Google Analytics

BY

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Why to use digital analytics?

Purchase Funnel

In Marketing, we have a concept of purchase funnel. There are different stages within funnel that describes the customer interactions.

1. **Acquisition** – building awareness and acquiring user interests
2. **Behavior** – when user engage with your business
3. **Conversion** – when a user becomes a customer and transacts with your business

In offline world this is hard to measure. But in online world we could measure different aspects of the funnel using digital analytics.

Ecommerce business can use digital analytics to understand their customers online purchasing behavior and better market their products and services. Source credits - Google

What is google analytics?

Google Analytics is now the most widely used web analytics service that tracks and reports website traffic on the Internet.

Main purpose to understand the web product more better with useful insights such as most devices used, load time, average user sessions etc.

Yes, Google analytics built using the concept of purchasing funnel in marketing strategy.

How google analytics works?

Google Analytics is implemented with "page tags", in this case, called the Google Analytics Tracking Code, which is a snippet of JavaScript code that the website owner adds to every page of the website. The tracking code runs in the client browser when the client browses the page (if JavaScript is enabled in the browser) and collects visitor data and sends it to a Google data collection server as part of a request for a web beacon. Source-wiki

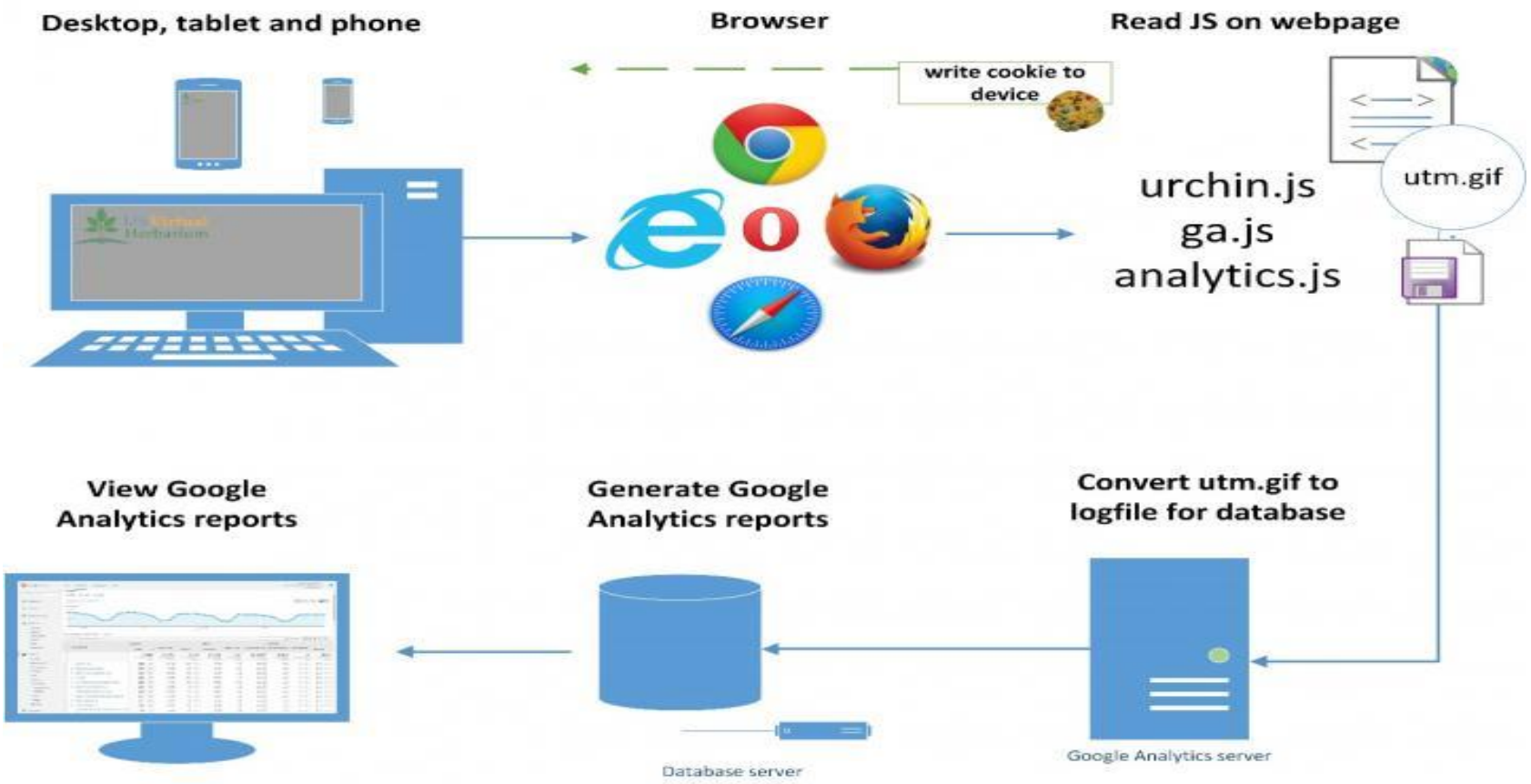
Small piece of java script code embed in your site right after <head> tag can start collecting all the activities data (like OS, browser, language, traffic, referral, country, page session) **from your site. With collected data, Google analytics generates a various reports.**

