Module 4

Google BigQuery Pricing

In this module we will:

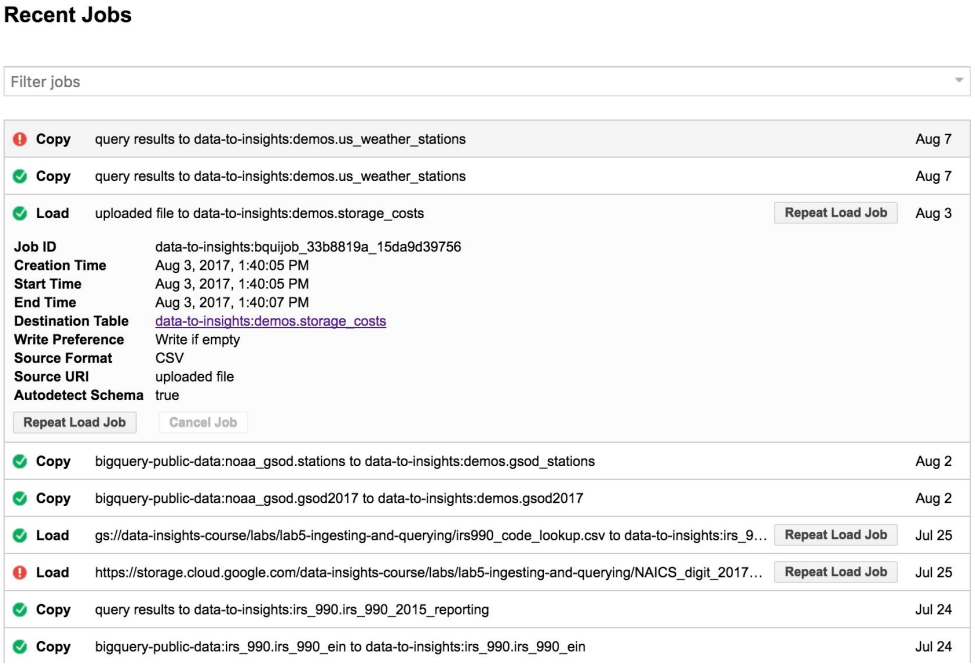
- **Walkthrough of a BigQuery Job**
- Calculate BigQuery Pricing: Storage, Querying, and Streaming Costs
- Optimize Queries for Cost

Google Cloud

The Unit of Work in BigQuery is Called **a Job**

Each Job:

- Given a Unique ID by Web UI
- Can run concurrently
- Perform Tasks
- History Stored for 6 Months



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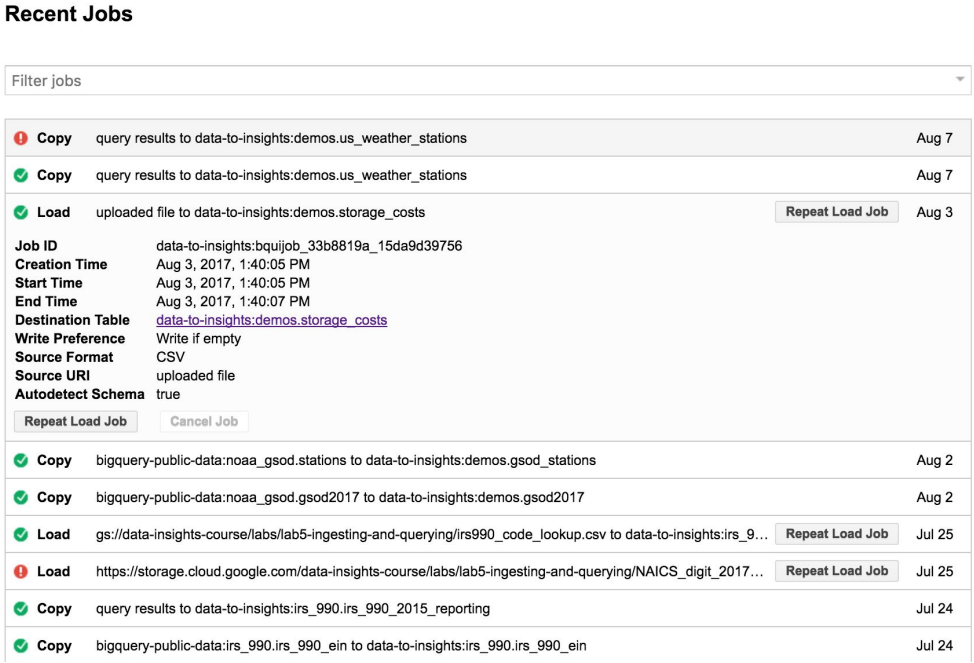
The **Four Types** of BigQuery Jobs

