Talend User Component tGoogleAnalytics4Input

Purpose

This component addresses the needs of gathering Google Analytics 4 data for a large number of properties and fine-grained detail data.
The component uses the Google Analytics API 1.0 beta and the Authentication API OAuth.
To provide the ability to run in multiple iterations the component has special capabilities to avoid multiple logins through iterations. Usually, automated processes should not use personal accounts. This requirement is addressed by using a service account, which are the only preferred way to login into Google Analytics for automated processes.

The account credentials are now only be taken from the standard json key file. This way you can only by changing the json file change the account, also the account type. No need for changing the job to switch between different account types like service account or application client Id.

Talend-Integration

This component can be found in the palette under Business->Google
This component provides an output flow and several return values.

Precondition

Take care your Google project is enabled for the Google Analytics Data API:
https://developers.google.com/analytics/devguides/reporting/data/v1?hl=en_GB

To enable this API visit the Google Console:
https://console.cloud.google.com/apis/api/analyticsdata.googleapis.com/metrics

To configure the access rights visit the Google Analytics and go to the Admin section (see bottom left menu)
https://analytics.google.com/analytics/web/#/report-home/

Parameters

Parameters to connect to Google Analytics (setup client)

Property	Content	Data types
Key File (*.json)	The Account Login works with private key file for authentication. In the process of creating a service account you download this file. Only for service accounts ***Required***	String
GA4-Property-ID	GA4-Property-IDs are numbers. You can provide the value as number or String	String or Long

If you key file is from a application client Id account than the component starts an approval process and expects on the first run an user interaction with the Google web page and after finishing the form to approve the access right you need to close the browser to let the component continue, otherwise the authentication process will not complete.

Parameters to define the query

Property	Content
Start Date	All queries need always a time range (only date, not time). The value must be a String with the pattern “yyyy-MM-dd”. ***Required!*** At the moment the component allows only one date range beside the fact v4 of the API allows 2 date ranges. But for the purpose of fetching the data into a data ware house the second date range currently does not make sense.
End Date	Time range end. If you want gather data for one date, use start date as end date. The value must be a String with the pattern “yyyy-MM-dd”. ***Required!***
Dimensions	Dimensions are like group clauses. These dimensions will group the metric values. See advise for notations below. Separate multiple dimensions with a comma. ***Not required***
Metrics	Things you want to measure. Separate multiple metrics with a comma. See advise for notations below. ***Required!***
Dimension Filters	Contains all filters as concatenated string to filter rows by dimension values (cause an AND combination of the filters) See advise for notation below
Metric Filters	Contains all filters as concatenated string to filter rows by metric values (cause an AND combination of the filters) See advise for notation below
Sorts	Contains all sort criteria as concatenated string. Separate multiple dimensions/metrics with a comma. See advise for notation below
Normalize Output	If true, the component normalizes the otherwise flat record into two normalized output flows (dimensions and metrics). For every raw record with its columns for dimensions and metrics this option creates one record per raw-record and dimension / metric. E.g. if the component in the flat mode would create 3 records with 4 dimensions and 2 metrics it will create for the dimensions-flow 3 x 4 records and for the metrics flow 3 x 2 records.
Exclude date dimension and provide value as return value	Set this to exclude the date dimension from the normalized output flow for dimension and instead set the date value in the globalMap as return value (available while the flow runs).

Explanation for the Normalized Output

The normalized output as made for scenarios in which the job will be configured with metrics and dimensions at runtime. In this use case it is not possible to declare the appropriated schema for the flat output. The normalization creates 2 read only output schemas:

Dimensions

Column	Type	Meaning
ROW_NUM	int	The row number from the original flat result row. It identifies the records, which belongs to together.
DIMENSION_NAME	String	Name of the dimension
DIMENSION_VALUE	String	Value of the dimension

Metrics

Column	Type	Meaning
ROW_NUM	int	The row number from the original flat result row. It identifies the records, which belongs together.
METRIC_NAME	String	Name of the metric
METRIC_VALUE	Double	Value of the metric

Advice for dimension and metric filter notation

- For dimensions, metrics, filters and sorts you must use the notation from the former Google Core API and these filters will be translated into the new GA4 filters.Unfortunately there is currently no other way to express the filters in a generic way because limitations of the current GA4-API.
- Currently all filters are AND combined.