Tracking code snippet

Paste the following snippet right after the `<head>` tag on each page of your site. Replace `GA_TRACKING_ID` with your own Google Analytics tracking ID:

```
<!-- Global Site Tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/js?id=GA_TRACKING_ID"></script>
<script>
  window.dataLayer = window.dataLayer || [];
  function gtag(){dataLayer.push(arguments);}
  gtag('js', new Date());

  gtag('config', 'GA_TRACKING_ID');
</script>
```



Web clients (browser) -> HTTP Request (utm.gif) -> Log files -> Database -> Report Data -> Views -> Dashboard.

Why/what is utm.gif? – Answer here – Parameters are passed via http request call to a google analytics server.

Inside Google Analytics

Organization -> Multiple Accounts

Accounts -> Multiple Property

Property -> Multiple Views

Understanding dimension vs metrics

Dimensions are attributes of your data.

For example, the dimension *City* indicates the city, for example, "Paris" or "New York", from which a session originates. The dimension *Page* indicates the URL of a page that is viewed.

Metrics are quantitative measurements.

The metric *Sessions* is the total number of sessions. The metric *Pages/Session* is the average number of pages viewed per session.

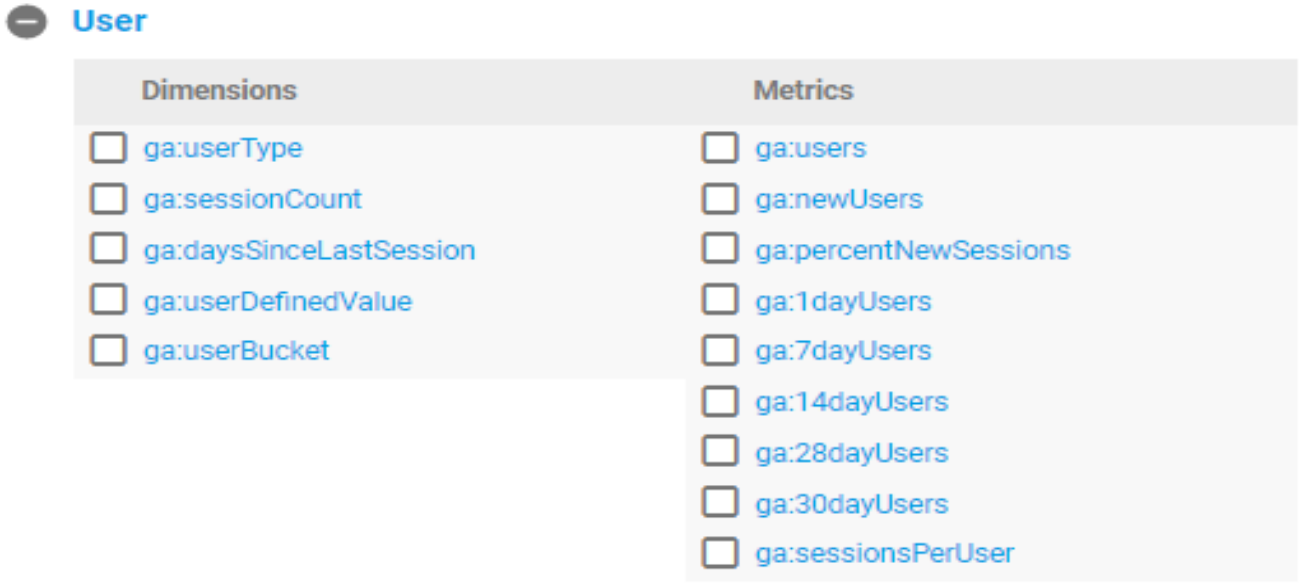
The tables in most Analytics reports organize dimension values into rows, and metrics into columns. For example, this table shows one dimension (*City*) and two metrics (*Sessions* and *Pages/Session*).

