Documentation Docker + Fluree (Windows):

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Creating a Fluree server using Docker

Note: Please ensure that you have Docker installed.

There is 2 ways to create a server using the Fluree Server Image, the first is using the Command Line interface or CLI for short (Recommended) the second is through the Docker desktop application.

1. Using a CLI to create a server:

- In the CLI run the following command:
- docker run --name fluree_server3 -p 58090:8090 fluree/server
- Important:
    - The "-p" command specifies the port the server will use locally.
    - The text following "–name" is the name of the Docker container pulled from the Fluree server image. This can be changed depending on the user's preference.
    - Docker will automatically pull the fluree/server and run it if it is not found on your local device.
    - In your CLI you can type "docker ps" this should show the running server.
    - This is what it will look like inside of the Docker Desktop Application (If you are using it):

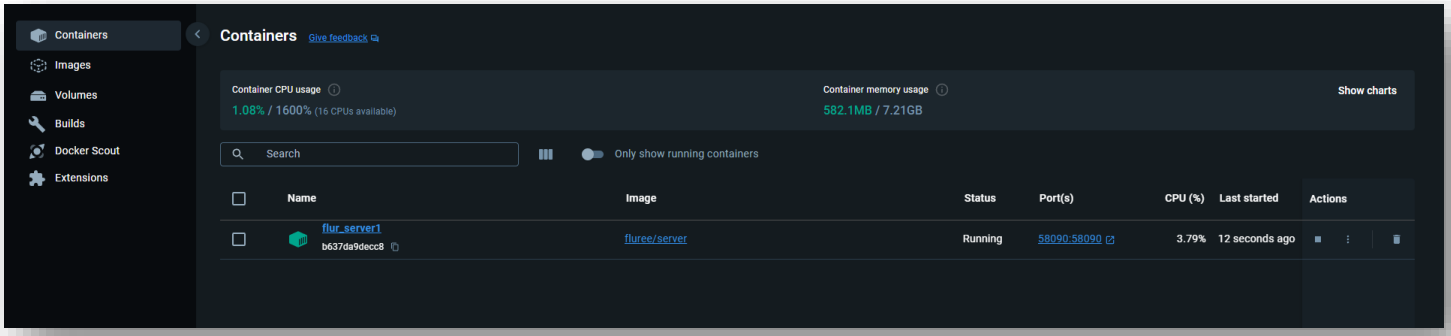
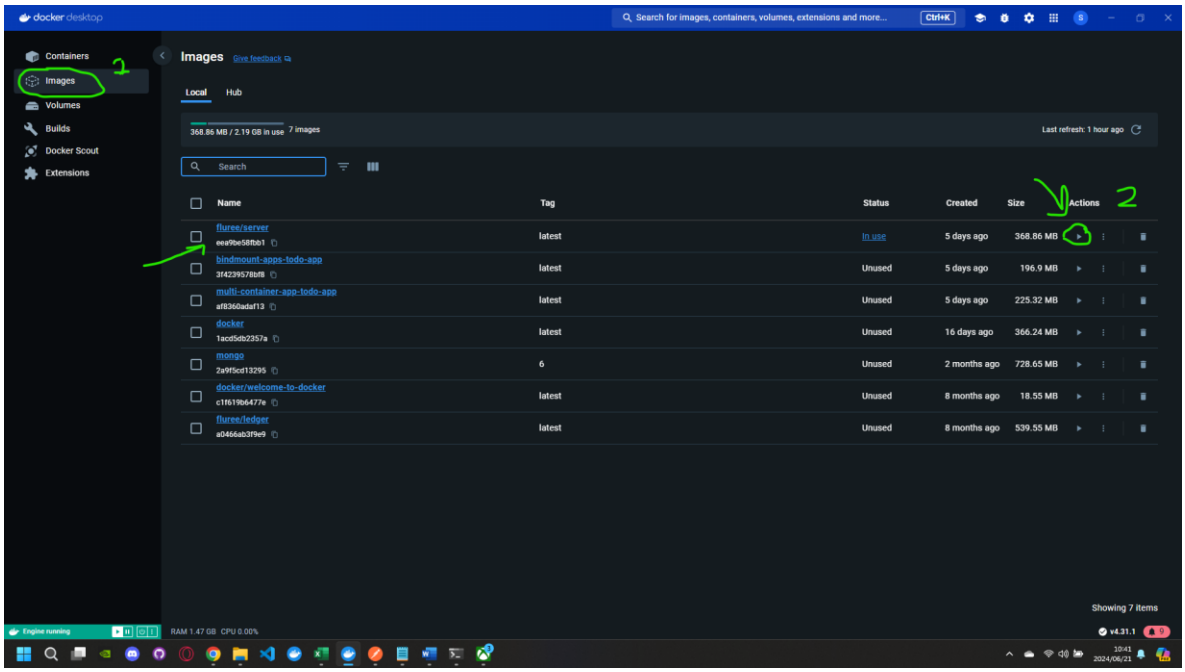
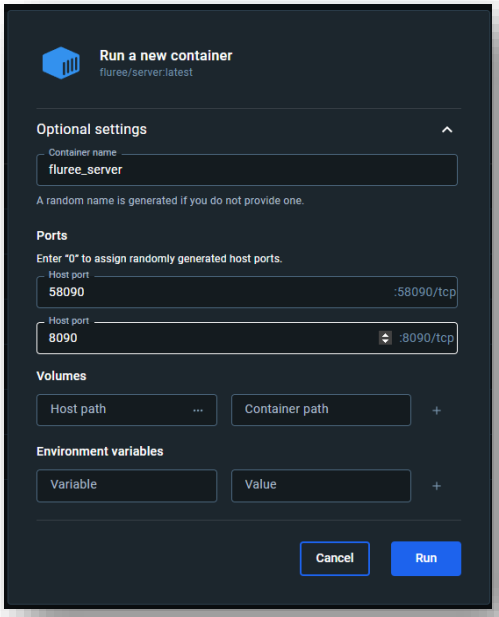


