Airflow Providers and Integrations:

Analytics:

- Apache Spark
- Apache Superset
- Google Analytics
- Adobe Analytics
- Microsoft Power BI
- Databricks

Preprocessing:

- Apache NiFi
- Qubole
- Apache Kafka
- Talend
- Apache Flink
- Apache Storm

Reports:

- Tableau
- Microsoft Power BI
- QlikView
- Google Data Studio
- SAP Crystal Reports

ETL:

- Apache NiFi
- Apache Beam
- Talend
- Glue
- Azure Data Factory
- Informatica

Storage:

- Amazon S3
- Google Cloud Storage
- Microsoft Azure Blob Storage
- Apache Cassandra
- MongoDB
- Snowflake

Real-time:

- Apache Flink
- Apache Storm
- Apache Kafka
- Apache Ignite
- Google Cloud Dataflow

Workflow:

- Apache Airflow
- Apache Oozie
- Apache Beam
- Luigi
- Azkaban

ML:

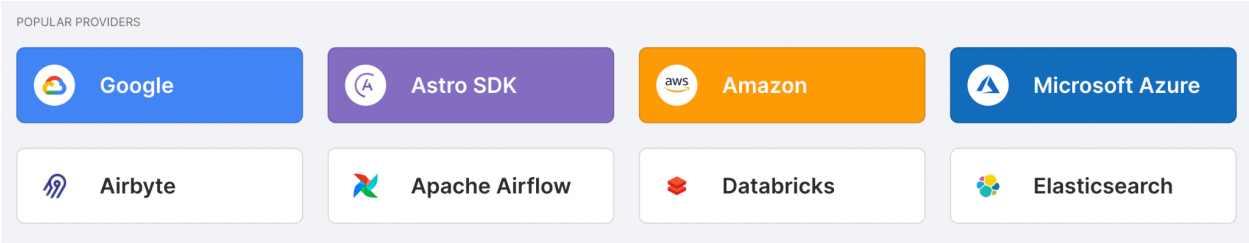
- TensorFlow
- PyTorch
- Scikit-learn
- Apache Spark MLlib
- Microsoft Azure ML

Monitor:

- Prometheus
- Grafana
- Nagios
- Datadog
- New Relic

Cloud Integrations

Popular Providers :

