

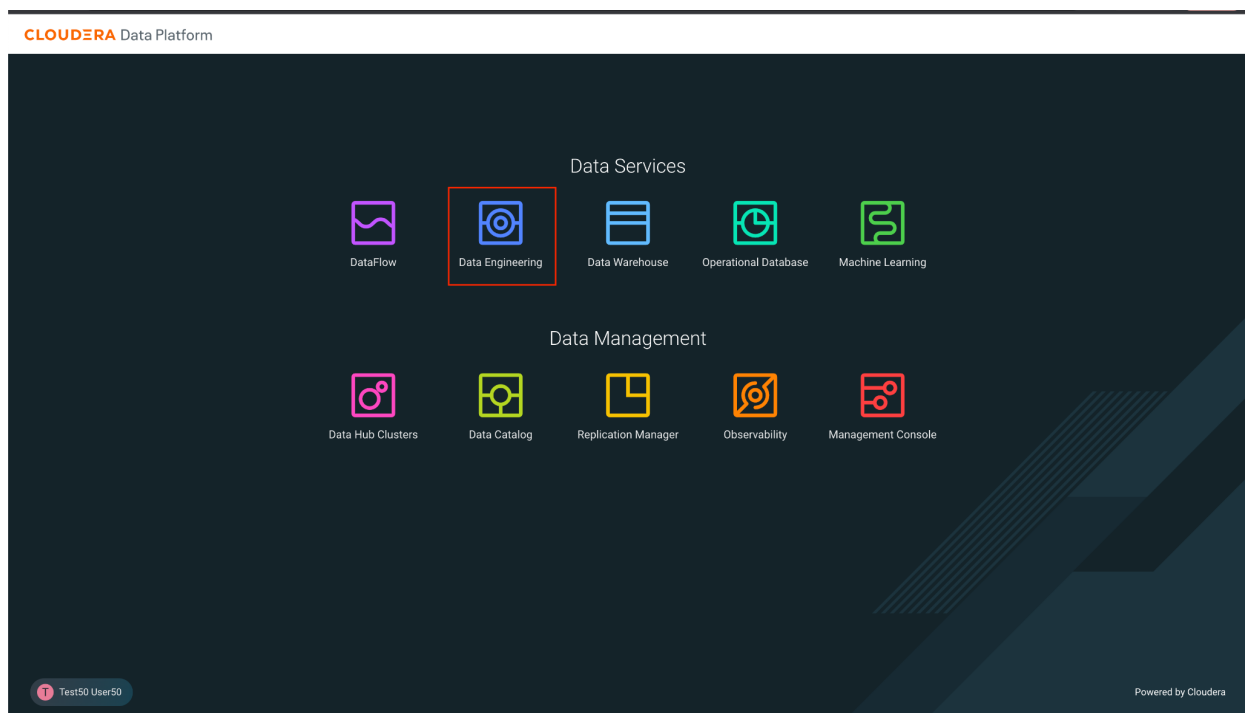
Data Lifecycle en CDP Public Cloud

Data Engineering Lab

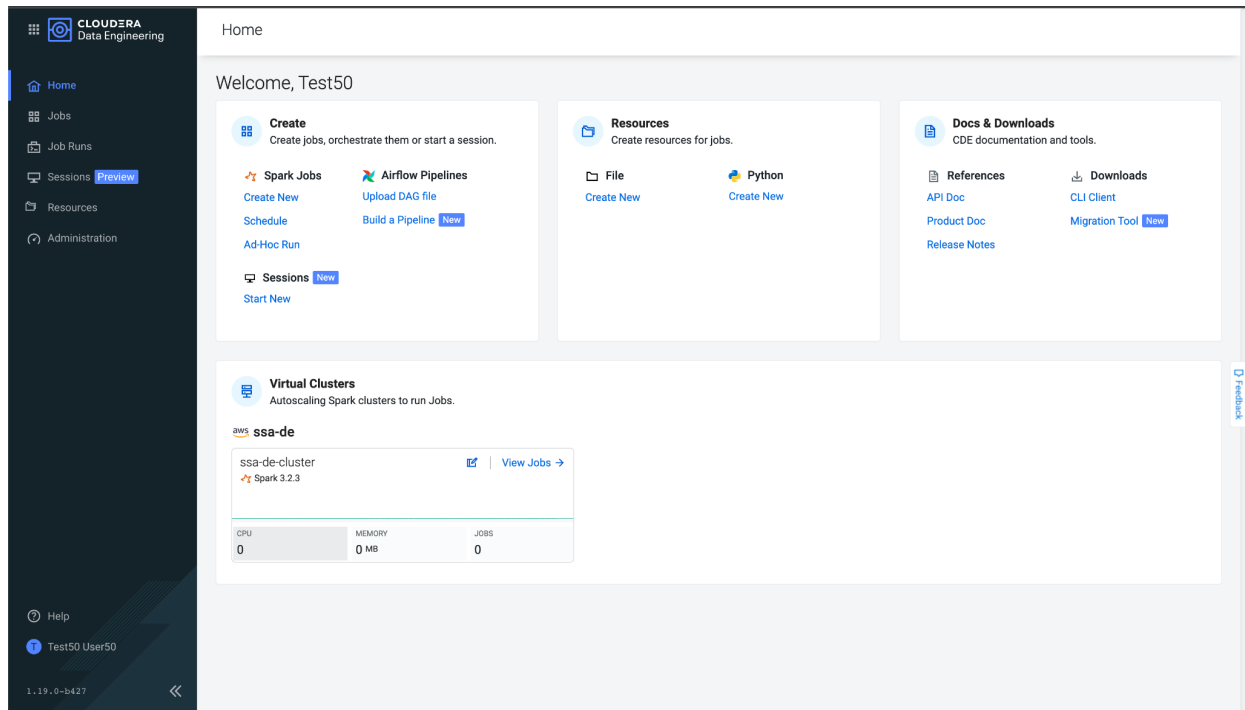
Goals:

- Run a data enrichment process
- Run a process to simulate changes to the data
- Configure the execution of a pipeline using low-code/no-code tools

1. Click on DataFlow from CDP PC Home:



2. The Data Engineering Home shows all the actions that can be done, such as Jobs in Spark and pipelines in Airflow, Resources and useful information/documentation. Click on the option **Jobs** from the left menu to create a dataflow in Airflow.

