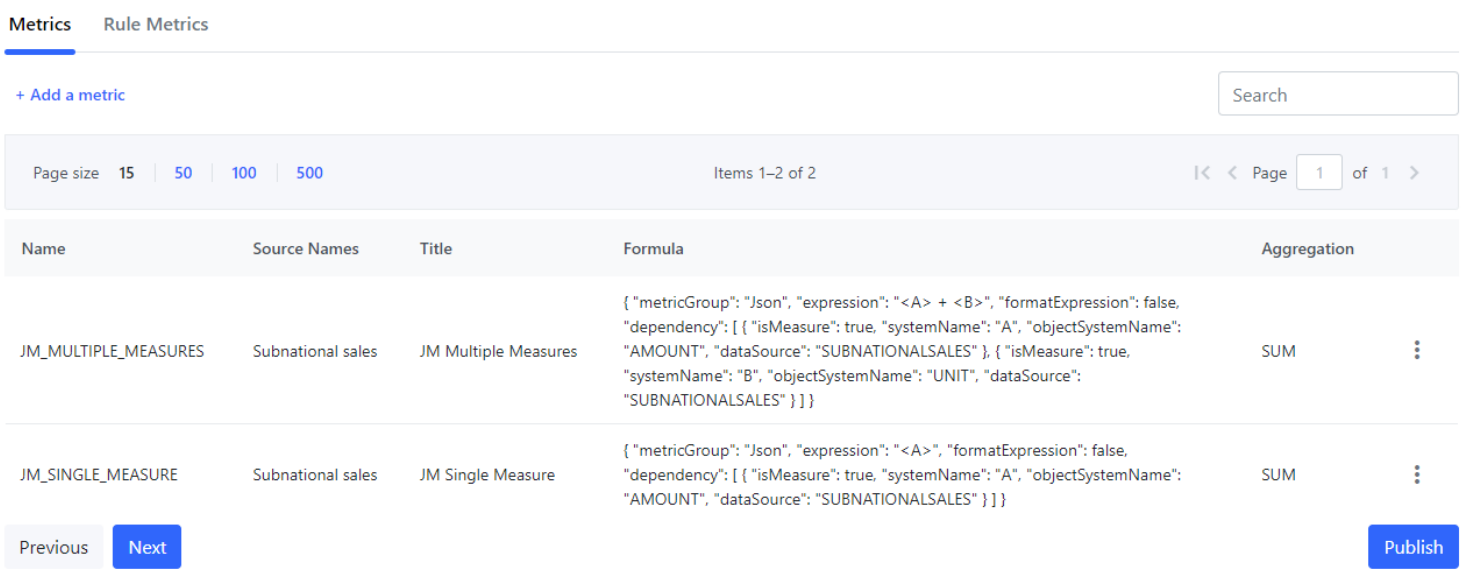
Once created new dimensions will appear in the table below and can be edited or deleted using the Ellipsis icon at the right of the row.

3.3 Features

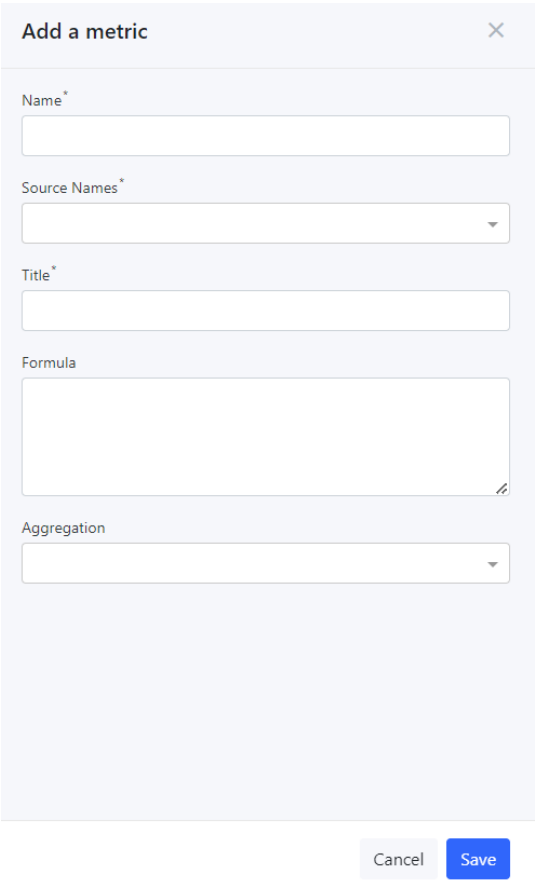
3.3.1 Metrics

The next tab in the Features section is the 'Metrics' section. To add a metric, click the 'Add a metric' button.

When adding a metric these are the values you can configure:



Name: The name of the measure you are adding
Source Name: The list of names of the data sources.
Title: The title of the metric
Formula: The Custom formula of the metric
Aggregation: The aggregation type. Metadata service will support following aggregation functions: [SUM, MIN, MAX, AVG, COUNT]



