

Congratulations! You passed!

Grade received **100%** To pass 100% or higher

[Go to next item](#)

To pass this optional practice quiz, you must receive 100%, or 1 out of 1 point, by completing the following activity. You can learn more about graded and practice items in the [course overview](#).



Activity Overview

As you have been learning, a **data pipeline** is a series of processes that transport data from different sources to their final destination for storage and analysis. Data pipelines automate the processes involved in extracting, transforming, combining, validating, and loading data for further analysis and visualization. Effective data pipelines also help eliminate errors and combat system latency. In this activity, you will complete a tutorial in which you will create a streaming pipeline using a Dataflow template.

Please note that this activity is optional and will not prevent you from completing this course or receiving your certificate. Google Dataflow and BigQuery are Google Cloud products that you can try at no cost. You will need to fill out your credit card information to begin your trial, but you will not be charged if you follow the free trial's terms. For more information, review this article about [free cloud features and trial offer](#). If you prefer not to open a billing account, you may skip to the [next course item](#).

Step-By-Step Instructions

Follow the instructions to complete each step of the activity. Then, answer the questions at the end of the activity before going to the next course item.

Step 1: Log into Google Cloud

To begin the quickstart guide, log into your Google Cloud account. If you have not created an account, be sure to complete the activity that involved [creating a Google Cloud account](#).

Step 2: Begin the tutorial

Once you are logged in, open the [streaming pipeline template](#) quickstart guide. Then click **Guide me**.

Dataflow > Documentation > Guides Was this helpful?

Create a streaming pipeline using a Dataflow template

This quickstart shows you how to create a streaming pipeline using a Google-provided Dataflow template. Specifically, this quickstart uses the [Pub/Sub Topic to BigQuery template](#) as an example.

The Pub/Sub Topic to BigQuery template is a streaming pipeline that reads JSON-formatted messages from a Pub/Sub topic and writes them to a BigQuery table.

To follow step-by-step guidance for this task directly in the Google Cloud console, click **Guide me**.

[Guide me](#)

To begin the tutorial, click **START**.

LEARN Tutorial

Learn how to:

1. Enable Dataflow and other required APIs in your Google Cloud project.
2. Create a Cloud Storage bucket.
3. Create a BigQuery dataset and table.
4. Use the Google-provided Pub/Sub Topic to BigQuery template.
5. Run the pipeline using a template.
6. Review BigQuery data.
7. Delete your project to prevent incurring charges.

Estimated time to complete:
⌚ 15 minutes

Click **Start** to begin.

[START](#)

Step 3: Create a new project and enable APIs

For Step 1 of the tutorial, click **create a new project**.

LEARN Tutorial

Step 1 of 7

Enable Dataflow and required APIs in a Google Cloud project

1. [Create a new project](#) to ensure that you have the permissions you need, or select an existing project in which you have the relevant permissions.

Give your project a name and project ID. Then click **CREATE**.

New Project

You have 10 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)
[MANAGE QUOTAS](#)

Project name *
data pipeline project

Project ID *
data-pipeline-project-375819

Project ID can have lowercase letters, digits, or hyphens. It must start with a lowercase letter and end with a letter or number.

Location *
No organization [BROWSE](#)

Parent organization or folder

[CREATE](#) [CANCEL](#)

Select your project from the dropdown menu in the tutorial pane and click **ENABLE APIS**. Then click **NEXT**.

[data pipeline project](#)

2. [Enable APIs](#)

This will enable Google Cloud APIs.

- Dataflow API**
- Compute Engine API**
- Cloud Logging API
- Cloud Storage
- Google Cloud Storage JSON API
- BigQuery API
- Cloud Pub/Sub API**
- Cloud Resource Manager API**

Click **Next** to create a Cloud Storage bucket.

[PREVIOUS](#) [NEXT](#)

Step 4: Complete the tutorial

Proceed with the steps of the tutorial, which is estimated to take about 15 minutes. The remaining steps of the tutorial are as follows:

- In Step 2, you will set up a Cloud Storage bucket. Buckets are the basic containers that hold your data.
- In Step 3, you will create a BigQuery dataset and BigQuery table within your project.
- In Steps 4 and 5, you will be guided through running the pipeline. You'll use an existing template that runs a pipeline from Pub/Sub to BigQuery. Pub/Sub is a cloud service that opens a communication channel for a publishing provider and subscriber for a data source. It is used to ingest data before moving it to BigQuery with a data pipeline.
- In Step 6, you will run a query on the table that now holds the data you brought in from Pub/Sub using the Dataflow template.
- In Step 7, you will delete your project. **Make sure to complete this step in order to avoid incurring charges on your Google Cloud account.**

1. Did you complete this activity?

1 / 1 point

- Yes
 No

Correct
Thank you for completing this activity! Creating a pipeline in Dataflow is a great example of how you'll transform and move data from a source to a table. Please complete the following quiz questions and review the feedback.

2. What are some benefits of data pipelines? Select all that apply.

1 / 1 point

- Assign roles cross-team
 Help eliminate errors

Correct
Data pipelines automate the processes involved in extracting, transforming, combining, validating, and loading data for further analysis and visualization. Effective data pipelines also help eliminate errors and combat system latency.

- Prevent system latency

Correct
Data pipelines automate the processes involved in extracting, transforming, combining, validating, and loading data for further analysis and visualization. Effective data pipelines also help eliminate errors and combat system latency.

- Automate data analysis processes

Correct
Data pipelines automate the processes involved in extracting, transforming, combining, validating, and loading data for further analysis and visualization. Effective data pipelines also help eliminate errors and combat system latency.

3. While working for a client, you need to create a streaming pipeline in Dataflow. What template could you use to quickly move Pub/Sub data to BigQuery?

1 / 1 point

- The Pub/Sub Topic to BigQuery template
 The Dataflow to BigQuery template
 The Cloud Storage to BigQuery template
 The Compute Engine to BigQuery template

Correct
The Pub/Sub Topic to BigQuery template is a streaming pipeline that reads JSON-formatted messages from a Pub/Sub topic and writes them to a BigQuery table. You can use this template as a quick solution to move Pub/Sub data to BigQuery.