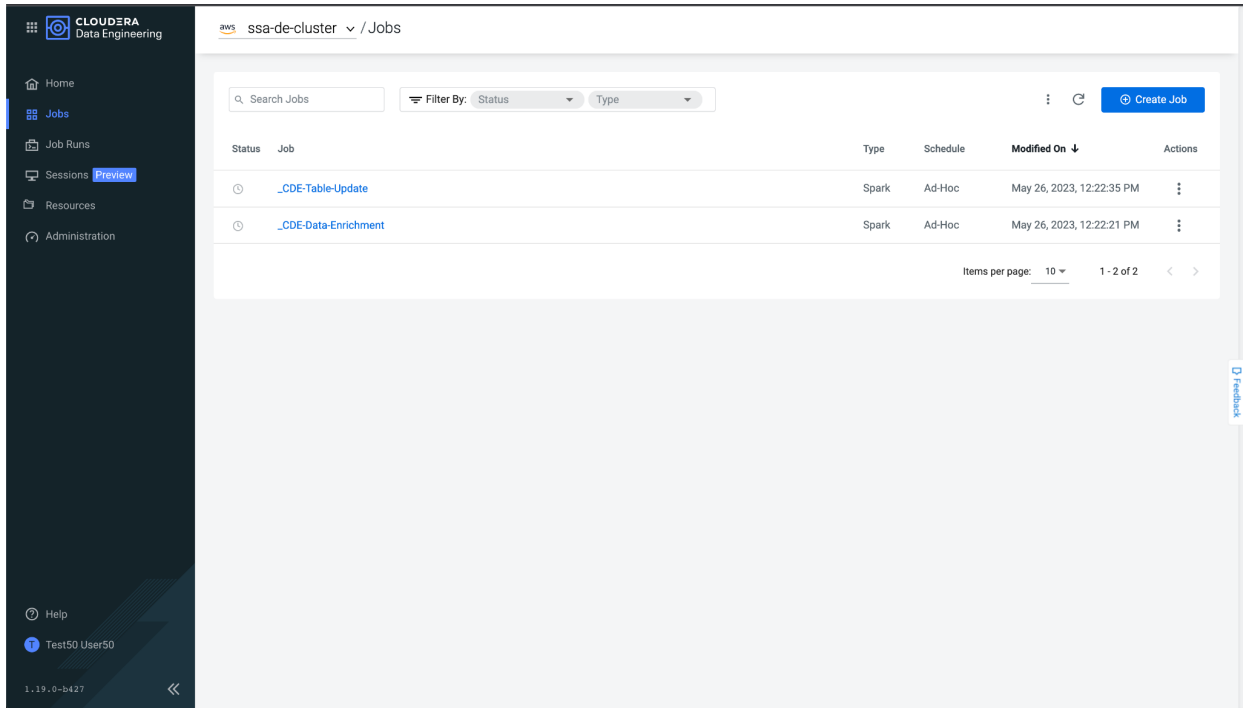


3. Here the available tasks are listed. For the purposes of this workshop, two Jobs have been configured:

_CDE-Table-Update, generate random changes in rich table to visualize Lakehouse Time Travel functionality.

_CDE-Data-Enrichment, process in Spark (Python) to enrich the data ingested from Kafka and save to a new table.

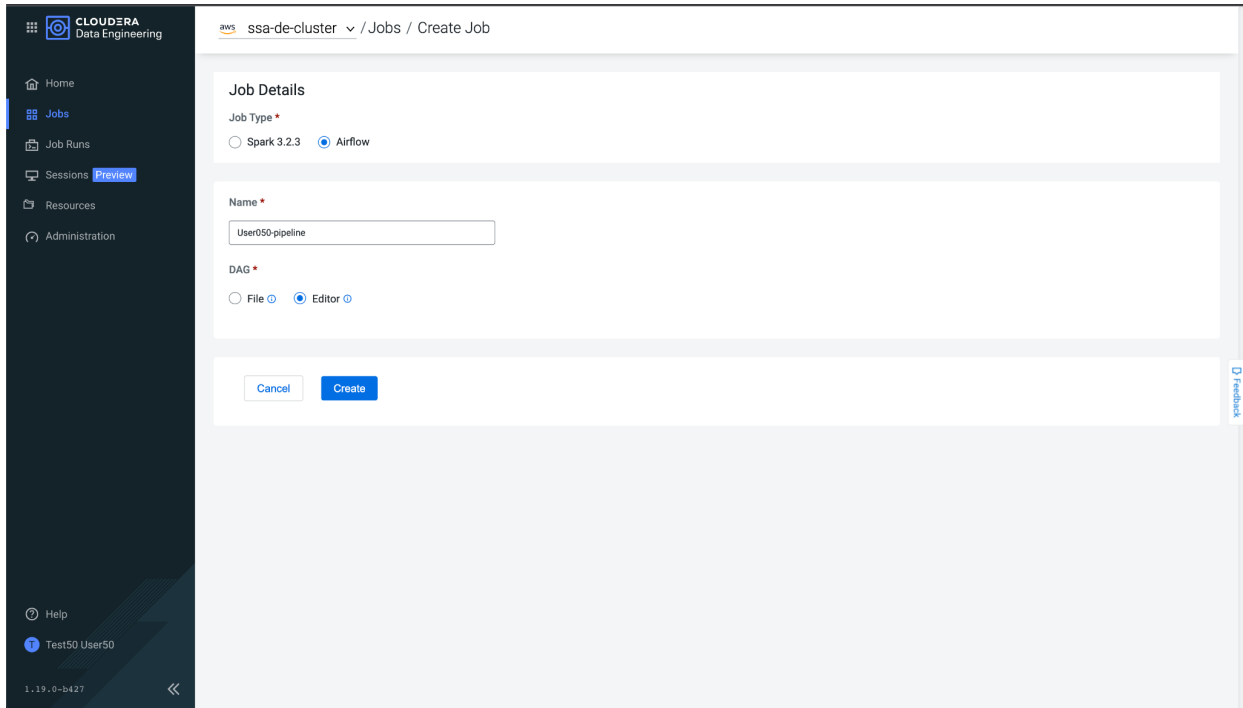
It is time to create our Job in Airflo. Click on **Create Job**.