Figure 1 In the docker desktop application the container you've just created will appear

2. Using Docker Desktop Application -Optional (Recommended to use 1):
   a. Running the command (IN CLI): docker pull fluree/server
   b. In Docker Desktop navigate to "**images**" on the left side of the window.
      i. Fluree Server image will be in the list of Docker images, click the "**play**" icon:



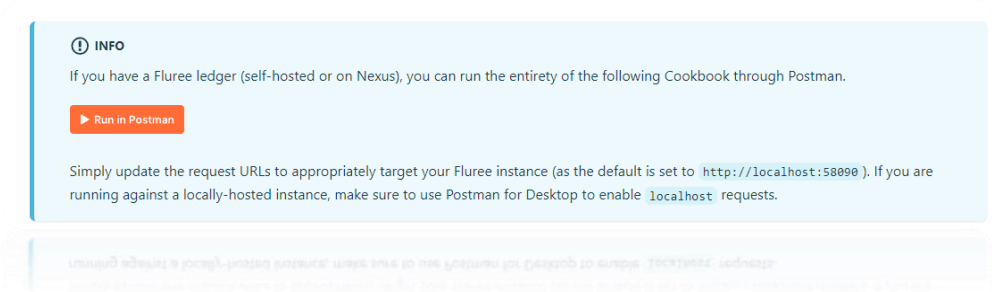
   c. Configure the container settings:



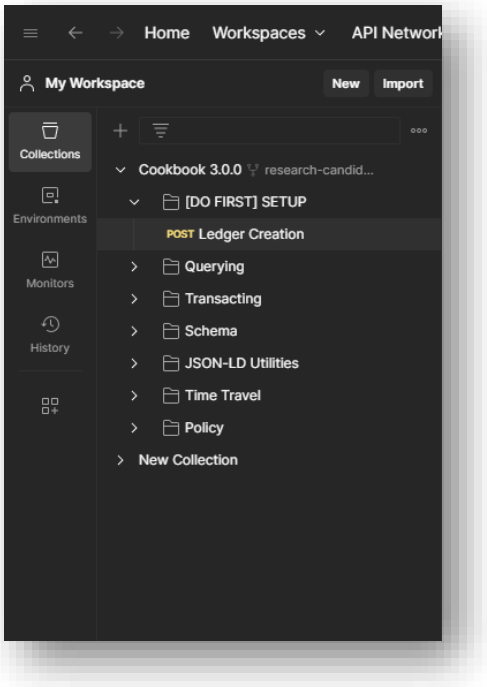
d. Your server will be up and running.