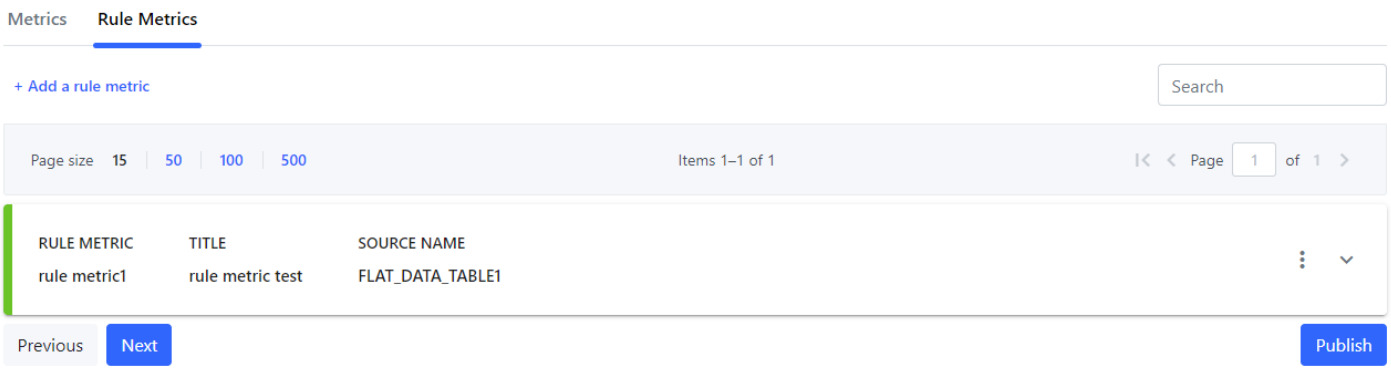
Once created new metrics will appear in the table below and can be edited or deleted using the three Ellipsis at the right of the row.

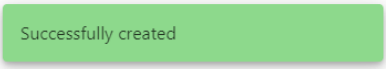
3.3.2 Rule Metrics

The next tab in the Features section is the 'Rule Metrics' section. This lets you define a Rule Metric. To add a new rule metric, click the 'Add a rule metric' button.

When adding a rule metric these are the values you can configure:
Name: The name of the rule metric, must be unique across measures, metrics and rule metrics
Source Name: The name of the relevant data source
Title: The title of the rule metric

Once created rule metrics will appear in the table below and can be edited or deleted using the three Ellipsis at the right of the row.





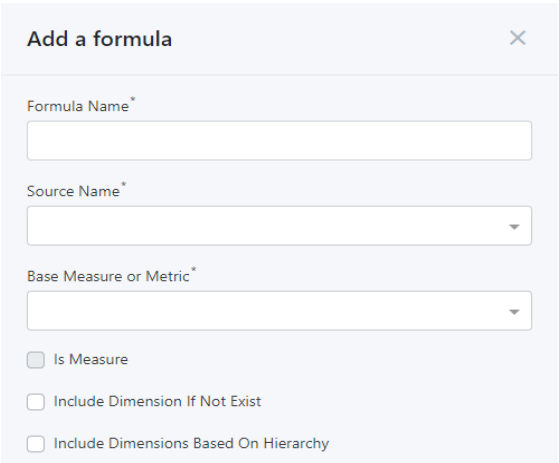
Once you have created a rule metric you will be presented with two more options for it. These are:

- Add a formula
- Add an expression

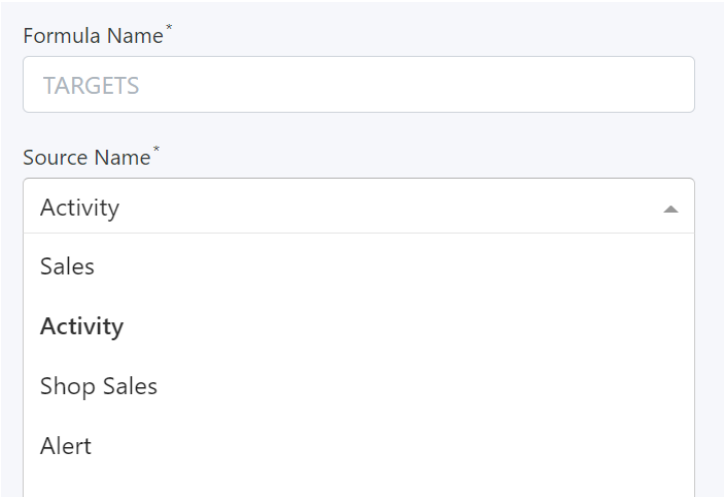
3.3.2.1 Add a formula

Clicking 'Add a formula' will open a dialogue box allowing you to configure a new formula. The values you can configure are:

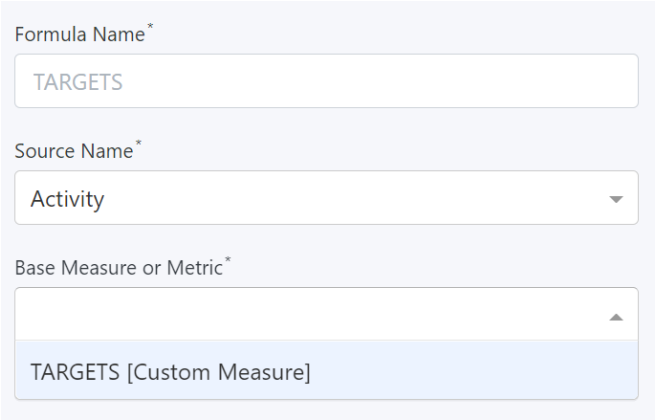
Formula Name: The name of your formula
Source Name: The data source for your formula
Base Measure or Metric: The base measure/metric for your formula
Is Measure: Checkbox, default unchecked
Include Dimension if Not Exist: Checkbox, default unchecked
Include Dimensions Based on Hierarchy: Checkbox, default unchecked