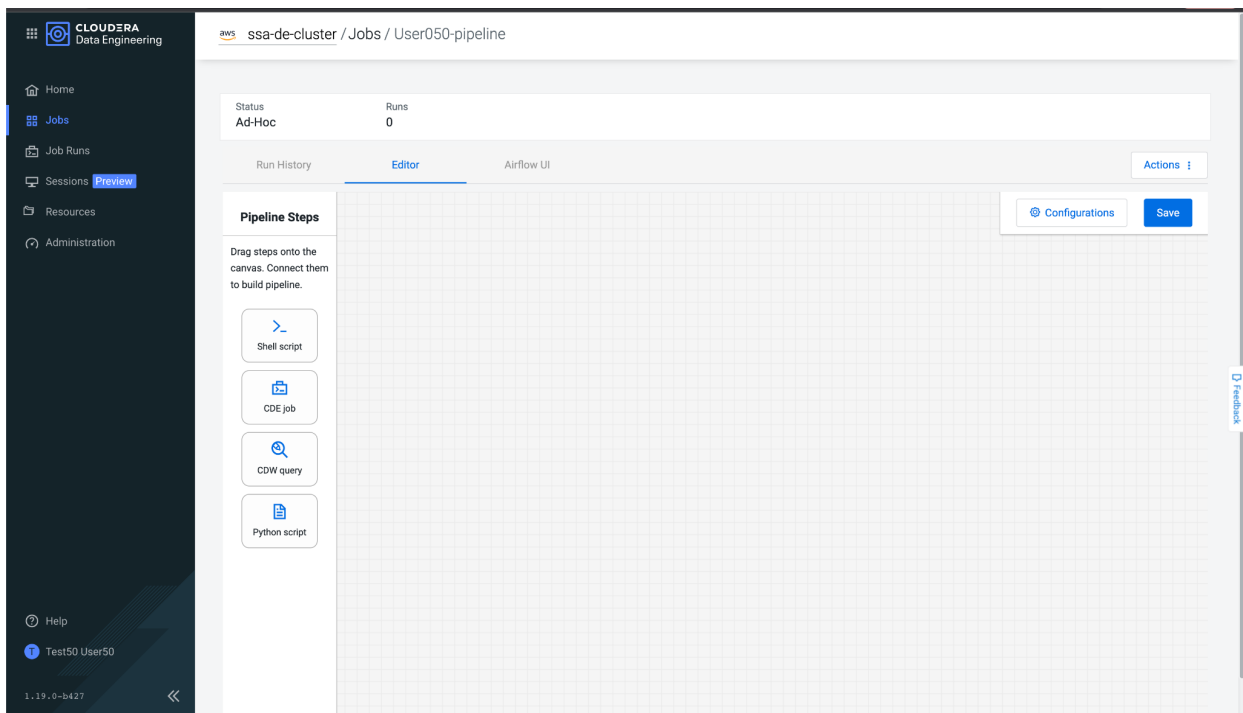
4. In the Job creation form, you must enter the following information:

- Job Type: Airflow
- Name: Use the naming <assigned user>-pipeline. Replace <assigned user> with the user assigned to you. For example, user050
- DAG: Editor, to graphically configure the task.

Once entering the values correctly, click on **Create**.

