Getting Started with BigQuery

Overview

In this lab, you load a web server log into a BigQuery table. After loading the data, you query it using the BigQuery web user interface and the BigQuery CLI.

BigQuery helps you perform interactive analysis of petabyte-scale databases, and it enables near-real time analysis of massive datasets. It offers a familiar SQL 2011 query language and functions.

Data stored in BigQuery is highly durable. Google stores your data in a replicated manner by default and at no additional charge for replicas. With BigQuery, you pay only for the resources you use. Data storage in BigQuery is inexpensive. Queries incur charges based on the amount of data they process: when you submit a query, you pay for the compute nodes only for the duration of that query. You don't have to pay to keep a compute cluster up and running.

Using BigQuery involves interacting with a number of Google Cloud Platform resources, including projects (covered elsewhere in this course), datasets, tables, and jobs. This lab introduces you to some of these resources, and this brief introduction summarizes their role in interacting with BigQuery.

Datasets: A dataset is a grouping mechanism that holds zero or more tables. A dataset is the lowest level unit of access control. Datasets are owned by GCP projects. Each dataset can be shared with individual users.

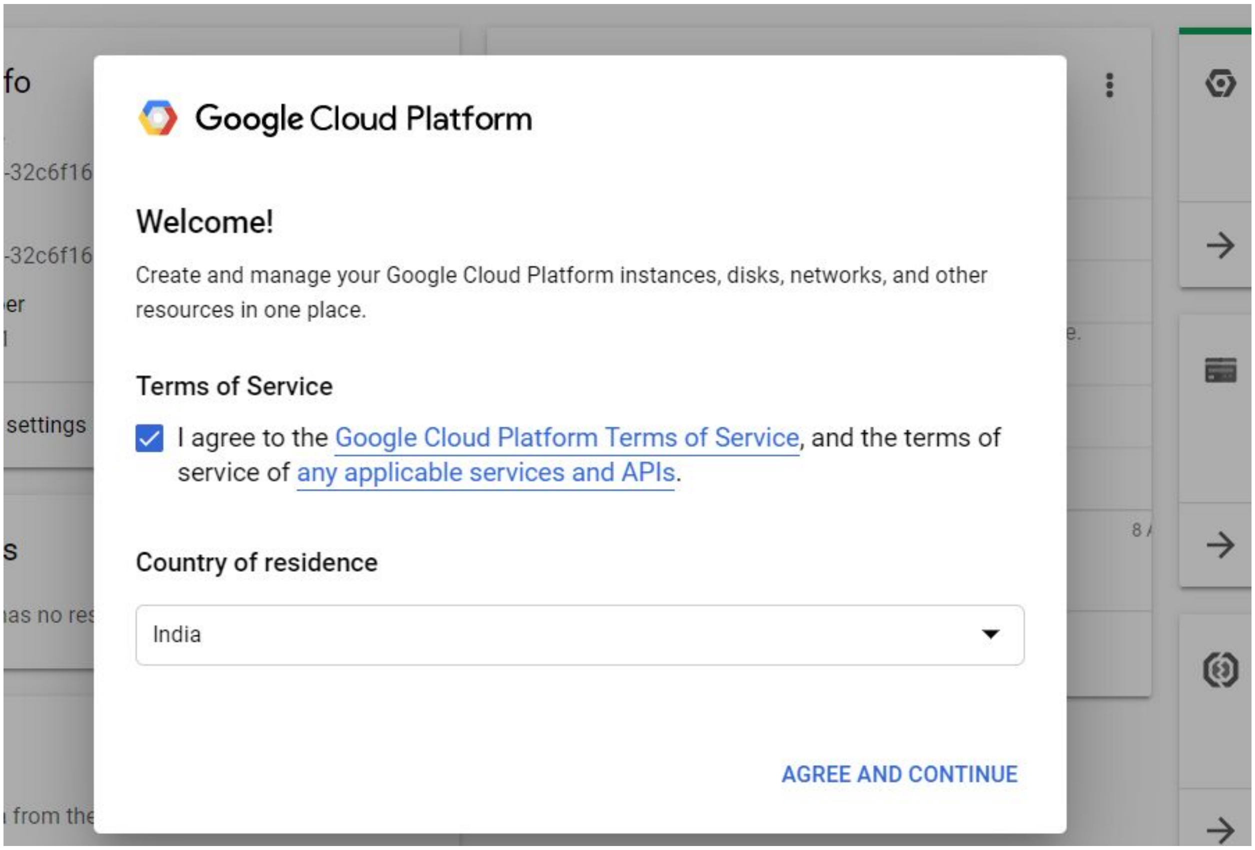
Tables: A table is a row-column structure that contains actual data. Each table has a schema that describes strongly typed columns of values. Each table belongs to a dataset.

