Snowplow Live Viewer Profile

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Git commit with doc: dd167e6
HTML version

1. Introduction

This project is a companion to the Snowplow JavaScript tracker demo app in React.

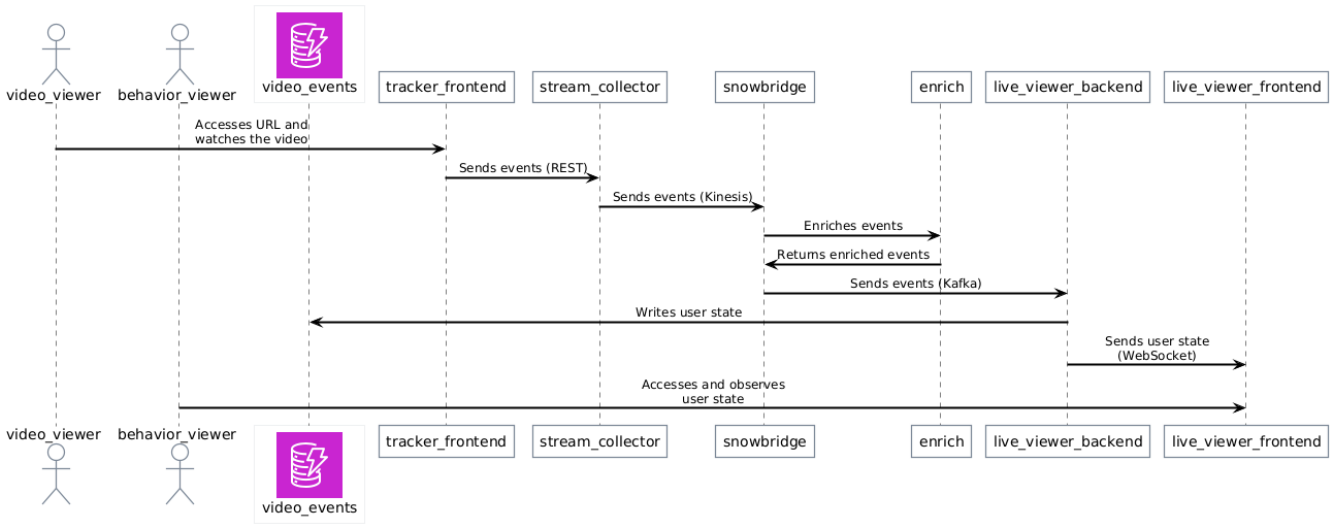
It allows you to test this demo locally, using LocalStack, and in the AWS cloud.

Its Architecture is designed so a developer can quickly and easily set up these two environments and test the project.

2. Architecture

- A user "video-viewer" accesses a URL, at http://localhost:3000, that contains runs the **"tracker-frontend"** component.
  - This component allows a new user "behavior-viewer" to track the state of the "video-viewer" user when viewing a video. To do this, the component emits events that identify this user behavior when the user clicks the play or pause button on the video while watching it or when an advertisement appears while viewing the video.
- The **"tracker-frontend"** sends events, via REST requests to http://localhost:9090, to the **"stream-collector"** component.
- The **"stream-collector"** component sends these events via Kinesis to the "snowbridge" component.
- The **"snowbridge"** component enriches these events, inserts more information (via **"enrich"** component), and sends them via Kafka to the "live-viewer-backend" component.
  - Read more about the "enrich" component here: https://docs.snowplow.io/docs/pipeline-components-and-applications/enrichment-components/enrich-kinesis/.
  - Read more about the "snowbridge" component here: https://docs.snowplow.io/docs/destinations/forwarding-events/snowbridge/.
- The **"live-viewer-backend"**, running at http://localhost:8180, component:
  - Is a Java 21 / Spring Boot 3 application.
  - Uses a state machine to create a JSON object that contains information about the user's state while viewing the video.
  - Records the JSON object in a DynamoDB table.
  - Sends the JSON object via WebSocket to the "live-viewer-frontend" component.
- The **"live-viewer-frontend"** component, running at http://localhost:8280, is accessed by the "behavior-viewer" user. It displays the JSON received via WebSocket on its screen.
  - In this way, the "behavior-viewer" user can observe the behavior of several users acting as a "video-viewer."