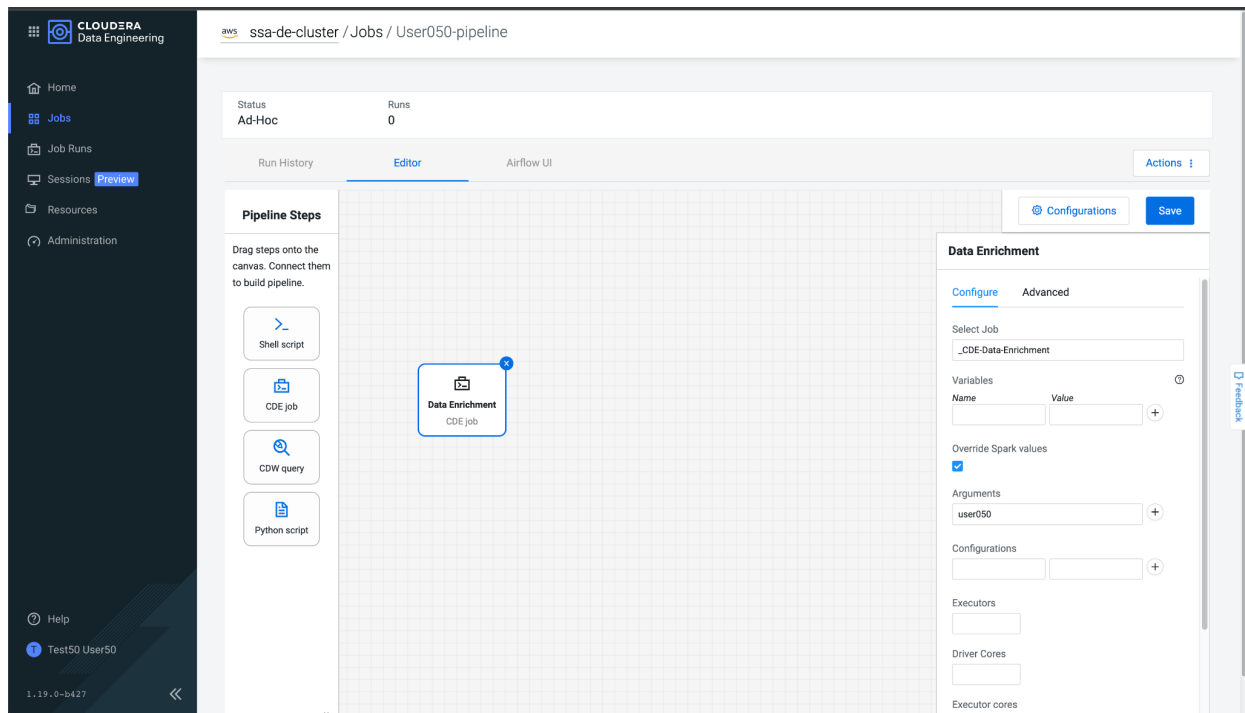


5. On the Job editing screen, select the Editor tab, and you will see the following canvas to drag the steps of the pipeline that we are going to create. In our case, we are going to create two CDE Jobs and relate them.



6. Let's start with the first Job. Click on the CDE Job button and drag onto the canvas, entering the following settings:

- **title/name:** Data Enrichment
- **Select Job:** select the Job_ *CDE-Data-Enrichment*
- Check the checkbox **Override Spark values**. Additional options will appear below.
- **Arguments:** <assigned user>. User the name of the user assigned to you. For example, user050



7. Configure the second Job. Click on the CDE Job button and drag onto the canvas, entering the following settings:

- **title/name:** Table Update
- **Select Job:** select the Job_ *CDE-Table-Update*
- Check the checkbox **Override Spark values**. Additional options will appear below.
- **Arguments:** <assigned user>. User the name of the user assigned to you. For example, user050

The screenshot shows the Cloudera Data Engineering interface. On the left is a sidebar with navigation links: Home, Jobs, Job Runs, Sessions (with a 'Preview' button), Resources, and Administration. Below these are 'Help' and 'Test50 User50' with a version number '1.19.0-b427'. The main area is titled 'aws ssa-de-cluster / Jobs / User050-pipeline'. It has tabs for 'Run History', 'Editor' (selected), and 'Airflow UI'. At the top, it shows 'Status: Ad-Hoc' and 'Runs: 0'. Below the tabs is a 'Pipeline Steps' panel on the left with icons for 'Shell script', 'CDE job', 'CDW query', and 'Python script'. The central canvas shows two job nodes: 'Data Enrichment' and 'Table Update', both labeled 'CDE job'. The 'Table Update' node is highlighted with a blue border and a small 'x' icon. On the right, the 'Table Update' configuration panel is open, showing 'Configure' and 'Advanced' tabs. The 'Configure' tab is active, displaying fields for 'Select Job' (set to '_CDE-Table-Update'), 'Variables' (Name and Value fields), 'Override Spark values' (checked), 'Arguments' (set to 'user050'), 'Configurations' (empty), 'Executors' (empty), 'Driver Cores' (empty), and 'Executor cores' (empty). There are 'Configurations' and 'Save' buttons at the top right of the configuration panel.