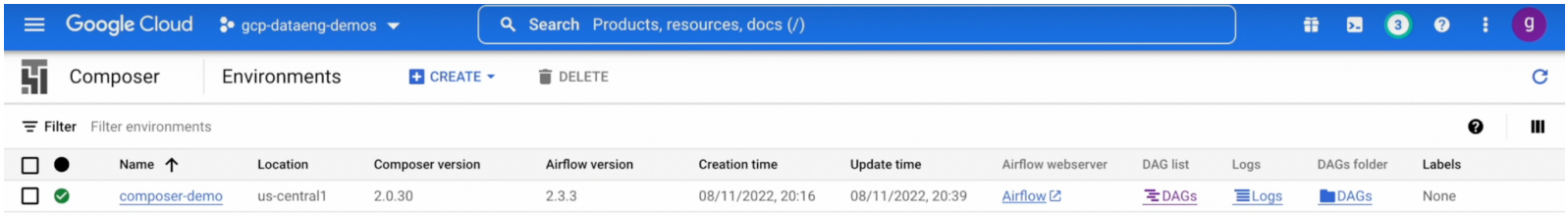


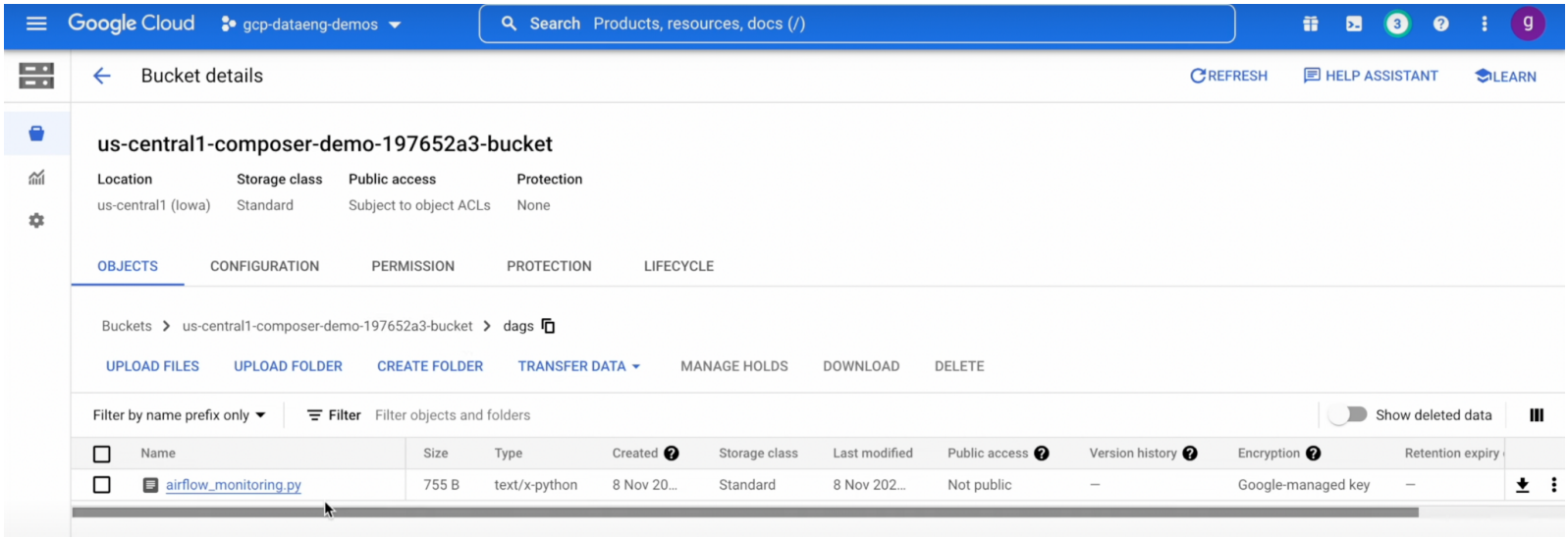
More Providers : https://registry.astronomer.io/providers

Google Cloud Service :