DIMENSION	METRIC	METRIC
City	Sessions	Pages/Session
San Francisco	5,000	3.74
Berlin	4,000	4.55

In most Analytics reports, you can change the dimension and/or add a secondary dimension. For example, adding Browser as a secondary dimension to the above table would result in the following:

DIMENSION	DIMENSION	METRIC	METRIC
City	Browser	Sessions	Pages/Session
San Francisco	Chrome	3,000	3.5
San Francisco	Firefox	2,000	4.1
Berlin	Chrome	2,000	5.5
Berlin	Safari	1,000	2.5
Berlin	Firefox	1,000	4.7

Dimensions and metrics explorer



- Session
- Traffic Sources
- Adwords
- Goal Conversions
- Platform or Device
- Geo Network
- System

https://developers.google.com/analytics/devguides/reporting/core/dimsmets#mode=api

For more information click above link

How do we dump Google Analytics raw data to local machine?

All accounts > Information Corners

Raw Data

Search reports and help

HOME

CUSTOMIZATION

Reports

REAL-TIME

AUDIENCE

ACQUISITION

BEHAVIOR

CONVERSIONS

Tools for developers

VIEW LESS

Google Cloud Platform

Build using Google's core infrastructure, data analytics and machine learning.

GO

Reporting API

The most advanced programmatic method to access report data in Google Analytics.

GO

Embed API

Easily create and embed a dashboard on any website you control.