Job Types:

- **Query**
- **Load Data** into a Table
- **Extract** to GCS
- **Copy** Existing Table



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You Only Incur **Query Job Processing** Costs

Job Types:

- **Query** - charged by bytes processed
- **Load Data** - free
- **Extract** - free
- **Copy** - free

Note that storing data in BigQuery is a separate cost

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Three categories of BigQuery pricing

Storage

- Amount of data in table
- Ingest rate of streaming data
- Automatic discount for old data

Processing

- On-demand OR Flat-rate plans
- On-demand based on amount of data processed
- 1 TB/month free
- Have to opt-in to run high-compute queries

Free

- Loading
- Exporting
- Queries on metadata
- Cached queries
- Queries with errors

On-demand Query and Storage Pricing (as of August 2017)

Query - charged by bytes processed
- $5 per TB (first TB each month is free)

Storage - charged by GB stored per month
- $0.02 per GB, per month

Streaming Inserts
- $0.05 per GB

Latest Pricing
https://cloud.google.com/bigquery/pricing

Storage Pricing is Prorated

Total Size of Tables Stored	Cost
100 MB for half a month	You pay $0.001
500 GB for half a month	You pay $5
1 TB for a full month	You pay $20

Demo: How much is 5TB of monthly storage and 5TB querying?

Access the price calculator:

https://cloud.google.com/products/calculator/

Latest Bigquery Pricing
https://cloud.google.com/bigquery/pricing

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Pricing Model - **Reserved** Slots

Slots are the amount of total query *throughput*

- Guarantee resources, regardless of demand on the overall multi-tenant pool
- Minimizes variability in query performance
  - More concurrent queries without slowing down
  - Larger queries may run faster

The more you use BigQuery, the more slots you get automatically

Use the validator in the web UI to help calculate cost

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Quotas are used to protect all BigQuery tenants

- 50 Concurrent Queries
- Query timeout: 6 hours
- 1,000 updates to a Table per day
- 1,000 Tables Referenced by a Single Query
- Max result size: 128MB Compressed*

You can set custom quotas by project and even by user for your organization

Pricing Pitfalls: Only query what you actually need

- `SELECT column WHERE column = 123 LIMIT 10` will still need to process all rows to satisfy the filter condition
- SELECT * with very **long string length columns** means more bytes processed

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Apply cost optimizing principles when writing your queries

- Only include the columns and rows you need (filter early)
- Use cached results when possible
  - (i.e. Permanent Tables instead of Views)
  - Views are saved Queries -- covered later
- Limit the use of User-Defined Functions
  - UDFs covered later

Summary: Calculate costs and optimize your queries

BigQuery jobs include query, load, extract, copy

BigQuery charges for what data you consume in your queries (bytes processed)

1TB / month of free data processing. No charges for queries using cache.

Consume only the rows and columns of data you need

Lab 3
Calculate Google BigQuery Pricing

Calculate BigQuery Pricing

In this lab, you will explore Google BigQuery pricing and how to estimate query and storage costs. Additionally, you will see how modifying a query can affect the cost.

BigQuery is a pay-for-what-you-use tool.
You don't pay for infrastructure costs.

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