Composer - Cloud Airflow Architecture

Google Kubernetes Cluster





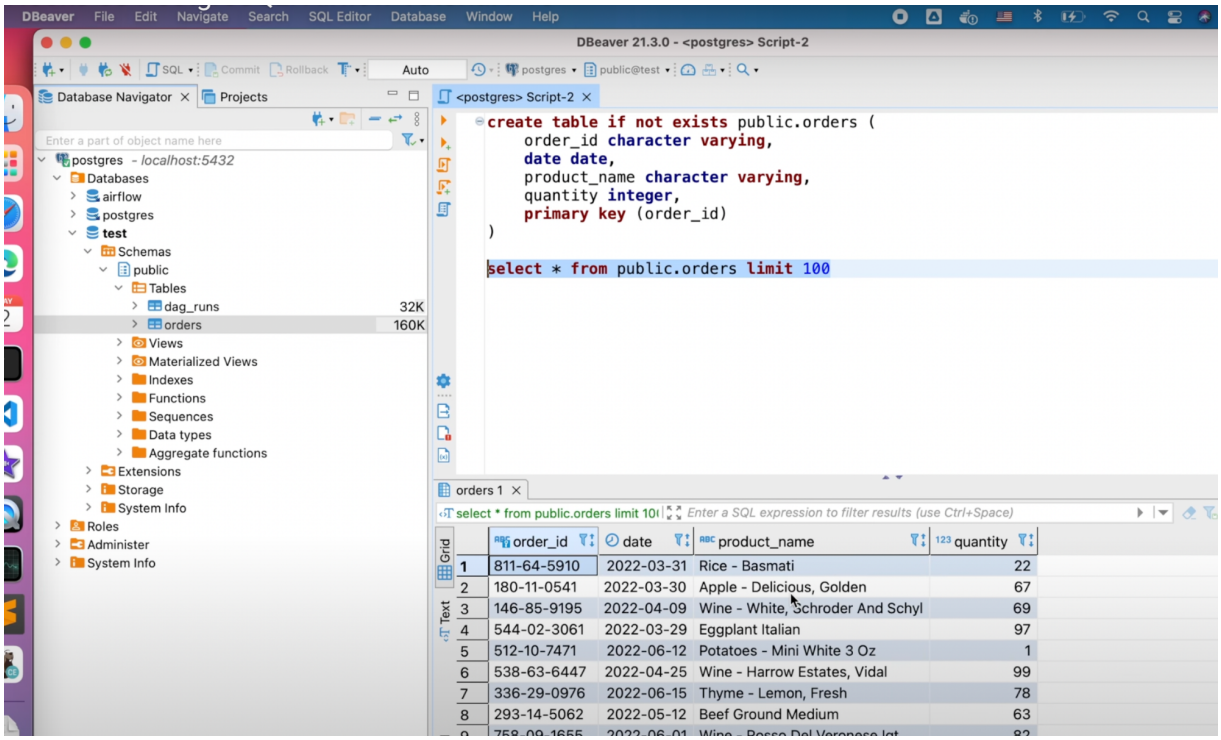
Amazon AWS :

EC2 Hosting Airflow

S3 Instances for Data Lake

Use Case :

Airflow Hooks S3 PostgreSQL [Postgres - Text - Upload to S3]



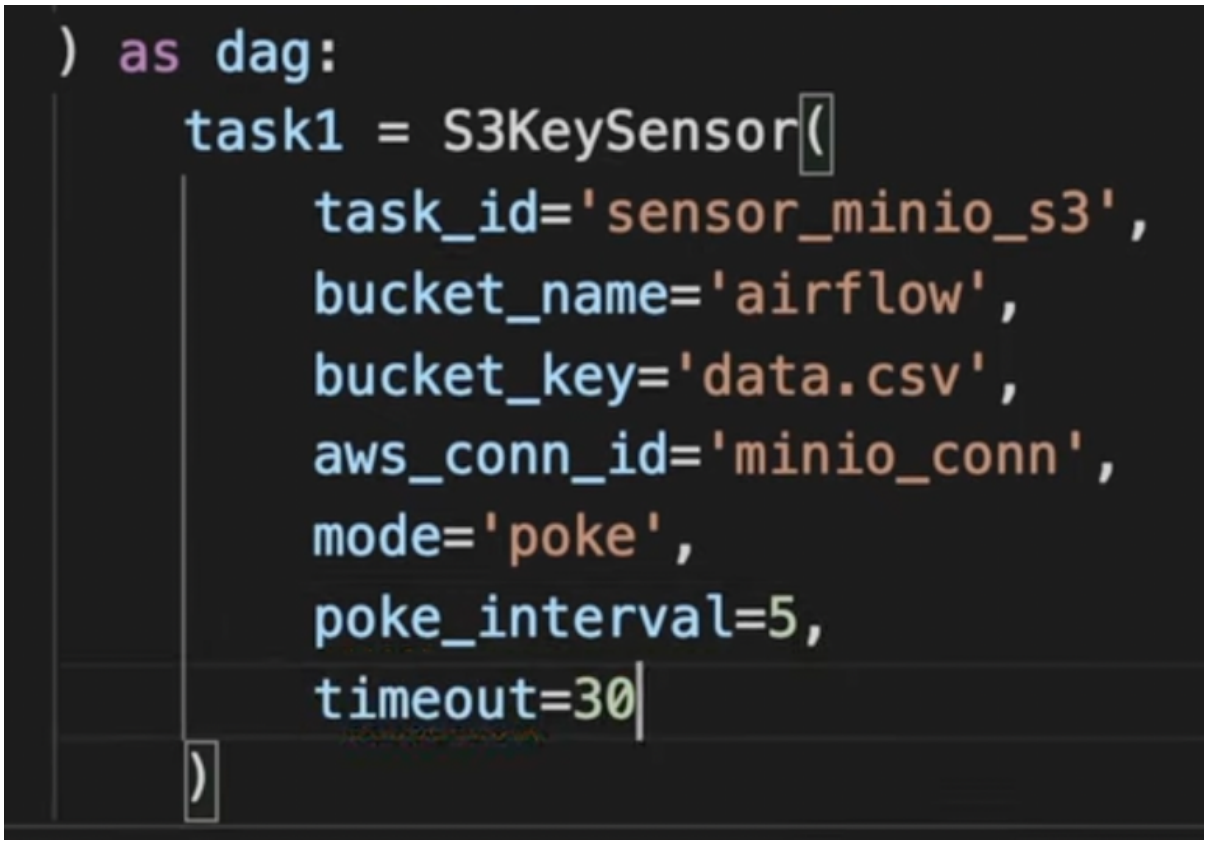

```
load_file(self, filename: str, key: str, bucket_name: Optional[str] = None,
replace: bool = False, encrypt: bool = False, gzip: bool = False, acl_policy:
Optional[str] = None)[source]
```

