

18.8.25 - Task

Apache Airflow Setup on Windows using Docker

1. Introduction

Apache Airflow allows you to schedule, monitor, and manage workflows with ease. Having it on your Windows PC can be a game-changer for your data engineering and automation projects.

In this guide, we will install **Docker Desktop**, set up **Apache Airflow** using **Docker Compose**, and create an **Admin user** to access the Airflow UI.

2. Prerequisites

1. **Docker Desktop** – Download and install:
<https://www.docker.com/products/docker-desktop>
2. **Visual Studio Code (VS Code)** – Download and install:
<https://code.visualstudio.com/>

3. Project Setup

Step 1: Download Airflow Docker Compose File

Download the official docker-compose.yaml file for Airflow:

```
curl -LfO 'https://airflow.apache.org/docs/apache-airflow/2.7.3/docker-compose.yaml'
```

Step 2: Create .env File

Open **VS Code** and create a new file named `.env`.
Add the following lines:

```
AIRFLOW_IMAGE_NAME=apache/airflow:2.4.2
```

```
AIRFLOW_UID=50000
```

```
.env
1 AIRFLOW_IMAGE_NAME=apache/airflow:2.4.2
2 AIRFLOW_UID=50000
```

Step 3: Start Airflow Services

Run the following command to start Airflow containers:

`docker-compose up -d`

```
PS C:\Users\harci\Materilas> docker-compose up -d
>>
time="2025-08-18T15:43:31+05:30" level=warning msg="C:\\Users\\harci\\Materilas\\docker
-compose.yaml: the attribute `version` is obsolete, it will be ignored, please remove i
t to avoid potential confusion"
[+] Running 7/7
 ✓ Container materilas-redis-1          Heal...      1.5s
 ✓ Container materilas-postgres-1       H...          1.5s
 ✓ Container materilas-airflow-worker-1 Started       10.0s
 ✓ Container materilas-airflow-scheduler-1 Started        9.9s
 ✓ Container materilas-airflow-webserver-1 Started       10.0s
 ✓ Container materilas-airflow-triggerer-1 Started       10.0s
 ✓ Container materilas-airflow-init-1    Exited        8.9s
```

Step 4: Create Admin User

Run the following command to create an **Admin user** for Airflow:

`docker-compose run airflow-worker airflow users create \`

```
--role Admin \
--username admin \
--email admin \
--firstname admin \
--lastname admin \
--password admin
```

```
PS C:\Users\harci\Materilas> docker-compose run airflow-worker airflow users create --role Admin --username admin --email admin --firstname admin --lastname admin --password admin
time="2025-08-18T15:56:26+05:30" level=warning msg="C:\\Users\\harci\\Materilas\\docker-compose.yaml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Creating 2/2
✓ Container materilas-redis-1      Running      0.0s
✓ Container materilas-postgres-1  Running      0.0s
[+] Running 3/3
✓ Container materilas-redis-1      Healthy      0.5s
✓ Container materilas-postgres-1  Health...    0.5s
✓ Container materilas-airflow-init-1 St...        0.2s
```


4. Access Apache Airflow UI

- Open your browser and visit: <http://localhost:8080>
- Login with the credentials you created:
 - **Username:** admin
 - **Password:** admin


Sign In

Enter your login and password below:

Username:

 admin

Password:



Sign In

Airflow Dashboard with Example DAGs

<div> <div>Airflow</div> <div>DAGs</div> <div>Cluster Activity</div> <div>Datasets</div> <div>Security</div> <div>Browse</div> <div>Admin</div> <div>Docs</div> </div> <div>10:28 UTC</div> <div>AA</div>									
DAGs									
<div> <div>All 61</div> <div>Active 0</div> <div>Paused 61</div> <div>Running 0</div> <div>Failed 0</div> <div>Filter DAGs by tag</div> <div>Search DAGs</div> <div>Auto-refresh</div> </div>									
DAG	Owner	Runs	Schedule	Last Run	Next Run	Recent Tasks			
dataset_consumes_1	airflow	0	Dataset		On s3://dag1/output_1.txt				
dataset_consumes_1_and_2	airflow	0	Dataset		0 of 2 datasets updated				
dataset_consumes_1_never_scheduled	airflow	0	Dataset		0 of 2 datasets updated				
dataset_consumes_unknown_never_scheduled	airflow	0	Dataset		0 of 2 datasets updated				
dataset_produces_1	airflow	0	@daily		2025-08-17, 00:00:00				
dataset_produces_2	airflow	0	None						
example_branch_operator	airflow	0	0 0 * * *		2025-08-17, 00:00:00				
example_branch_datetime_operator	airflow	0	@daily		2025-08-17, 00:00:00				
example_branch_datetime_operator_2	airflow	0	@daily		2025-08-17, 00:00:00				
example_branch_datetime_operator_3	airflow	0	@daily		2025-08-17, 00:00:00				

5. Verify Running Containers

To check if services are running:

`docker ps`

```
PS C:\Users\harci\Materilas> docker ps
>>
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
	PORTS		NAMES	
bac708cc945c	apache/airflow:2.7.3	"/usr/bin/dumb-init ..."	2 minutes ago	Up 2 min
utes (healthy)	8080/tcp		materilas-airflow-trigge	
rer-1				
b3ce3b64c57e	apache/airflow:2.7.3	"/usr/bin/dumb-init ..."	2 minutes ago	Up 2 min
utes (healthy)	0.0.0.0:8080->8080/tcp, [::]:8080->8080/tcp		materilas-airflow-webser	
ver-1				
b1873ed22a72	apache/airflow:2.7.3	"/usr/bin/dumb-init ..."	2 minutes ago	Up 2 min
utes (healthy)	8080/tcp		materilas-airflow-schedu	
ler-1				
3f6bc1dc40b5	apache/airflow:2.7.3	"/usr/bin/dumb-init ..."	2 minutes ago	Up 2 min
utes (healthy)	8080/tcp		materilas-airflow-worker	
-1				
ece340f0885f	redis:latest	"docker-entrypoint.s..."	5 minutes ago	Up 5 min
utes (healthy)	6379/tcp		materilas-redis-1	
56660a0a857c	postgres:13	"docker-entrypoint.s..."	5 minutes ago	Up 5 min
utes (healthy)	5432/tcp		materilas-postgres-1	

7. Conclusion

You have successfully installed **Apache Airflow on Windows** using Docker.

Now you can:

- Add custom **DAGs** to the dags/ folder.
- Schedule, run, and monitor workflows from the **Airflow UI**.