Filter comparison operators:

Operator	Meaning
“==”	Exact match to include (both filters)
“!=”	Exact match to exclude (both filters)
“=~”	Regex match to include (only for dimension filters)
“!~”	Regex match to exclude (only for dimension filters)
“>=”	Greater or equals than (only for metric filters)
“=@”	Contains string (only for dimension filters)
“!@”	Does not contains string (only for dimension filters)
“>”	Greater than (only for metric filters)
“<=”	Lower or equals than (only for metric filters)
“<”	Lower than (only for metric filters)

Building Flat Schema for Component

In the schema you need an amount of columns equals to the sum of the number of dimensions and metrics.
Columns in the schema must start at first with dimensions (if provided) and ends with metrics.
Schema column types must match to the data types of the dimensions and metrics. The schema column names can differ from the names of dimensions and metrics. Only the order and there types are important.
In Talend schema columns must follow the Java naming rules therefore avoid writing ga:xxx instead use the name without the ga: namespace prefix.
Important: For date dimensions (e.g. date) you must specify the date pattern as “yyyyMMdd” if you want it as Date typed value.

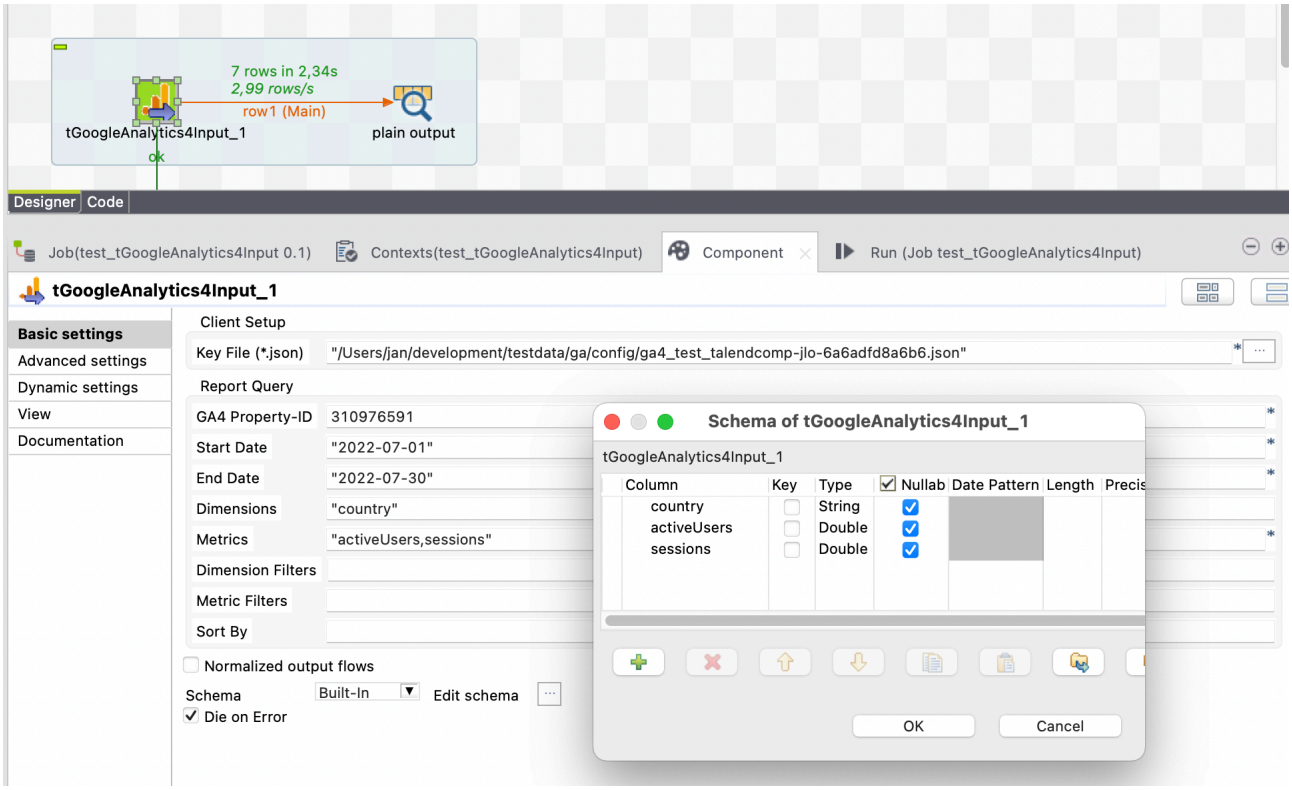
Advanced Option Parameters

Property	Content
Timeout in s	How long should the component wait for getting the first result and fetching all result with one internal iteration