Loads a local file to S3

Parameters

- **filename** (*str*) -- name of the file to load.
- **key** (*str*) -- S3 key that will point to the file
- **bucket_name** (*str*) -- Name of the bucket in which to store the file

Airflow AWS S3 Sensor Operator:



Microsoft Azure :

Databricks

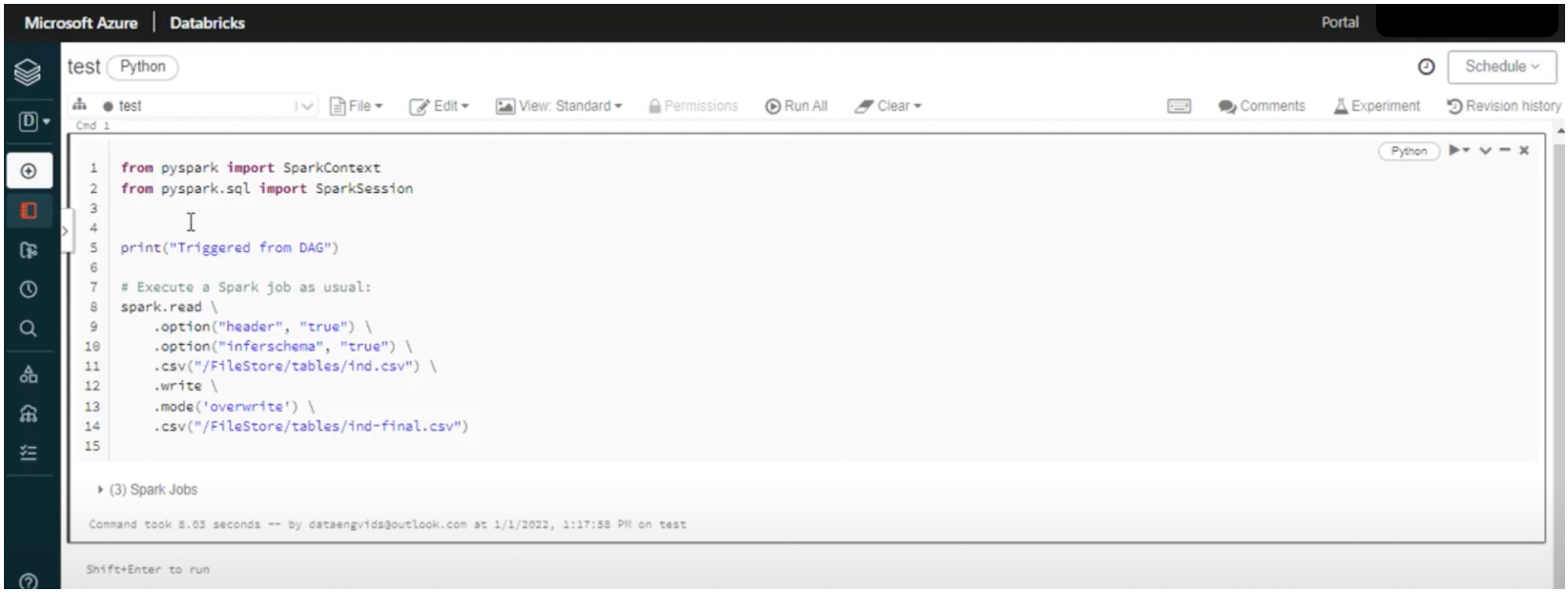
Steps:

Create Connection
Import DatabricksSubmitRunOperator

Input Cluster details { name, versions, confs }

Notebook JSON { Cluster Details, Notebook Path }

Initiate Task { T_id, Conn_id, dag, notebook JSON }



More Providers and APIs :

1) Spotify Playlist :

Get Recently Played Spotify Playlist into DB:

https://github.com/karolina-sowinska/free-data-engineering-course-for-beginners/blob/master/dags/spotify_dag.py

2) Slack Notification:

Send Task Notification Via Slack

https://github.com/eywoon/airflow_demo/tree/master/dags

3) Podcast Summary:

A pipeline that will download podcast episodes and automatically transcribe them using speech recognition.

Store our results in a SQLite database that we can easily query.

https://github.com/dataquestio/project-walkthroughs/blob/master/podcast_summary/podcast_summary.py

4) Monitor Apache Airflow:

StatsD | Prometheus | Grafan

statsd-exporter: Service that aggregates and sends airflow statsd metrics to Prometheus metrics

Prometheus: Monitoring and alerting toolkit that runs Prometheus service that scraps airflow metrics from statsd-exporter

Grafana: Runs Grafana instance for our final dashboard visualization and monitoring that allows you to query, visualize, alert on, and understand

https://github.com/maxcotec/Apache-Airflow/tree/bc06530aa06e063c8c8c9f7ccd5fff8e17c16cc3

5) Python Data Analysis ETL Pipeline :

https://github.com/hnawaz007/pythondataanalysis/blob/main/ETL%20Pipeline/automate_etl_with_airflow.py

Task :

Create a data processing pipeline that takes data from a CSV file, transforms it, and stores the results in a PostgreSQL database. The pipeline should run every day at midnight, and we want to be notified by email if there are any errors or if the pipeline fails.

Possible Steps:

1. A file_sensor task that waits for a CSV file to be uploaded to a specified directory.
2. A data_processing task that reads the CSV file, applies some transformations, and stores the results in a PostgreSQL database.
3. An email_notification task that sends an email notification if there are any errors or if the pipeline fails.
4.

Task 2 :

Create an Airflow data processing pipeline that extracts data from a MySQL database, cleans and transforms it using Apache Spark, loads it into a PostgreSQL database, triggers an ML model training script using Databricks, and sends a notification email with a report of the pipeline's status using the email operator.

Possible Steps:

1. Create a connection in Airflow for the MySQL and PostgreSQL databases, as well as the Databricks workspace.
2. Define a DAG with a schedule_interval of daily at midnight.
3. Create a task to extract data from the MySQL database using the MySqlOperator.
4. Create a Spark job using the SparkSubmitOperator to clean and transform the extracted data.
5. Create a task to load the transformed data into the PostgreSQL database using the PostgresOperator.
6. Create a task to trigger the ML model training script using the DatabricksSubmitRunOperator.
7. Define a task to send an email notification using the EmailOperator if there are any errors or if the pipeline fails.