Creating a Ledger in Fluree Server using Postman:

- There is a good beginner guide from Fluree to start adding data to server, we are going to use it as a foundation: https://next.developers.flur.ee/docs/reference/cookbook/
    - Click the "Run in Postman" option to view the Fluree "Cookbook" to easily conduct data management using Postman:



- Once you have added the Fluree Workbook on the Postman Website. The Cookbook workbook will also automatically be added to the desktop version of Postman, here you can see a good example on how to query Fluree server.



- In the cookbook example, click on [DO FIRST] setup in the left-hand side where the Collections are stated.
- You can edit the values in the Ledger creation space to match your requirements.

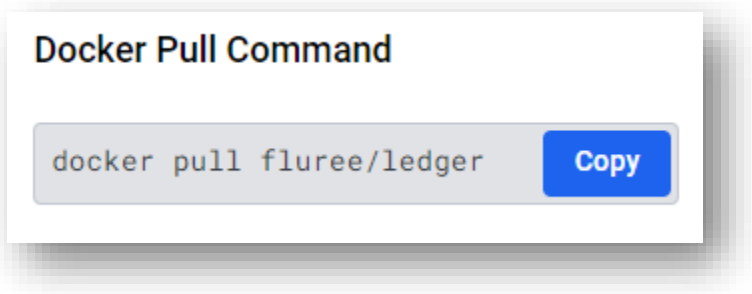
- After hitting send you have created a transaction with a unique transaction id which can identify it if needed. You can now query the ledger and perform insert, update and delete operations if needed.

Using Fluree Ledger Image in Docker (Outdated)

VERY IMPORTANT: We did not proceed to use the Fluree Ledger Image and rather used Fluree server directly. This is only additional information.

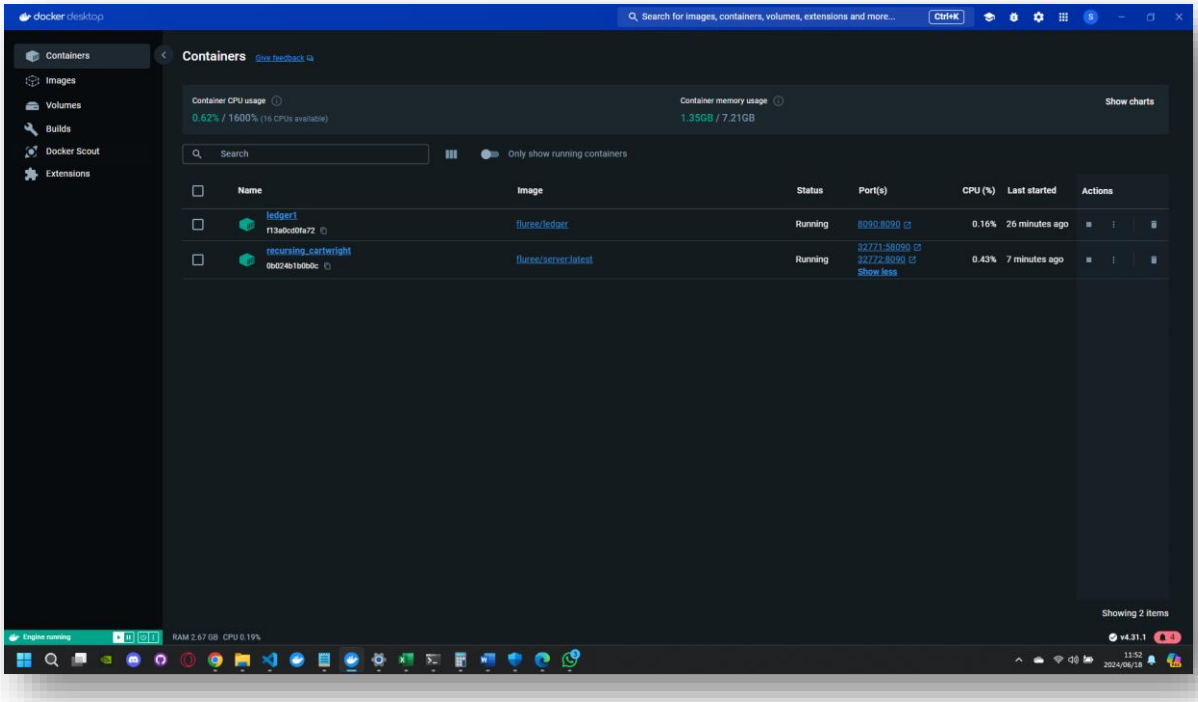
- Ensure **Docker Desktop** is installed.