Fetch Size	This is the amount of data the component fetches at once. The value is used to set the max_rows attribute. max_rows means not the absolute amount of data! The component manages setting the start index to get all data. To achieve this, the component iterates as long as the last result set are completely fetched.
Local Number Format	You can get numbers in various formats. Here you can define the locale in which format double or float values are should textual format by the API.
Reuse Client for Iterations	If you use this component in iterations it is strongly recommended to set this option. It saves time to authenticate unnecessary often and avoids problems because of max amount of connects per time range.

Return values

Return value	Content
ERROR_MESSAGE	Last error message
NB_LINE	Number of delivered lines (only set if normalization is not used)
TOTAL_AFFECTED_ROWS	Number of rows, which are collected by Google to calculate the result.
NB_LINE_DIMENSIONS	Number of normalized dimension records (only set if normalization is used)
NB_LINE_METRICS	Number of normalized metric records (only set if normalization is used)
CURRENT_DATE	The value of the ga:date dimension (if present in the file) for every row. This value is only available in the “Normalized Flow” mode. Type: java.util.Date
ERROR_CODE	The last error code as Integer. Default value is 0 at start.

Scenario 1: Plain flat output



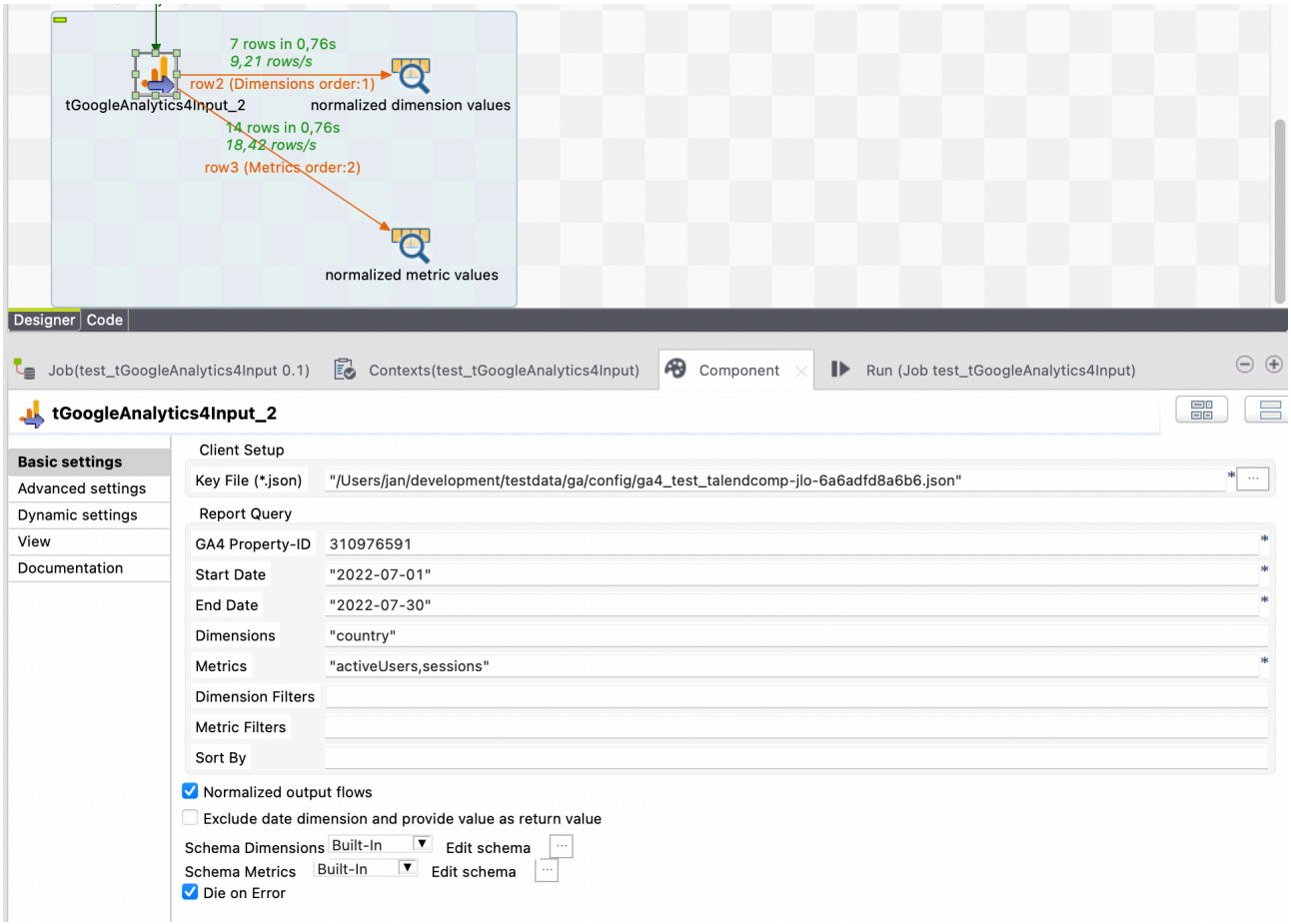
The schema must be setup with the dimensions first and then the metrics. If dimensions are not used, start with the metrics.