Sequence Diagram for the Architecture:



All components in this Architecture run as Docker containers via `docker compose`:

- The Snowplow's components (**"stream-collector"**, **"enrich"**, and **"snowbridge"**) are defined in the file `compose.snowplow.yaml`.
- Kafka's infrastructure is provided by the file `compose.kafka.yaml`.
- The apps components (**"tracker-frontend"**, **"live-viewer-backend"**, and **"live-viewer-frontend"**) are defined in the file `compose.apps.yaml`.
- The infrastructure to provide the resources (Kinesis, Kafka, and DynamoDB) are provided locally, in a development environment, via LocalStack.
  - Read the file `compose.localstack.yaml`.
- These components and resources are created in AWS using Terraform scripts.
  - There is another document, in `docs/terraform` folder, explaining the details.

3. Prerequisites

This project can be build using a Linux environment.

It was tested in a Ubuntu Linux (natively and inside a WSL2 machine).

4. Steps (to run this application as is)

Step 0 → Prerequisites

1. Start a Ubuntu Linux (it can be running on a WSL2 environment) terminal.
2. Make sure you have docker (and docker compose) installed.
3. Clone this project with Git and cd to it.

You don't need Java or Node.js configured on your machine to follow the steps below. Only a Bash terminal and a Docker installation.

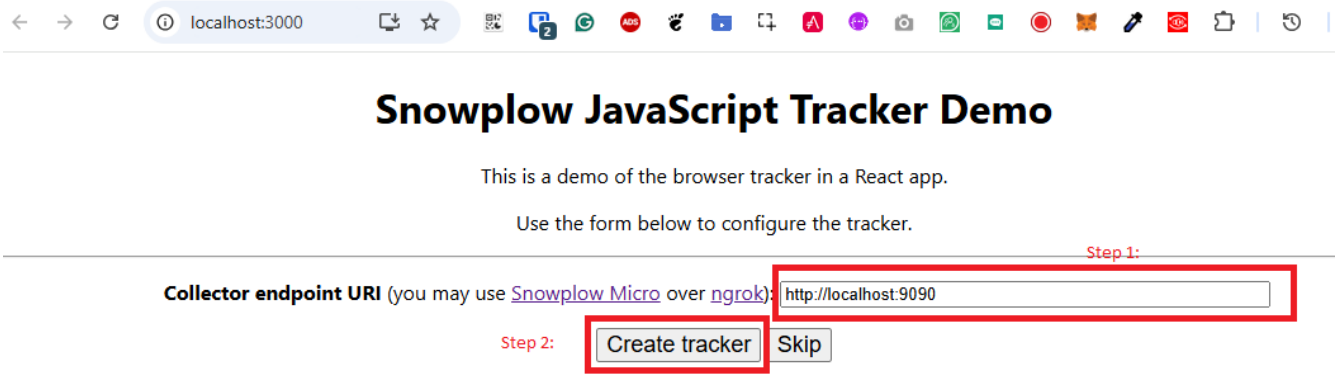
Step 1 → Start the containers

```
$ ./up.sh
```

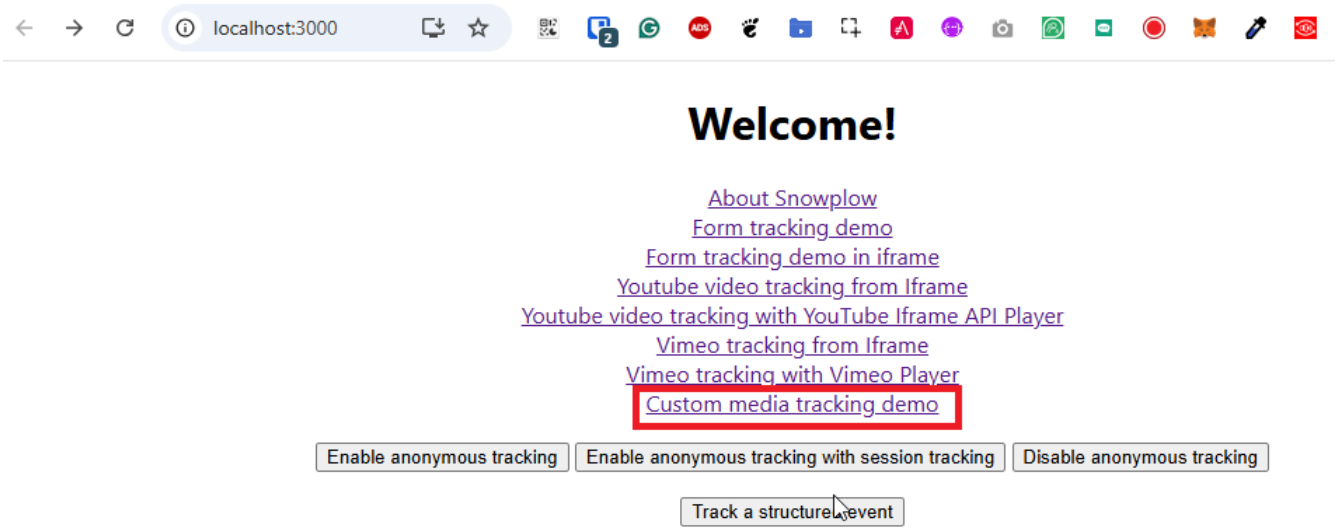
You can press `Ctrl` + `C` at any time. The docker containers will remain running.