1. Open https://hub.docker.com/r/fluree/ledger and copy the Docker pull command to copy the image to your local storage: **docker pull fluree/ledger.** Once you have copied the command, paste and run it inside a CLI.



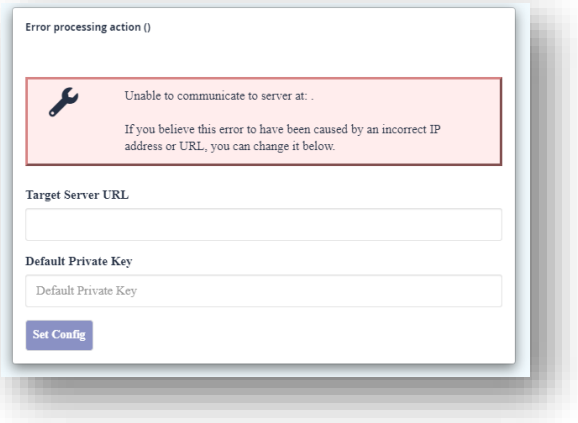
2. Then run the following command in the terminal:
   docker run -p 8090:8090 --name ledger1 fluree/ledger
   //This gives the docker container the name "ledger1"//

3. On the docker desktop application a new container should be up and running called "ledger1" or whatever you have named it. In the Containers widget under port there will be a link for 8090:8090, it may be different if you have assigned a different port in step 2. Click on the link or in your browser type http://localhost:8090/.

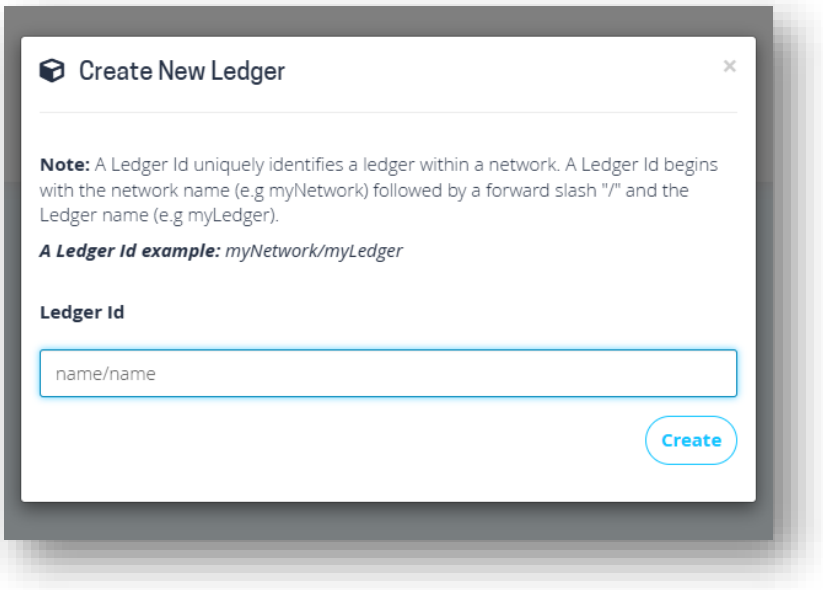


Note:

- If you get the following error, try opening this link in a **different browser** Microsoft Edge worked for me:



4. When you have opened the link in your browser, the following popup will appear, where you must name your network followed by a '/' and lastly the ledger name. The Fluree provides I found to be misleading, it contains capitalised letters, **the application only accepts lowercase letters as input**.



Working with Fluree Admin Console (Outdated):

VERY IMPORTANT: We did not proceed to use the Fluree Ledger and rather used Fluree server directly.