Objectives

In this lab, you learn how to perform the following tasks:

- Load data from Cloud Storage into BigQuery.
- Perform a query on the data in BigQuery.

Task 1: Sign in to the Google Cloud Platform (GCP) Console



Google Cloud Platform

Welcome!

Create and manage your Google Cloud Platform instances, disks, networks, and other resources in one place.

Terms of Service

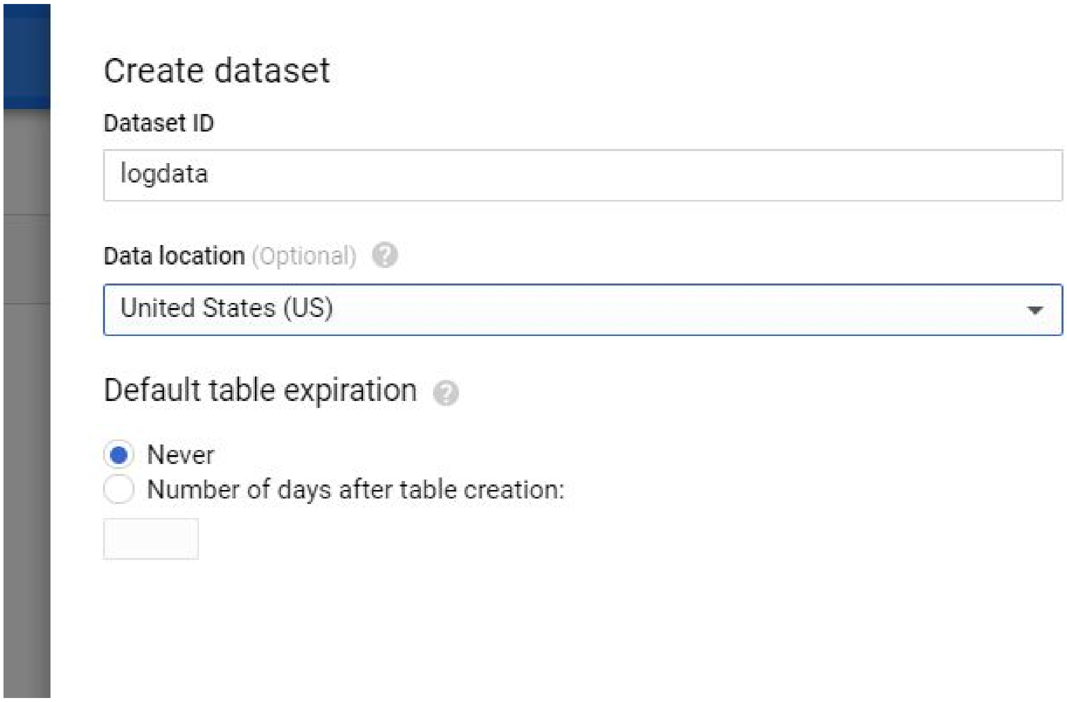
☑ I agree to the Google Cloud Platform Terms of Service, and the terms of service of any applicable services and APIs.

Country of residence

India

Task 2: Load data from Cloud Storage into BigQuery

1. In the Console, on the **Navigation menu** (☰) click **BigQuery** then click **Done**.
2. Create a new dataset within your project by selecting your project in the Resources section, then clicking on **CREATE DATASET** on the right.