8. To set up the execution sequence, bind **Data Enrichment** with **Table Update**. For that, click on the right connector of the job of **Data Enrichment** and drag to the left connector of **Table Update**.

This screenshot shows the same Cloudera Data Engineering interface as the first one, but with the 'Data Enrichment' and 'Table Update' jobs connected. A red box highlights the right connector of the 'Data Enrichment' job, and a black dot indicates the connection point on the left connector of the 'Table Update' job. The configuration panel for 'Table Update' remains open on the right, showing the same fields as in the first screenshot.

CLUSTER: ssa-de-cluster / Jobs / User050-pipeline

Status: Ad-Hoc | Runs: 0

Run History | Editor | Airflow UI

Actions: Configurations | Save

Pipeline Steps

Drag steps onto the canvas. Connect them to build pipeline.

- Shell script
- CDE job
- CDW query
- Python script

Diagram: Data Enrichment (CDE job) → Table Update (CDE job)

Help | Test50 User50 | 1.19.0-b427

CLUSTER: ssa-de-cluster / Jobs / User050-pipeline

Status: Ad-Hoc | Runs: 0

Run History | Editor | Airflow UI

Actions: Configurations | Save

Pipeline Steps

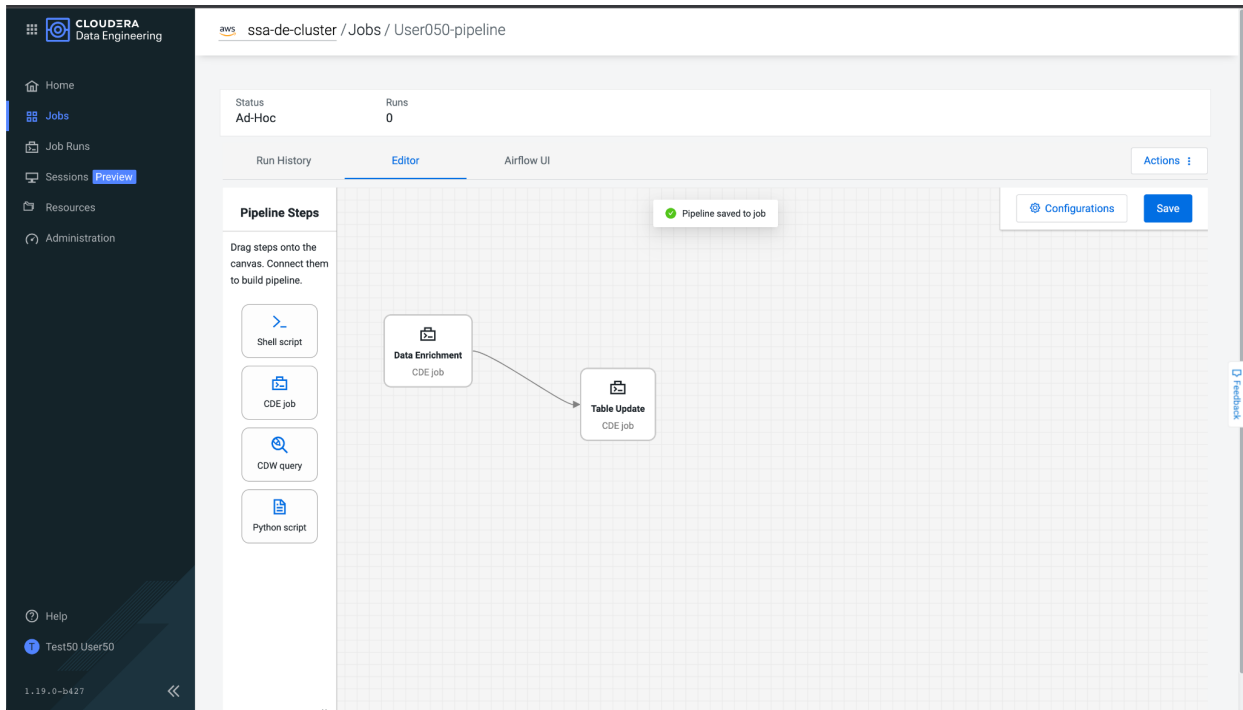
Drag steps onto the canvas. Connect them to build pipeline.