This is the output:

```
.--------------+-----------+--------.
|           plain output              |
|=-------------+-----------+-------=|
|country       |activeUsers|sessions|
|=-------------+-----------+-------=|
|Germany       |13.0       |16.0    |
|China         |12.0       |12.0    |
|United States |10.0       |10.0    |
|Netherlands   |1.0        |1.0     |
|Singapore     |1.0        |1.0     |
|Taiwan        |1.0        |2.0     |
|United Kingdom|1.0        |1.0     |
'--------------+-----------+--------'
```

Scenario 2: Normalized output

This mode helps you to store the dimension and metric values for different reports in the same table design.



Output for normalized mode in in job (left) compared to the same output in plain flat mode (right)

```
.-------+--------------+---------------.
|     normalized dimension values      |
|=------+--------------+---------------=|
|ROW_NUM|DIMENSION_NAME|DIMENSION_VALUE|
|=------+--------------+---------------=|
|1      |country       |Germany        |
|2      |country       |China          |
|3      |country       |United States  |
|4      |country       |Netherlands    |
|5      |country       |Singapore      |
|6      |country       |Taiwan         |
|7      |country       |United Kingdom |
'-------+--------------+---------------'
```

```
.-------+-----------+------------.
|    normalized metric values    |
|=------+-----------+------------=|
|ROW_NUM|METRIC_NAME|METRIC_VALUE|
|=------+-----------+------------=|
|1      |activeUsers|13.0        |
|1      |sessions   |16.0        |
|2      |activeUsers|12.0        |
|2      |sessions   |12.0        |
|3      |activeUsers|10.0        |
|3      |sessions   |10.0        |
|4      |activeUsers|1.0         |
|4      |sessions   |1.0         |
|5      |activeUsers|1.0         |
|5      |sessions   |1.0         |
|6      |activeUsers|1.0         |
|6      |sessions   |2.0         |
|7      |activeUsers|1.0         |
|7      |sessions   |1.0         |
'-------+-----------+------------'
```

```
.--------------+-----------+--------.
|          plain output              |
|=-------------+-----------+--------=|
|country       |activeUsers|sessions|
|=-------------+-----------+--------=|
|Germany       |13.0       |16.0    |
|China         |12.0       |12.0    |
|United States |10.0       |10.0    |
|Netherlands   |1.0        |1.0     |
|Singapore     |1.0        |1.0     |
|Taiwan        |1.0        |2.0     |
|United Kingdom|1.0        |1.0     |
'--------------+-----------+--------'
```