Create dataset

Dataset ID

logdata

Data location (Optional)

United States (US)

Default table expiration

● Never

○ Number of days after table creation:

3. In the **Create Dataset** dialog, for **Dataset ID**, type **logdata**.
4. For **Data location**, select the continent closest to the region your project was created in. click **Create dataset**.
5. Create a new table in the **logdata** to store the data from the CSV file.
6. Click on **Create Table**. On the **Create Table** page, in the **Source** section:

- For **Create table from**, choose select **Google Cloud Storage**, and in the field, type`gs://cloud-training/gcpfci/access_log.csv`.
- Verify **File format** is set to **CSV**.

Note: When you have created a table previously, the Create from Previous Job option allows you to quickly use your settings to create similar tables.

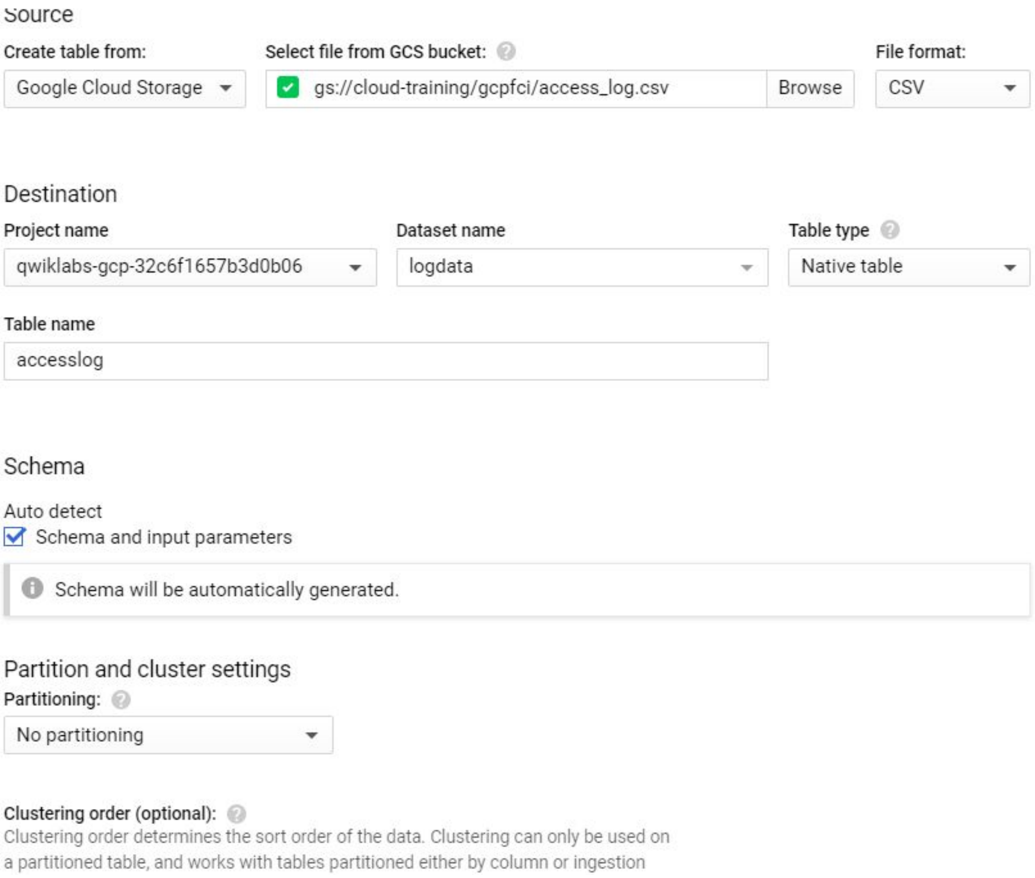
1. In the **Destination** section:

- For **Dataset name**, leave **logdata** selected.

- For **Table name**, type **accesslog**.
- For **Table type**, **Native table** should be selected and unchangeable.

1. Under **Schema** section, for **Auto detect** check the **Schema and input Parameters**.
2. Accept the remaining default values and click **Create Table**.

   BigQuery creates a load job to create the table and upload data into the table (this may take a few seconds).
3. (Optional) To track job progress, click **Job History**.
4. When the load job is complete, click **logdata** > **accesslog**.



