
Streaming Analytics into BigQuery: Challenge Lab

[Prerequisite] Enable Required APIs

Before doing anything, make sure the following APIs are **enabled**:

- Dataflow API
- BigQuery API
- Pub/Sub API
- Cloud Storage

Go to **Navigation Menu > APIs & Services > Library**, and search/enable them if needed.

Task 1: Create a Cloud Storage Bucket

Bucket Name:

Use the **Project ID** (copy it from the Lab's top panel) as the **bucket name**.

Steps:

1. Go to **Navigation Menu > Cloud Storage > Buckets**.
2. Click "**Create**".
3. Set:
 - a. **Name**: (paste your **Project ID**) – must be globally unique.
 - b. **Region**: Use the region given in your lab instructions.
 - c. **Storage class**: Standard (default).
4. Click "**Create**".

The image shows two screenshots of the Google Cloud Platform interface.

Create a bucket (Left Screenshot):

- Left Sidebar:** Overview, Buckets, Monitoring, Settings, Storage Intelligence (with Insights datasets and Configuration), Marketplace, Release Notes.
- Main Content:**
 - Get Started:** Pick a globally unique, permanent name. [Naming guidelines](#). Input field: `qwiklabs-gcp-00-773d3a52df35`.
 - Labels (optional):** [Continue](#)
 - Choose where to store your data:** Location: us (multiple regions in United States), Location type: Multi-region.
 - Choose how to store your data:** Default storage class: Standard, Hierarchical namespace: Disabled.
 - Choose how to control access to objects**
- Right Sidebar:** **Good to know:** Location pricing, Current configuration: Multi-region / Standard, Item Cost (us: \$0.026 per GB-month, With default replication: \$0.020 per GB written). [Estimate your monthly cost](#).

Bucket details (Right Screenshot):

- Left Sidebar:** Overview, **Buckets** (selected), Monitoring, Settings, Storage Intelligence (with Insights datasets and Configuration), Marketplace, Release Notes.
- Main Content:**
 - Bucket Overview:** Name: `qwiklabs-gcp-00-773d3a52df35`, Location: us (multiple regions in United States), Storage class: Standard, Public access: Not public, Protection: Soft Delete.
 - Objects Tab:** Folder browser, Bucket: `qwiklabs-gcp-00-773d3a52df35`, Actions: Create folder, Upload, Filter by name prefix only, Filter object, Name, Size, Type, Created, Storage.
 - No rows to display**

✓ Task 2: Create a BigQuery Dataset and Table

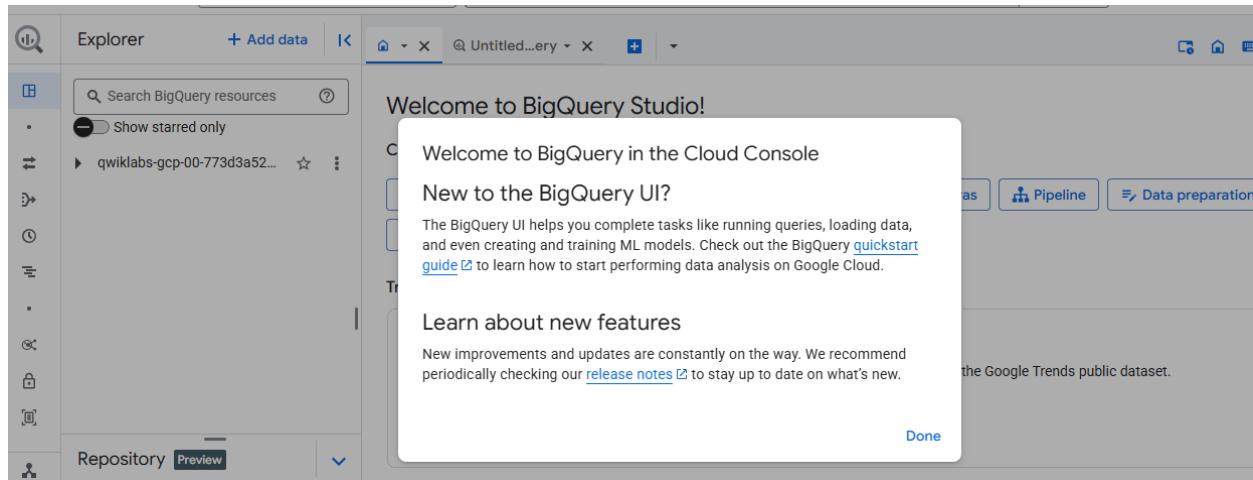
📌 Steps:

1. Go to **Navigation Menu > BigQuery > Explorer**.
2. Click on your **Project ID**, then click “**Create dataset**”.
3. Name it as:
 - a. **Dataset ID:** BigQuery_dataset_name
 - b. **Location:** US (multi-region)
 - c. Click **Create dataset**.