Adding Data:

Using Protocol:

1. Open a Command Line Interface (CLI), I made use of **PowerShell**. I inserted sample data from using the HTTP API in CLI using the following command:

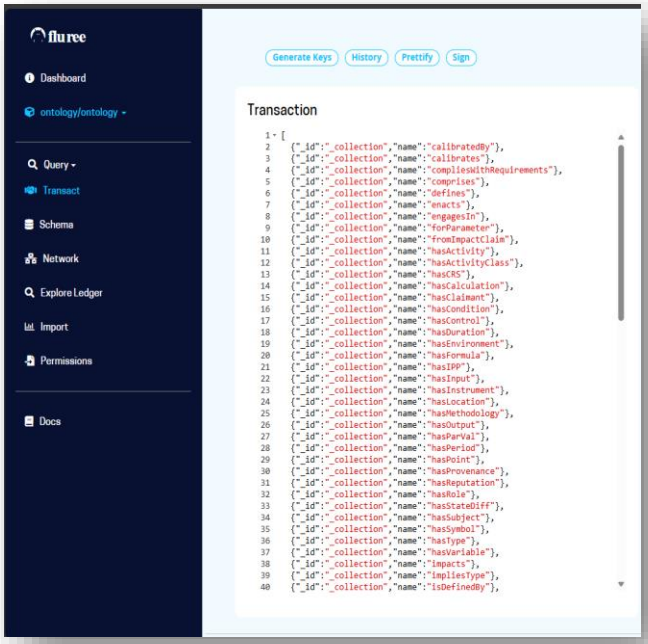
```
Invoke-RestMethod -Uri 'http://localhost:32771/fluree/create' `
  -Method POST `
  -Headers @{ 'Content-Type' = 'application/json' } `
  -Body '{"ledger": "cryptids", "insert": {"@id": "my-first cryptid", "name": "Freddy the Yeti"}}'
```

Using Admin UI:

1. In the Transact column paste data in a similar format as the following:

```
[
  {"_id":"_collection","name":"calibratedBy"},
  {"_id":"_collection","name":"calibrates"},
  {"_id":"_collection","name":"compliesWithRequirements"},
  {"_id":"_collection","name":"comprises"},
  {"_id":"_collection","name":"defines"},
  {"_id":"_collection","name":"enacts"},
  {"_id":"_collection","name":"engagesIn"},
  {"_id":"_collection","name":"forParameter"},
  {"_id":"_collection","name":"fromImpactClaim"},
  {"_id":"_collection","name":"hasActivity"},
  {"_id":"_collection","name":"hasActivityClass"},
  {"_id":"_collection","name":"hasCRS"}
]
```


- The data above is Predicates from the AIA ontology, however, Fluree does not want the "name" aspect to be in a URL/URI format. http://purl.org/aiaontology#calibratedBy



2. Click the "play" icon on the right to process the "transaction".

From Fluree Doc using Admin Console:

- This adds a Collection “Category” for an entity to be apart of.

Docker Networks (Incomplete):

- VERY IMPORTANT: We did not proceed to use the Fluree Ledger and rather used Fluree server directly.

Using Fluree ledger and Server together using Docker images :

1.

```
version: '3.7'

services:
  fluree_ledger:
    image: fluree/ledger
    container_name: fluree_ledger
    ports:
      - "8090:8090"
    volumes:
      - fluree_ledger_data:/fluree/data
    networks:
      - fluree_network

  fluree_server:
    image: fluree/server
    container_name: fluree_server
    ports:
      - "8080:8080"
    environment:
      - FLUREE_LEDGER_URL=http://fluree_ledger:8090
    depends_on:
      - fluree_ledger
    networks:
      - fluree_network

volumes:
  fluree_ledger_data:

networks:
  fluree_network:
```

- This is the compose.yml file, required to create a **bridging network** between Server and Ledger.

2. Run the docker CLI command to create the containers from the **compose** file:

- Ensure the CLI Path is leading to the **same directory** where the compose file is located.

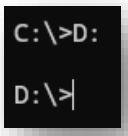
docker compose up

Important Notes:

- The transactions work differently on the Data platform then the Admin UI.
- It is more difficult to reference subjects, predicates and objects in terms of URL's using Admin Console.
- Admin Console does not have support for JSON-LD, next best option is FlureeQL
- All Fluree documentation for Semantic Web is in JSON-LD, making it more difficult to interact with Admin Console.

Navigating in a CLI Windows:

- Navigating from C drive to D drive simply type "D:"



- Navigating to sub folder, simply type "cd type_path_here"