- Shell script
- CDE job
- CDW query
- Python script

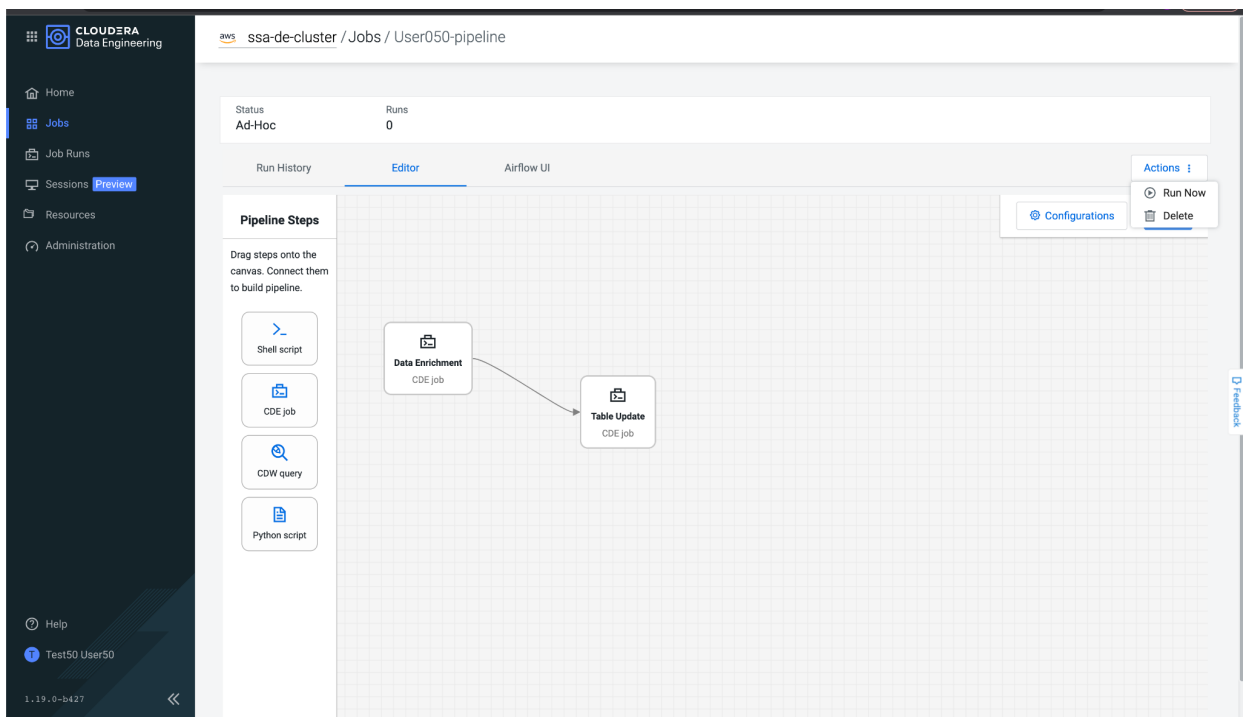
Diagram: Data Enrichment (CDE job) → Table Update (CDE job)

Help | Test50 User50 | 1.19.0-b427

9. Once the Jobs have been joined, click on **Save** to save the settings made. You should see a message indicating **Pipeline saved to job**.



10. The time has come to run the pipeline. On the upper right side of the canvas, click **Actions** -> **Run Now**.



11. You should see the pipeline execution screen, indicating that the execution has been initialized.

CloudERA Data Engineering

Home Jobs Job Runs Sessions **Preview** Resources Administration

Help Test50 User50 1.19.0-b427

aws ssa-de-cluster / Jobs / User050-pipeline

Status: Ad-Hoc Runs: 0

Run History Editor Airflow UI Actions

Duration

Search by Run Id

Status	Run ID	Duration	User	Start Time ↓	Actions
Ad-Hoc	7		user050	May 26, 2023, 1:32:09 PM	

Items per page: 10 1 - 1 of 1

A new run with Id 7 has been initiated.