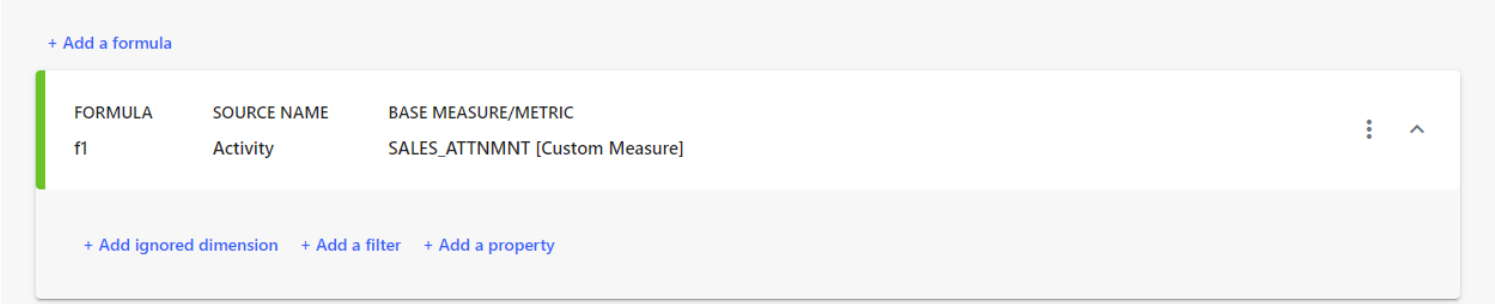
User fills the field ‘Formula Name’ with the text.
Then select a Source Name from the dropdown menu ‘Source Name’.



After selecting a Source Name user can choose Base Measure or Metric from the dropdown menu ‘Base Measure or Metric’. The options in the dropdown menu ‘Base Measure or Metric’ depends on Source Name. "Base Measure or Metric" drop down has only items from Base measure, Custom measure & custom metrics where the source name is same. If the Source Name isn’t selected, there will be no items in the dropdown menu ‘Base Measure or Metric’.



Once you have added a formula this will be displayed within the relevant Rule Metric. Clicking the ellipses on the left side of the formula will allow you to either edit or delete the formula.

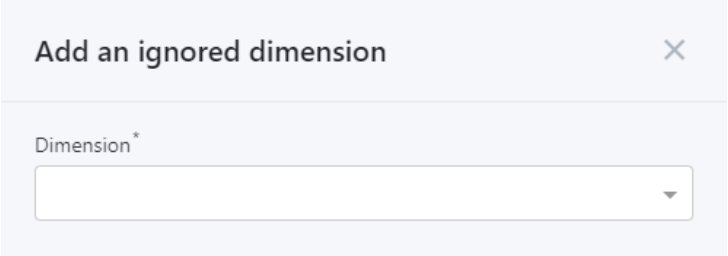


Once you have created a formula you will be presented with three more options. These are:

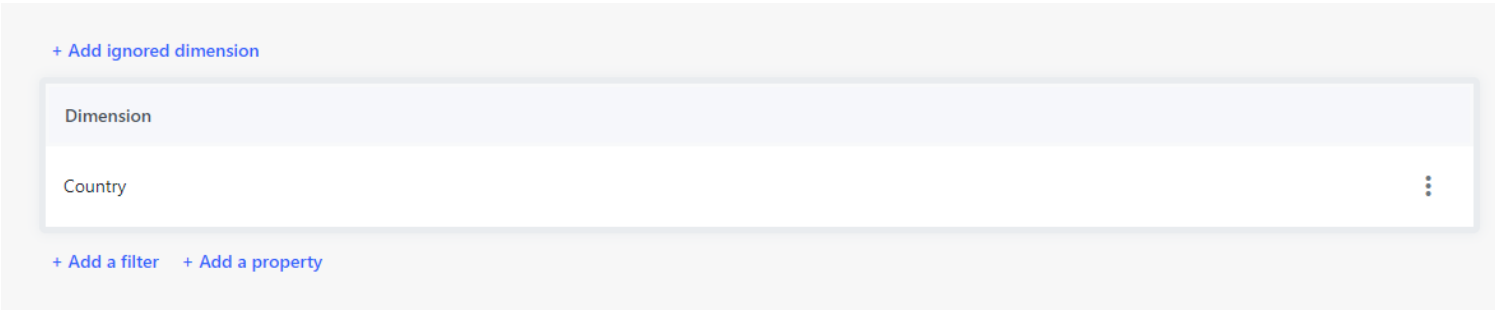
- Add ignored dimension
- Add a filter
- Add a property

3.3.2.2 Add ignored dimension

Clicking 'Add ignored dimension' will open a dialogue box allowing you to add an ignored dimension. There is one dropdown to select your desired dimension to ignore.



Once you have added an ignored dimension it will appear within the formula inside the relevant rule metric. Clicking the ellipses on the left side of the ignored dimension will allow you to either edit or delete the ignored dimension.

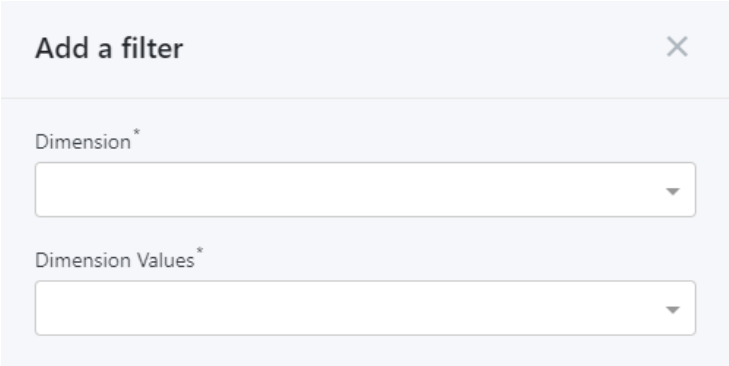


3.3.2.3 Add a filter

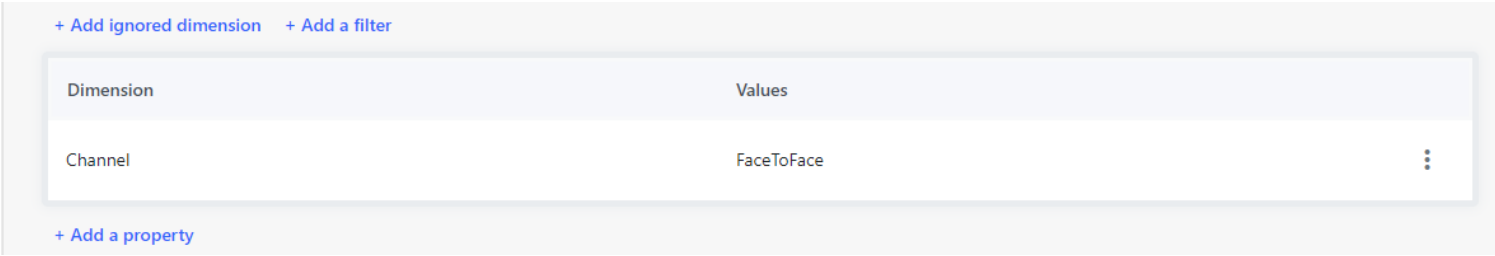
Clicking 'Add a filter' will open a dialogue box allowing you to add a filter. The values you can configure are:

Dimension: The dimension of the filter

Dimension Values: The list of values for the filter



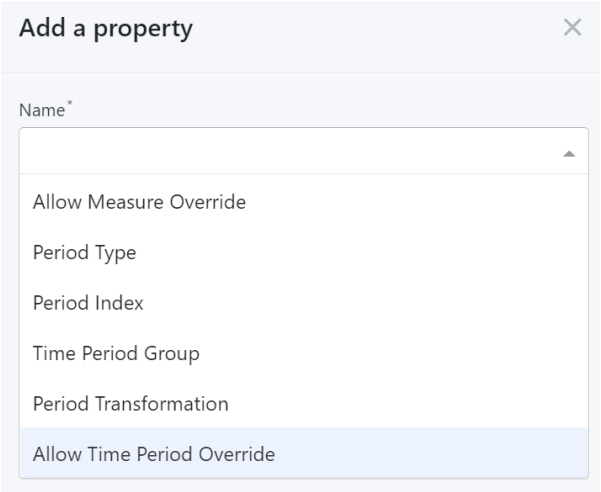
Once you have added a filter it will appear within the formula inside the relevant rule metric. Clicking the ellipses on the left side of filter will allow you to either edit or delete the filter.



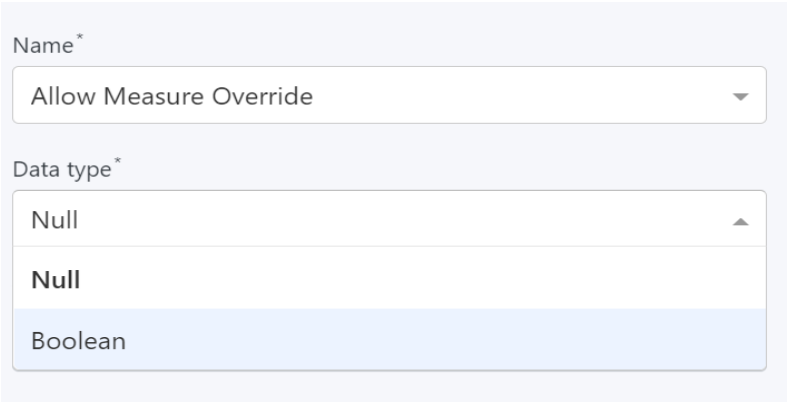
3.3.2.4 Add a property

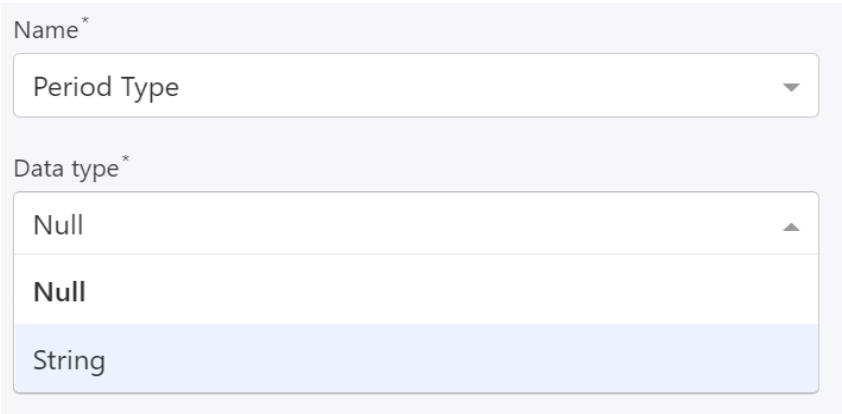
Clicking 'Add a property' will open a dialogue box allowing you to add a property. The values you can configure are:
Name: The name of the property
Data Type: The datatype of the property
Value: The value of the property

Clicking the 'Name' will show a list of supported properties. You can then click on one to select it.

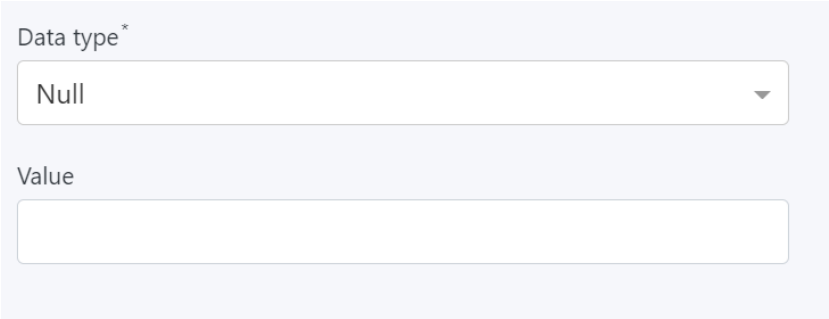


Once you have Selected the Name you can click the 'Data Type' menu. Clicking this will show a list of available Data types. The options in the dropdown menu 'Data Type' depends on Name. It can be: 'Null'and 'String' or 'Null'and 'Boolean'. You can click on one option to select it.