GO

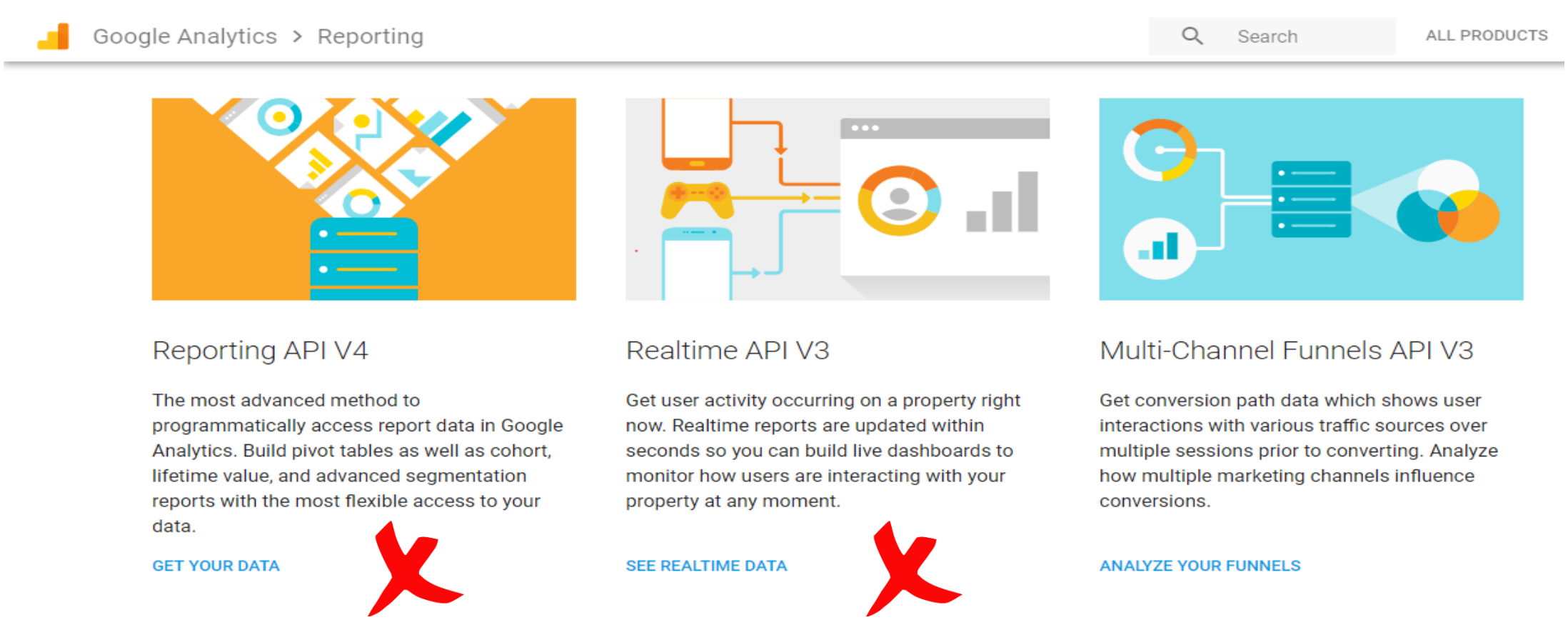
Management API

Manage your Google Analytics configuration data programmatically.

Possibility 1: Reporting API

We have multiple reporting API's provided by google,

1. Reporting API v4 ✅
2. Real time API v3 ✅
3. Multi channel funnels API v3 ❌
4. Embed API ❌
5. Metadata API ❌



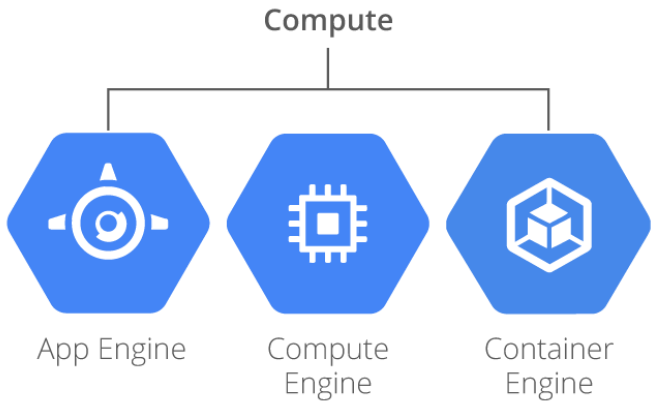
After using few sample API snippets, I found

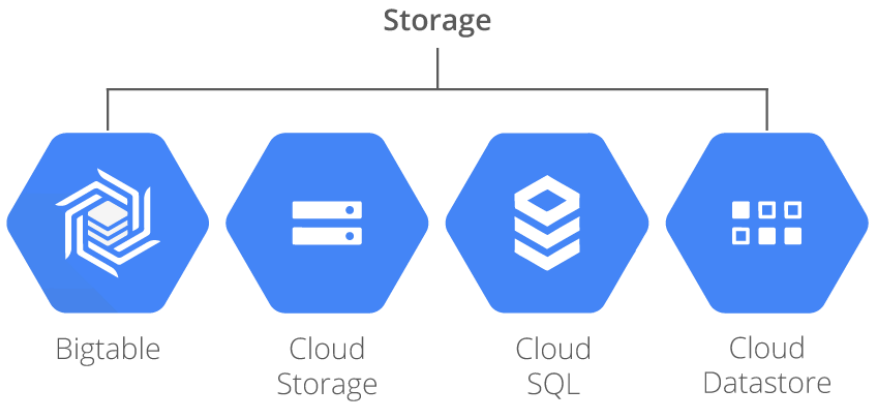
1. Reporting API helps to get only report data from Google analytics view. (Query Builder)
2. Real time API helps to get only real time report data from Google analytics view.