Source

Create table from: Google Cloud Storage

Select file from GCS bucket: ✓ gs://cloud-training/gcpfci/access_log.csv Browse

File format: CSV

Destination

Project name: qwiklabs-gcp-32c6f1657b3d0b06

Dataset name: logdata

Table type: Native table

Table name: accesslog

Schema

Auto detect

☑ Schema and input parameters

Schema will be automatically generated.

Partition and cluster settings

Partitioning: No partitioning

Clustering order (optional):

Clustering order determines the sort order of the data. Clustering can only be used on a partitioned table, and works with tables partitioned either by column or ingestion

5. On the **Table Details** page, click **Details** to view the table properties, and then click **Preview** to view the table data.

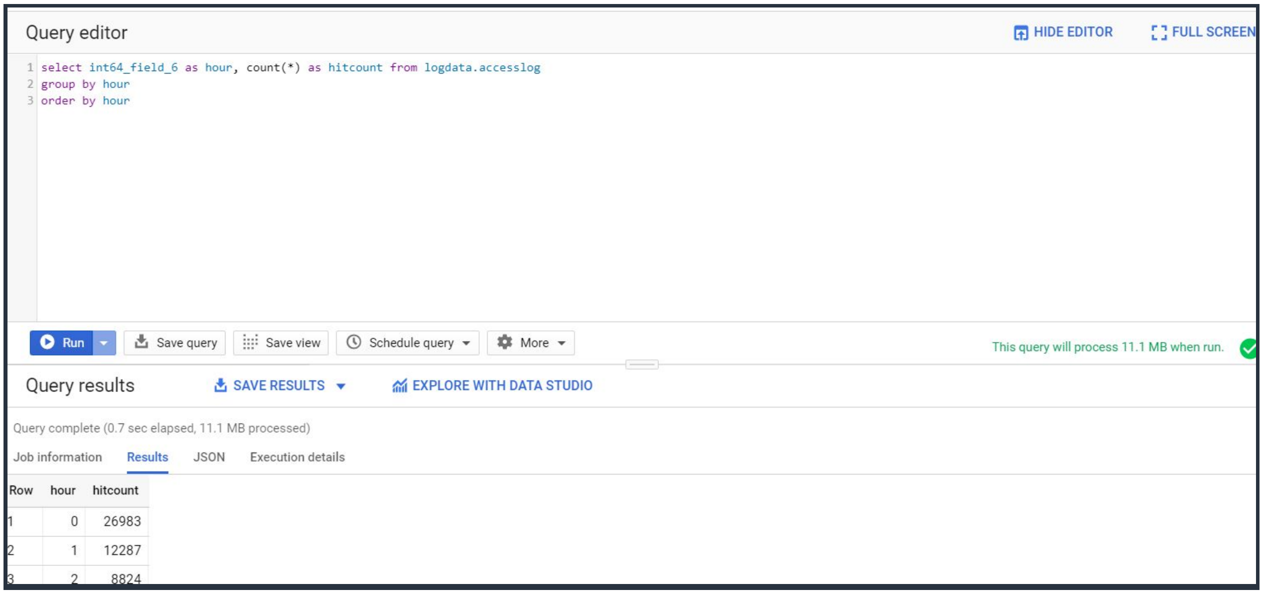
Each row in this table logs a hit on a web server. The first field, **string_field_0**, is the IP address of the client. The fourth through ninth fields log the day, month, year, hour, minute, and second at which the hit occurred. In this activity, you will learn about the daily pattern of load on this web server.

Task 3: Perform a query on the data using the BigQuery web UI

In this section of the lab, you use the BigQuery web UI to query the **accesslog** table you created previously.

1. In the **Query editor** window, type (or copy-and-paste) the following query:
2. Because you told BigQuery to automatically discover the schema when you load the data, the hour of the day during which each web hit arrived is in a field called **int_field_6**.

```
select int64_field_6 as hour, count(*) as hitcount from logdata.accesslog
group by hour
    order by hour
```



```
select int64_field_6 as hour, count(*) as hitcount from logdata.accesslog
group by hour
order by hour
```

This query will process 11.1 MB when run.