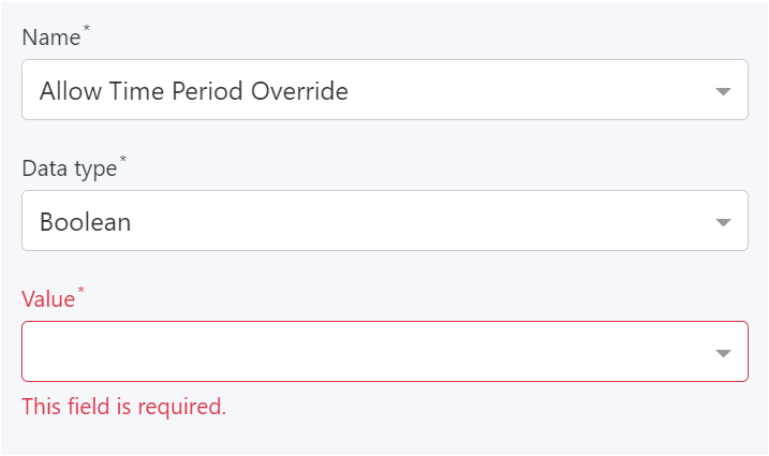




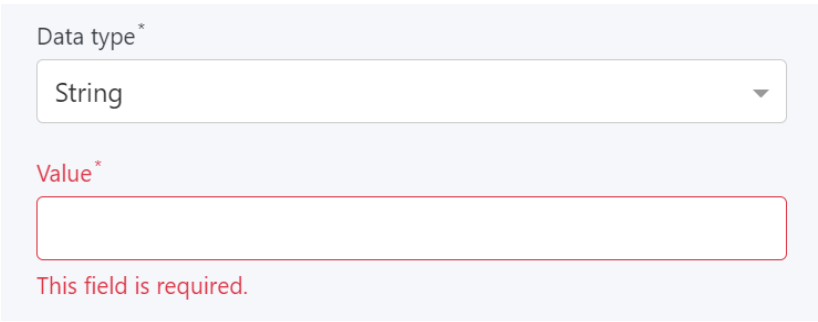
After selecting the Data type, the user can choose the 'Value'.
If a user chose Data Type 'Null', then Value isn't needed, and a user can't fill in anything in this field.



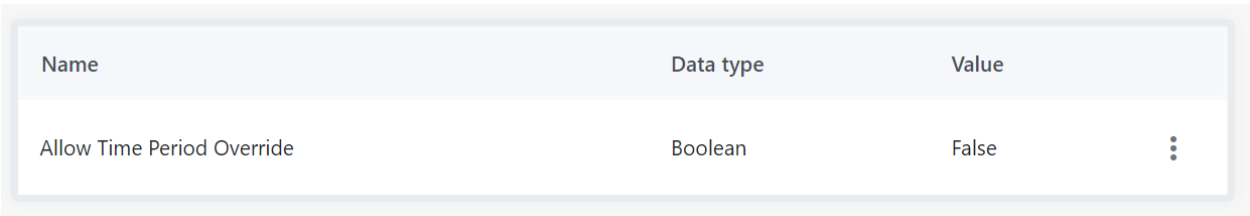
If a user chose Data Type ‘Boolean’, then a user can choose Value from the dropdown list.



If user chose Data Type ‘String’, then user fill in the text field Value.



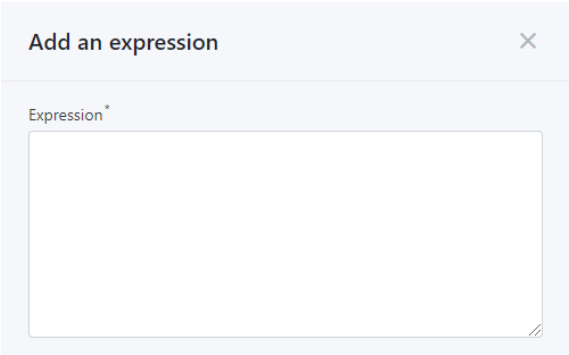
Once you have added a property it will appear within the formula inside the relevant rule metric. Clicking the ellipses on the left side of the property will allow you to either edit or delete the property.



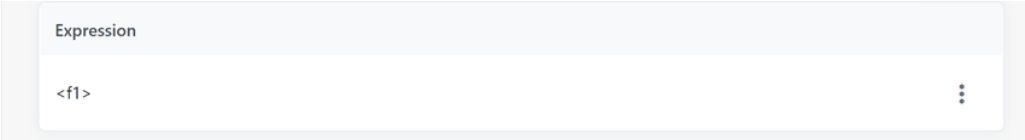
If the property is no longer valid, an indicator "Invalid Value!" appears and user can change it, choosing the valid value from the dropdown list.

3.3.2.5 Add an expression

Clicking 'Add an expression' will open a dialogue box allowing you to add an expression. There is one text field to enter your desired expression.