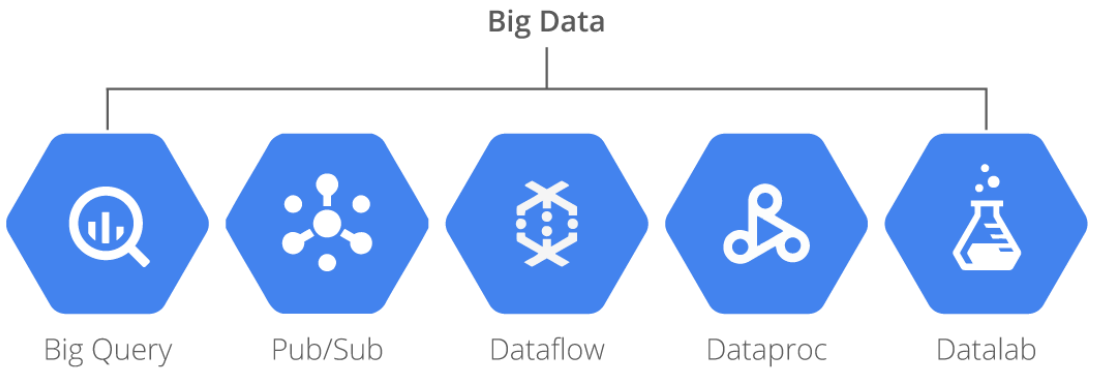
This is not going to solve to our problem.