Query complete (0.7 sec elapsed, 11.1 MB processed)

Row	hour	hitcount
1	0	26983
2	1	12287
3	2	8824

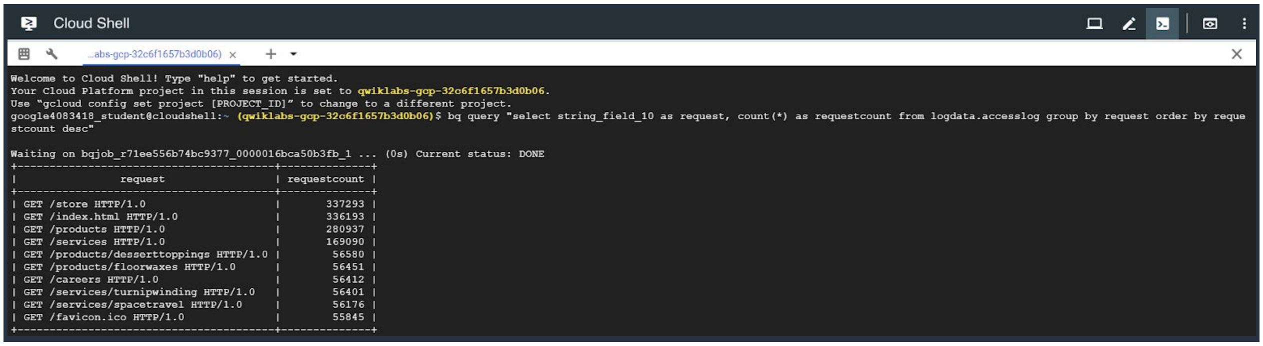
3. Notice that the Query Validator tells you that the query syntax is valid (indicated by the green check mark) and indicates how much data the query will process. The amount of data processed allows you to determine the price of the query using theCloud Platform Pricing Calculator.
4. Click **Run** and examine the results. At what time of day is the website busiest? When is it least busy?

Task 4: Perform a query on the data using the bq command

In this section of the lab, you use the bq command in Cloud Shell to query the **accesslog** table you created previously.

1. On the **Google Cloud Platform** menu, click **Activate Cloud Shell** . If a dialog box appears, click **Start Cloud Shell**.
2. At the Cloud Shell prompt, enter this command:

```
bq query "select string_field_10 as request, count(*) as requestcount from
logdata.accesslog group by request order by requestcount desc"
```



```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to qwiklabs-gcp-32c6f1657b3d0b06.
Use “gcloud config set project [PROJECT_ID]” to change to a different project.
google4083418_student@cloudshell:~ (qwiklabs-gcp-32c6f1657b3d0b06)$ bq query "select string_field_10 as request, count(*) as requestcount from logdata.accesslog group by request order by reque
stcount desc"

Waiting on bqjob_r71ee556b74bc9377_0000016bca50b3fb_1 ... (0s) Current status: DONE
+----------------------------------------+--------------+
|                request                 | requestcount |
+----------------------------------------+--------------+
| GET /store HTTP/1.0                    |       337293 |
| GET /index.html HTTP/1.0               |       336193 |
| GET /products HTTP/1.0                 |       280937 |
| GET /services HTTP/1.0                 |       169090 |
| GET /products/desserttoppings HTTP/1.0 |        56580 |
| GET /products/floorwaxes HTTP/1.0      |        56451 |
| GET /careers HTTP/1.0                  |        56412 |
| GET /services/turnipwinding HTTP/1.0   |        56401 |
| GET /services/spacetravel HTTP/1.0     |        56176 |
| GET /favicon.ico HTTP/1.0              |        55845 |
+----------------------------------------+--------------+
```

3. The first time you use the `bq` command, it caches your Google Cloud Platform credentials, and then asks you to choose your default project. Choose the project that Qwiklabs assigned you to. Its name will look like `qwiklabs-gcp-` followed by a hexadecimal number.
   The `bq` command then performs the action requested on its command line. What URL offered by this web server was most popular? Which was least popular?

Congratulations!