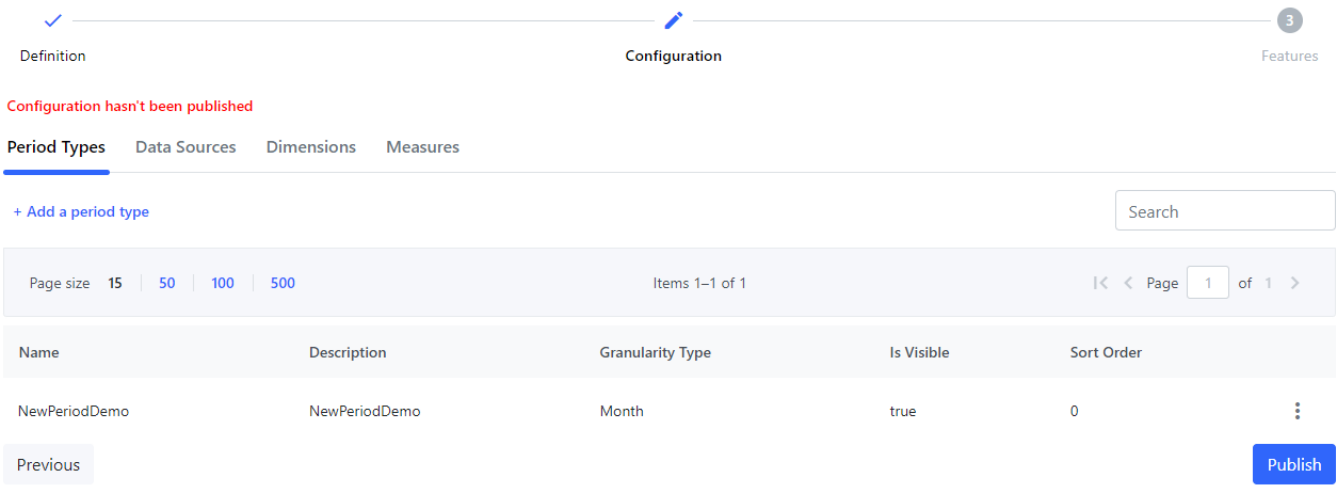


Once you have added an Expression this will be displayed within the relevant Rule Metric. Once an expression has been created the 'Add an expression button will disappear ad only one expression can exist at once. 'Clicking the ellipses on the left side of the formula will allow you to edit or the Expression. Once an Expression has been created it cannot be deleted.

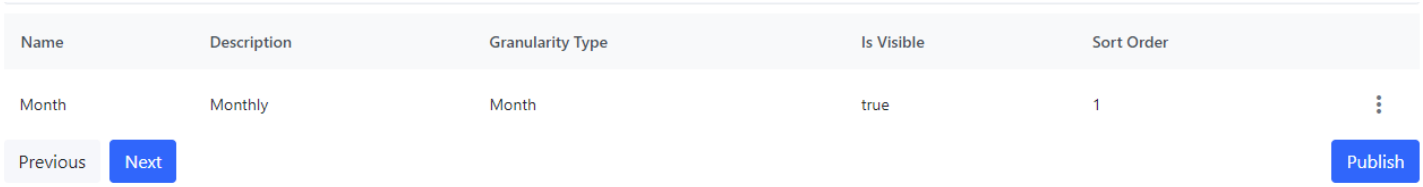


4. Publishing and Loading Metadata

For databases type like DataDM and DataDWH it's possible to load metadata directly from the created connection string and feature store. Working with FLAT type databases, we need to define the metadata and then it's possible to load it by the 'publish' button. By default, the system displays the red label 'Configuration/Features/ Data Security hasn't been published'.

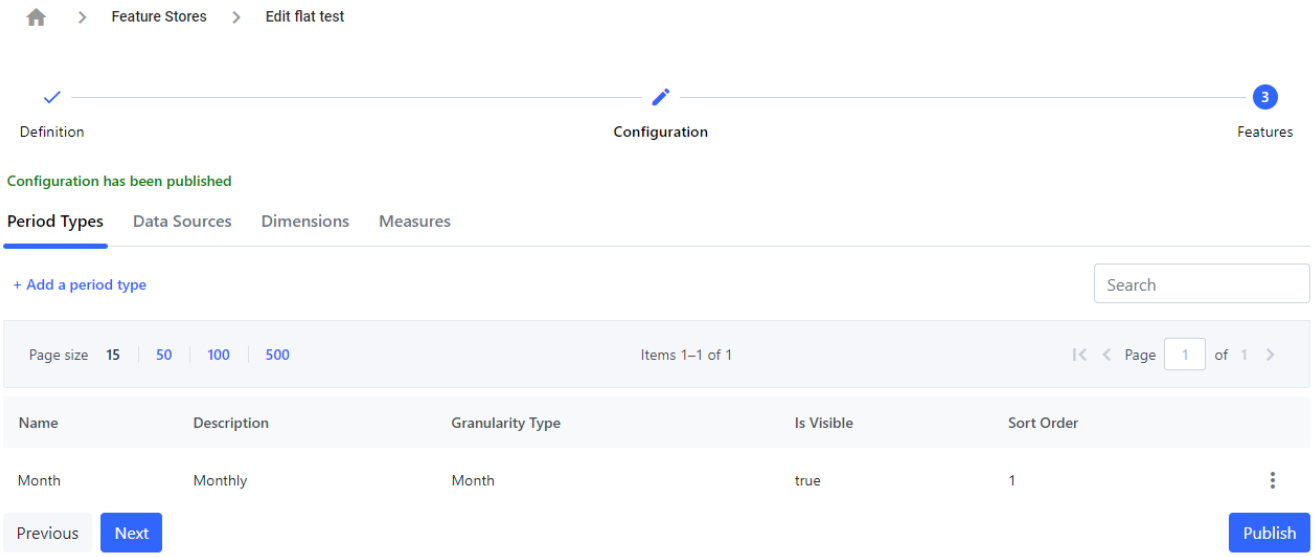


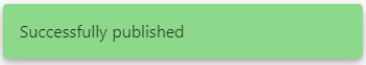
When you have configured the ‘Configuration’ step, then click on the ‘Publish’ button.