4. Inside your new dataset, click “**Create table**”.

- a. **Source:** Empty table
- b. **Table name:** BigQuery_table_name
- c. **Schema:** Add field
 - i. **Name:** data
 - ii. **Type:** STRING

d. Click **Create Table**



Create dataset

Project ID *

qwiklabs-gcp-00-773d3a52df35

[Change](#)

Dataset ID *

sensors_551

Letters, numbers, and underscores allowed

Location type [?](#)

Region

Specify a region to colocate your datasets with other Google Cloud services.

Multi-region

Allow BigQuery to select a region within a group to achieve higher quota limits.



Some locations have been restricted due to a policy set by your organization. [Learn more about restricting locations.](#)

Multi-region *

US (multiple regions in United States)



External Dataset

The selected region supports the following external dataset types: Cloud Spanner

Link to an external dataset [?](#)

[Create dataset](#)

[Cancel](#)

Create table

Source

Create table from —

Empty table

Destination

Project * —
qwiklabs-gcp-00-773d3a52df35 [Browse](#)

Dataset * —
sensors_551

Table * —
temperature_441

Maximum name size is 1,024 UTF-8 bytes. Unicode letters, marks, numbers, connectors, dashes, and spaces are allowed.

Table type — Native table

Create a BigQuery table for Apache Iceberg [Preview](#)

Schema

[Edit as text](#)

Create table Cancel

✓ Task 3: Create a Pub/Sub Topic

📌 Steps:

1. Go to **Navigation Menu > Pub/Sub > Topics**.
2. Click "**Create Topic**".
 - a. **Topic ID:** PubSub_topic_name
 - b. Keep "**Add a default subscription**" checked.
3. Click **Create Topic**.

✓ Task 4: Run a Dataflow Pipeline

📌 Steps:

1. Go to **Navigation Menu > Dataflow**.
2. Click "**Create job from template**".
3. Set the following:
 - a. **Job Name:** Dataflow_job_name
 - b. **Region:** Choose the region from your lab environment
 - c. **Template location:**

`gs://dataflow-templates-/latest/PubSub_to_BigQuery`

1. Click **Run Job**.

Wait for status to become **Running**.

Create job from template

Dataflow templates
Launch jobs from Google-provided or custom templates

Job name * dfjob-88053
Must be unique among running jobs

Regional endpoint * europe-west1 (Belgium)

Dataflow template * Custom Template

Template path * gs://dataflow-templates-europe-west1/latest/PubSub_toBigQuery BROWSE

Additional parameters + ADD PARAMETER

Additional information
This streaming pipeline will cost you between \$0.40 and \$1.20 per hour in the us-central1 region.

Show more

```

graph TD
    A[ReadPubSubTopic] --> B[ConvertMess...ToTableRow]
    B --> C[WriteSuccessfulRecords]
    B --> D[Flatte]
  
```

Select table

Filter projectid : qwiklabs-gcp-00-773d3a52df35 Enter property name or value

Name	Description	Project
temperature_441	-	qwiklabs-gcp-00-773d3a52df35

dfjob-88053 CLONE STOP CREATE SNAPSHOT SEND FEEDBACK

JOB GRAPH EXECUTION DETAILS JOB METRICS COST RECOMMENDATIONS

Job steps view Graph view CLEAR SELECTION

Job info

Job name	dfjob-88053
Job ID	2025-06-12_06_49-08-5433609080215715573
Job type	Streaming
Job status	Running
SDK version	Apache Beam SDK for Java 2.6.0
Job region	europe-west1
Service zones	europe-west1-b
Worker location	europe-west1
Current workers	0
Latest worker status	Starting a pool of 1 workers.
Straggler status	No active straggler
Start time	June 12, 2025 at 7:19:09 PM GMT+5
Elapsed time	1 min 29 sec
Encryption type	Google-managed
Dataflow Prime	Disabled

Logs SHOW

```

graph TD
    A[ReadPubSubTopic] --> B[ConvertMess...ToTableRow]
    B --> C[WriteSuccessfulRecords]
    B --> D[Flatte]
  
```

 **Task 5: Publish Test Message and Query BigQuery**

 **Publish Message:**

1. Go to **Pub/Sub > Topics > PubSub_topic_name**.

2. Click "**Publish Message**".

3. **Message Body:**

```
{"data": "73.4 F"}
```