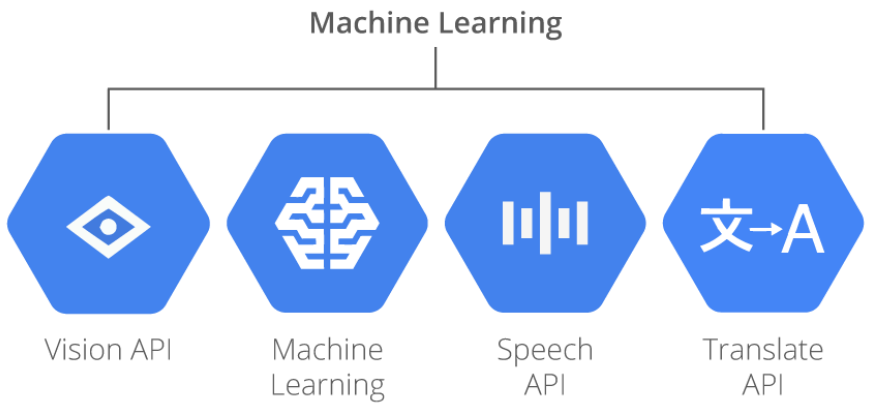
Possibility 2: Google Cloud Platform

We have lot and lots of product API's provided by google cloud,





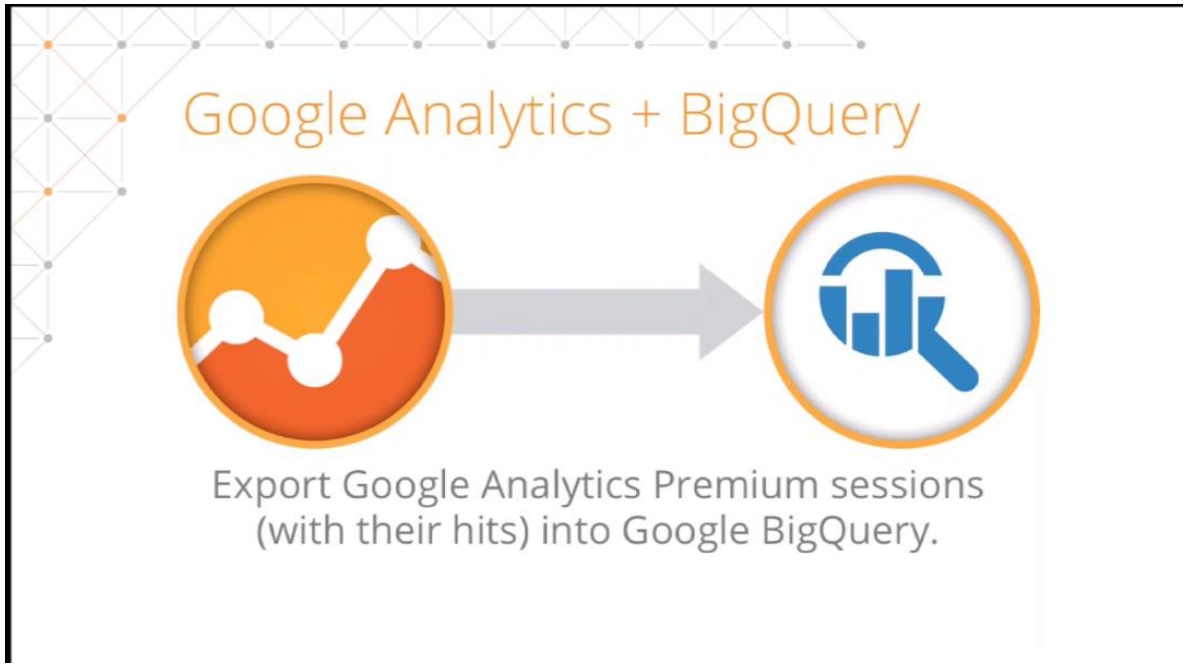




Yet another way to do it

How about exporting google analytics raw dataset to a data warehouse?

Yes, it is possible.



Link BigQuery to Google Analytics 360

All products -> Link Big Query

Once the linkage is complete, data should start flowing to your BigQuery project within 24 hours. Also provides a historical export of the smaller of *10 billion hits* or *13 months of data* within 4 weeks after the integration is complete.

About BigQuery

BigQuery is Google's fully managed, petabyte scale, low-cost analytics data warehouse.

Google BigQuery is a web service that lets you do interactive analysis of massive datasets—up to billions of rows. Scalable and easy to use, BigQuery lets developers and businesses tap into powerful data analytics on demand.

BigQuery charges for querying/processing of data. Those queries are charged to the credit card of the billing project.

Detailed step-by-step to download large query output

1.enable billing
2.You have to give your credit card number to Google to export the output, and you might have to pay.
3.But the free quota (1TB of processed data) should suffice for many hobby projects.
4.create a project
5.associate billing to a project
6.do your query
7.create a new dataset
8.click "Show options" and enable "Allow Large Results" if the output is very large
9.export the query result to a table in the dataset
10.create a bucket on Cloud Storage.
11.export the table to the created bucked on Cloud Storage.
    1. make sure to click GZIP compression
    2. use a name like <bucket>/prefix.gz.
    3. If the output is very large, the file name must have an asterisk * and the output will be split into multiple files.
12.download the table from cloud storage to your computer.
13.Does not seem possible to download multiple files from the web interface if the large file got split up, but you could install gsutil and run:
14.gsutil -m cp -r 'gs://<bucket>/prefix_*' . See also: Download files and folders from Google Storage bucket to a local folder
15.There is a gsutil in Ubuntu 16.04 but it is an unrelated package.
16.You must install and setup as documented at:
17.unzip locally:
18.for f in *.gz; do gunzip "$f"; done

Things to do next – Play with real data

1. bigquery_to_gcs

https://github.com/GoogleCloudPlatform/python-docs-samples/blob/master/bigquery/cloud-client/export_data_to_gcs.py

2. gcs to local dump

https://cloud.google.com/storage/docs/object-basics#storage-download-object-python

Useful links

1. https://github.com/GoogleCloudPlatform/python-docs-samples/blob/master/bigquery/cloud-client/export_data_to_gcs.py
2. https://cloud.google.com/bigquery/docs/exporting-data
3. https://stackoverflow.com/questions/18493533/how-to-download-all-data-in-a-google-bigquery-dataset
4. https://joaocorreia.io/blog/how-to-export-google-analytics-bigquery-clickstream-data.html