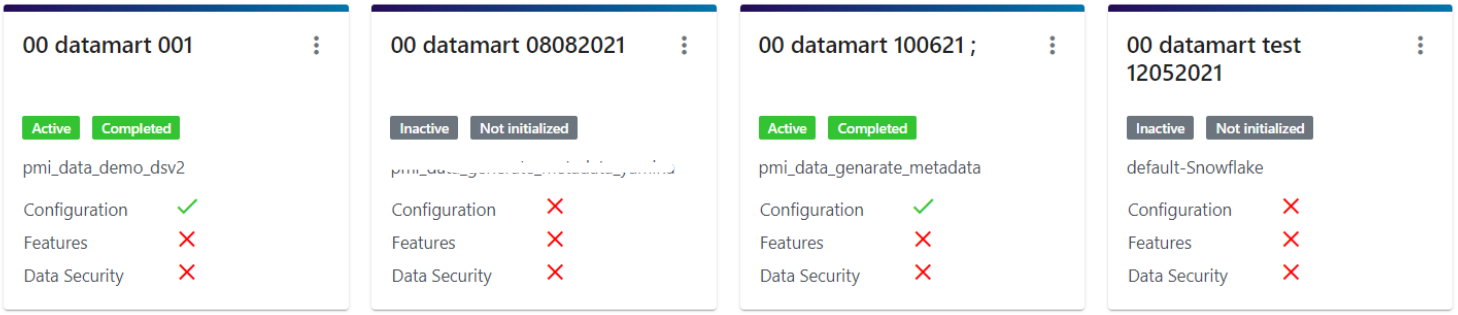
The ‘Publish’ functionality is essential for FLAT connection feature stores. As it was mentioned before, metadata won’t be loaded if it’s unpublished.

When you publish the configuration, the system automatically loads metadata and displays the green label message ‘Configuration/Features/ Data Security has been published’ and the green toast notification ‘Successfully published’.





You can get back to the initial ‘Feature stores’ page and see the green tick nearby the published step and the red X nearby the unpublished step on the Feature Store.