12. Click on the Airflow UI tab to see the execution detail of each step in the pipeline. The configured Data Enrichment and Table Update jobs are listed at the bottom left. The colors indicating the status of each job. Make sure the radio button **Auto-refresh** is enabled to automatically display the status of jobs.

CloudERA Data Engineering

Home Jobs Job Runs Sessions **Preview** Resources Administration

Help Test50 User50 1.19.0-b427

aws ssa-de-cluster / Jobs / User050-pipeline

Status: Ad-Hoc Runs: 0

Run History Editor **Airflow UI** Actions

DAG: User050_pipeline

Schedule: None Next Run: None

Grid Graph Calendar Task Duration Task Tries Landing Times Gantt Details Code

Audit Log

26/05/2023, 18:32:26 25 All Run Types All Run States Clear Filters

Auto-refresh

Duration

00:00:21

00:00:10

00:00:00

Data_Enrichment Table_Update

Task Status Legend: deferred, failed, queued, running, scheduled, skipped, success, up_for_reschedule, up_for_retry, upstream_failed, no_status

DAG User050_pipeline

DAG Details


DAG Runs Summary

Total Runs Displayed	1
Total running	1
First Run Start	2023-05-26, 18:32:10 UTC
Last Run Start	2023-05-26, 18:32:10 UTC
Max Run Duration	00:00:21

13. You can see more information about the execution by clicking on the view**Graph**. Hovering the mouse over the Job name displays specific information for each step in the pipeline. Make sure the pipeline status is Success, which indicates that the entire pipeline was able to run without issue.

The screenshot shows the Cloudera Data Engineering interface. On the left is a sidebar with navigation links: Home, Jobs, Job Runs, Sessions (with a 'Preview' button), Resources, and Administration. The main content area is titled 'aws ssa-de-cluster / Jobs / User050-pipeline'. It displays the pipeline's status as 'Ad-Hoc' and 'Runs: 1'. Below this, there are tabs for 'Run History', 'Editor', and 'Airflow UI' (which is selected). The 'Airflow UI' tab shows a DAG for 'User050_pipeline' with a 'success' status. A tooltip is visible over the 'Graph' button, showing details for the task 'Data_Enrichment':
Task Id: Data_Enrichment
Run: 2023-05-26, 18:36:24 UTC
Run Id: cde-job-run-7
Operator: CdeRunJobOperator
Duration: 1Min 11.676Sec
UTC:
Started: 2023-05-26, 18:33:29
Ended: 2023-05-26, 18:34:40
The DAG diagram shows two tasks: 'Data_Enrichment' and 'Table_Update'. The 'Data_Enrichment' task is highlighted with a red box. A legend at the bottom right shows various task statuses: running (green), scheduled (blue), skipped (pink), success (green), up_for_reschedule (yellow), up_for_retry (orange), upstream_failed (red), and no_status (grey). The 'Data_Enrichment' task is shown as 'success' in the legend.

The execution status appears next to the name of the pipeline (marked in red). If it is green and indicates**Success**, it means that the execution was successful.

 CLOUDERA
Data Engineering

Home

Jobs

Job Runs

Sessions Preview

Resources

Administration

Help

Test50 User50

1.19.0-b427

aws ssa-de-cluster / Jobs / User050-pipeline

Status
Ad-Hoc

Runs
1

Run History

Editor

Airflow UI

Actions

DAG: User050_pipeline

SUCCESS Schedule: None Next Run: None

Grid

Graph

Calendar

Task Duration

Task Tries

Landing Times

Gantt

Details

Code

Audit Log

2023-05-26T18:32:11Z

Runs

25

Run

cde-job-run-7

Layout

Find Task...

CdeRunJobOperator

deferred

failed

skipped

success

up_for_reschedule

up_for_retry

upstream_failed

no_status

Data_Enrichment

Table_Update

Status: success

Task_id: Table_Update

Run: 2023-05-26, 18:36:36 UTC

Run Id: cde-job-run-7

Operator: CdeRunJobOperator

Duration: 1Min 1.533Sec

UTC:

Started: 2023-05-26, 18:34:53

Ended: 2023-05-26, 18:35:55

Update

Auto-refresh