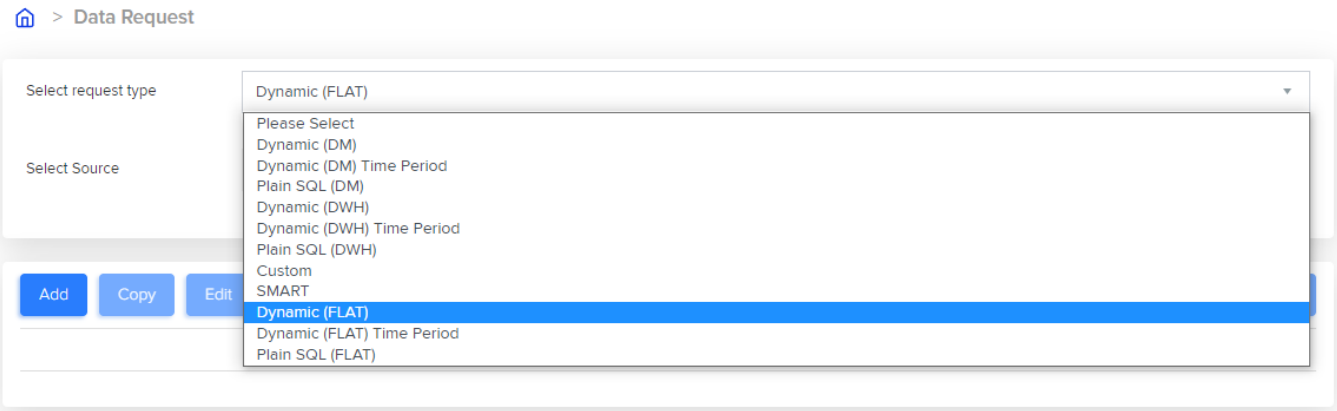


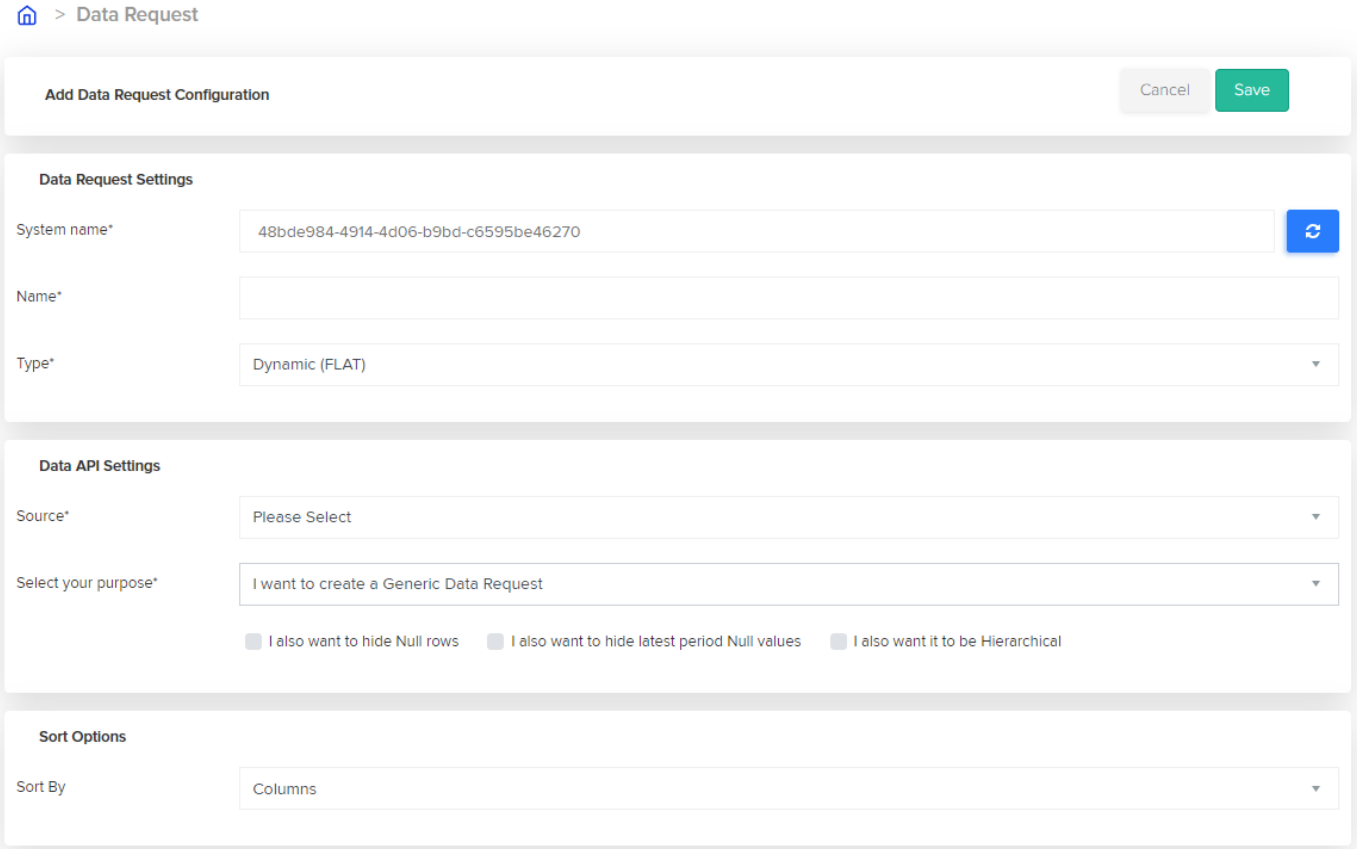
5. Configured Data Usage and Flow

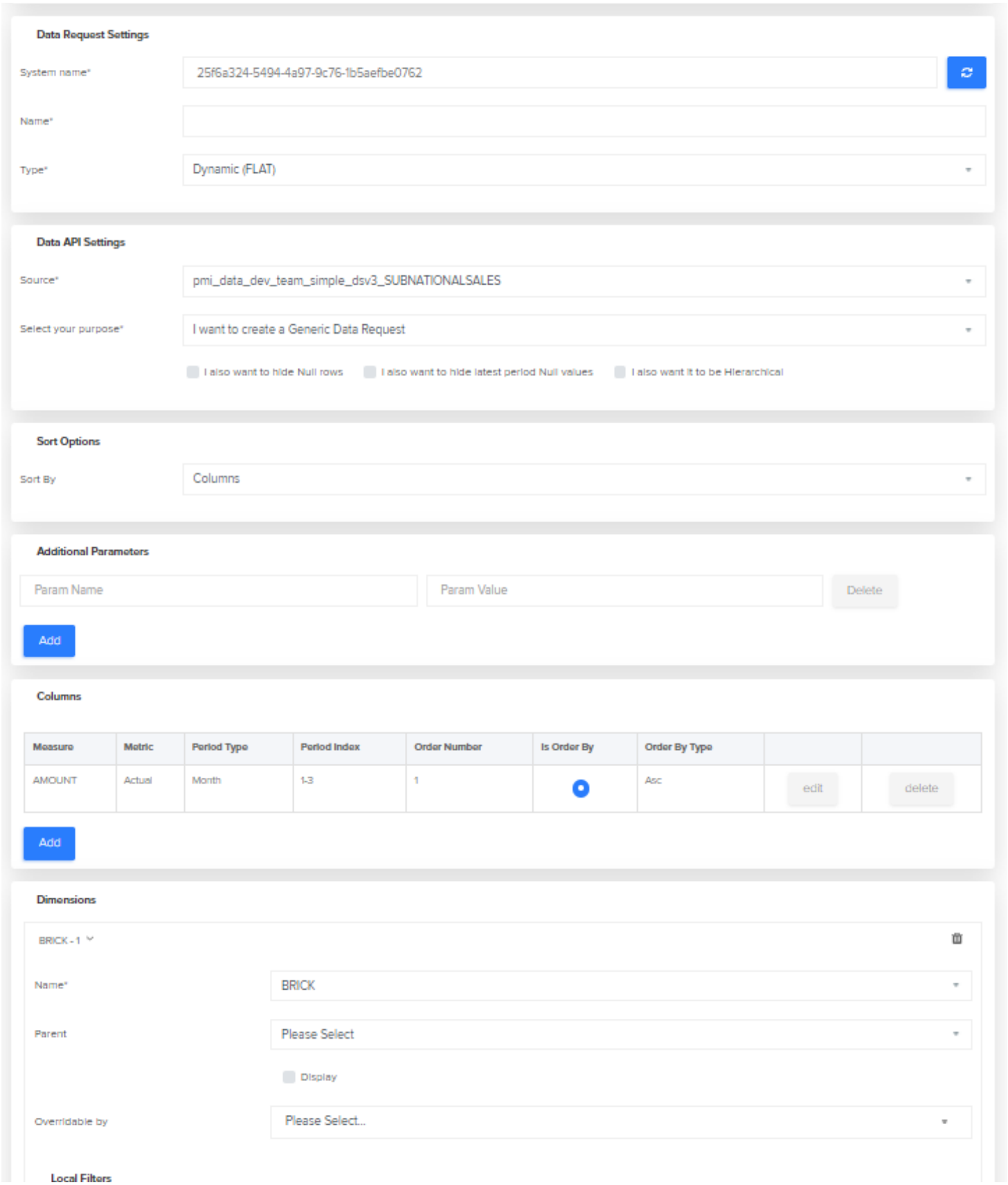
After publishing and load metadata, you can navigate to the 'KPI Admin' app and configure a data request using the defined metadata.

For creation data request we need to know Data Source, Dimension, Time Period and Measure.

The defining of these entities is indicated in the 'Configuring a Feature store' article. When we have these entities defined and the whole 'Configuration' is published, we have metadata loaded and it can be used for configuring a data request now.







DataV3 type (FLAT) is used for flexible data. Teams that are involved in adding data can load any table with any name without worrying about other tables.

Flat tables have no naming convention. Its columns can be named anything and have any symbols.