Step 2 → Open http://localhost:3000 to generate the events

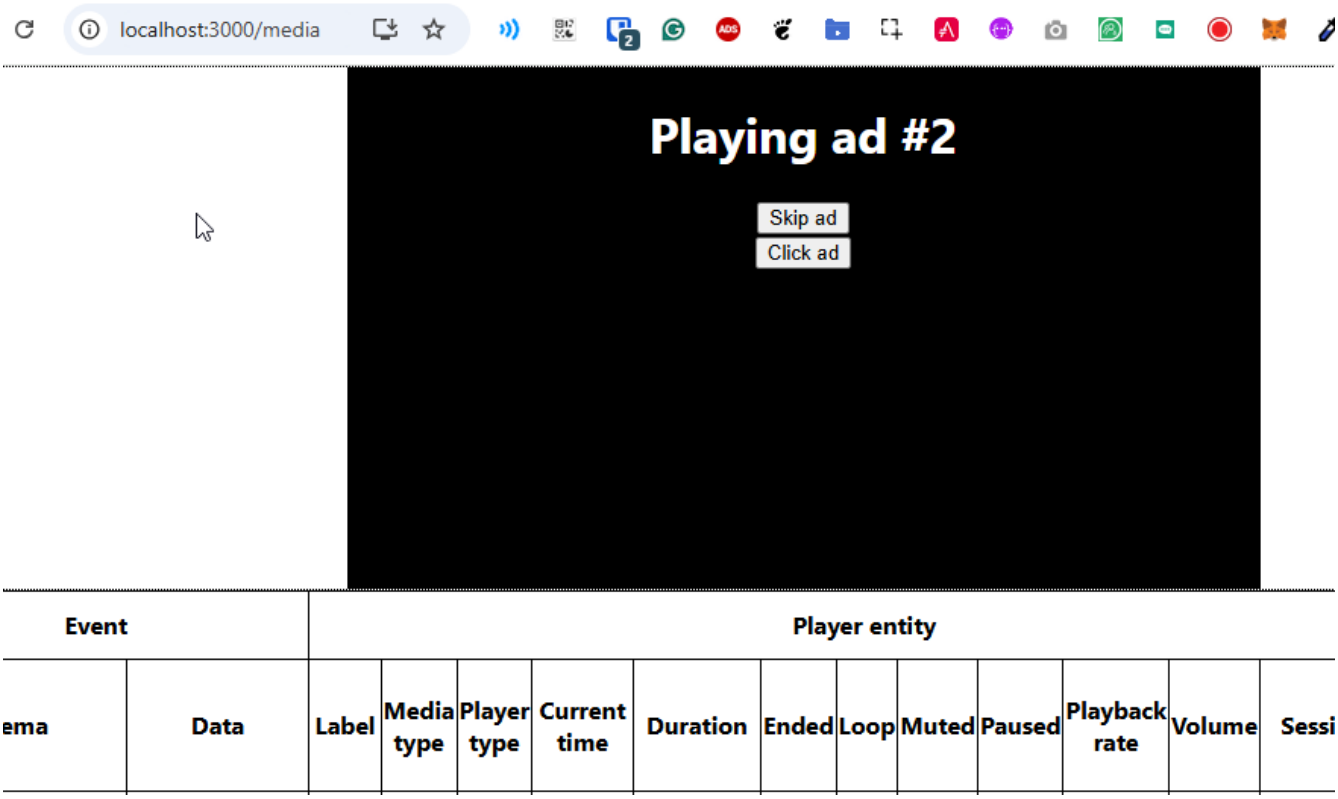
After open this link, configure the collector endpoint:



Open the "Custom media tracking demo":



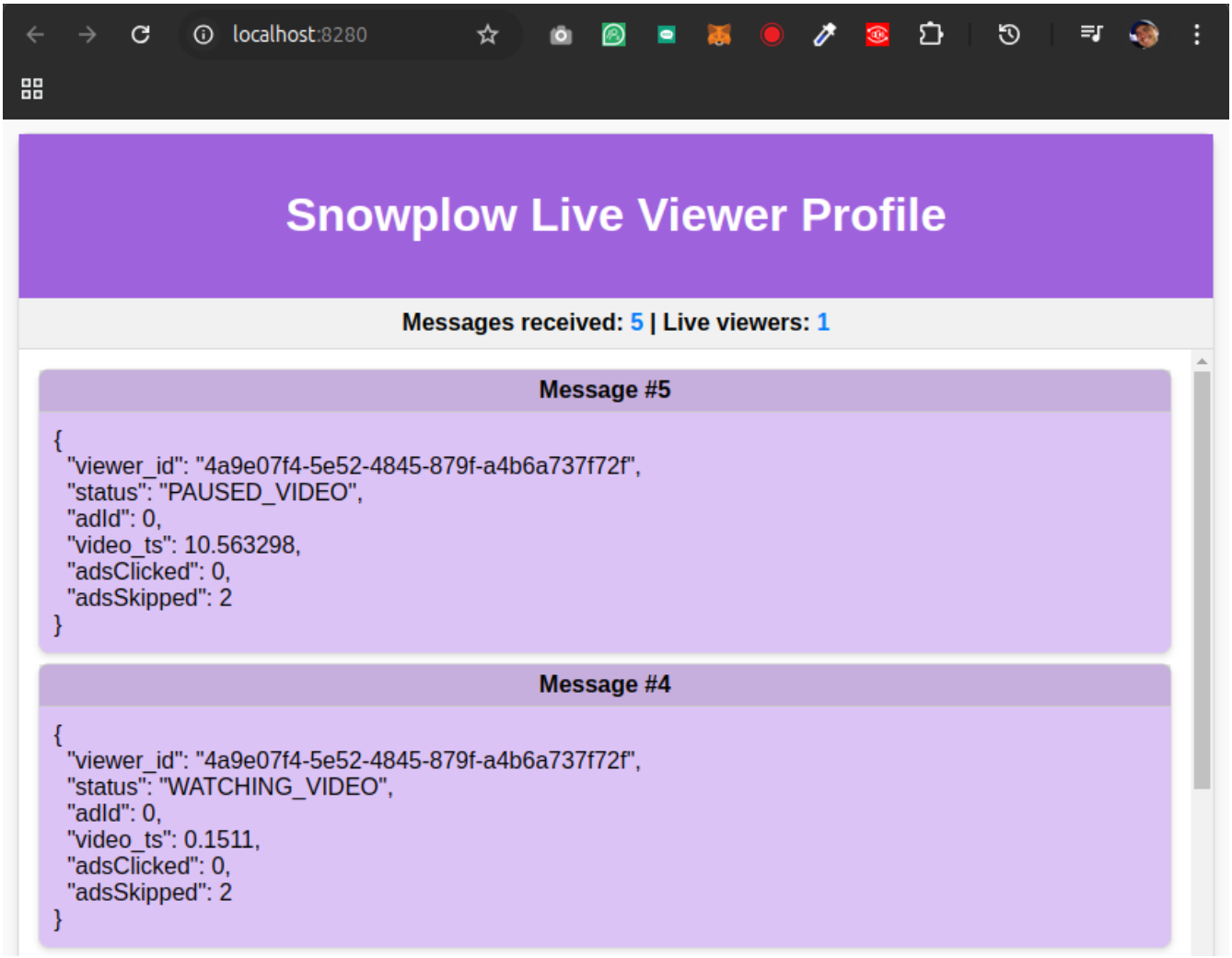
You will get a page like this one:



Event		Player entity											
ema	Data	Label	Media type	Player type	Current time	Duration	Ended	Loop	Muted	Paused	Playback rate	Volume	Sessi

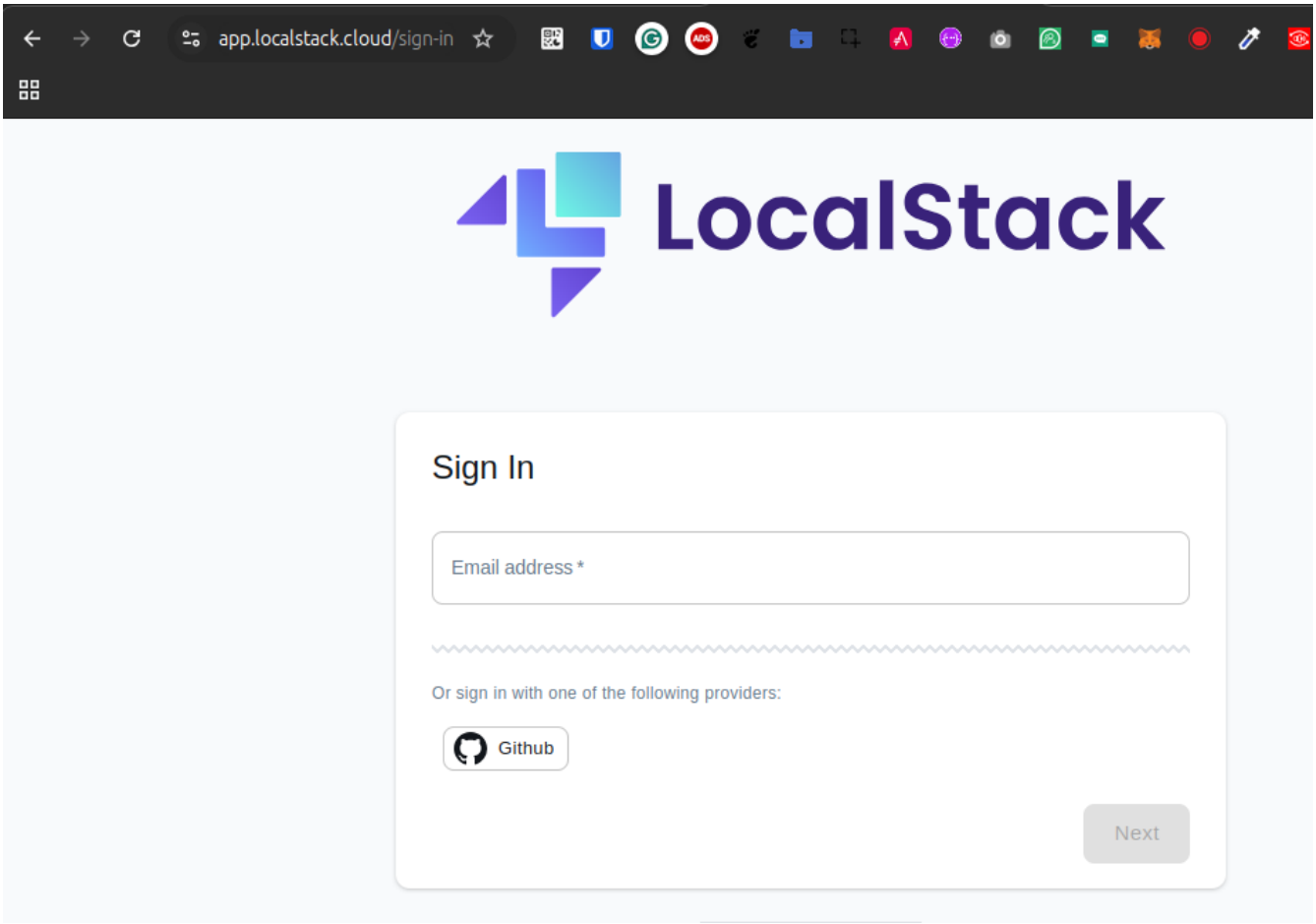
Step 3 → Open http://localhost:8280 to see the "Snowplow Live Viewer Profile" UI.

You will notice, after some time the video was started and for after the first pause you made on it, a screen like this:

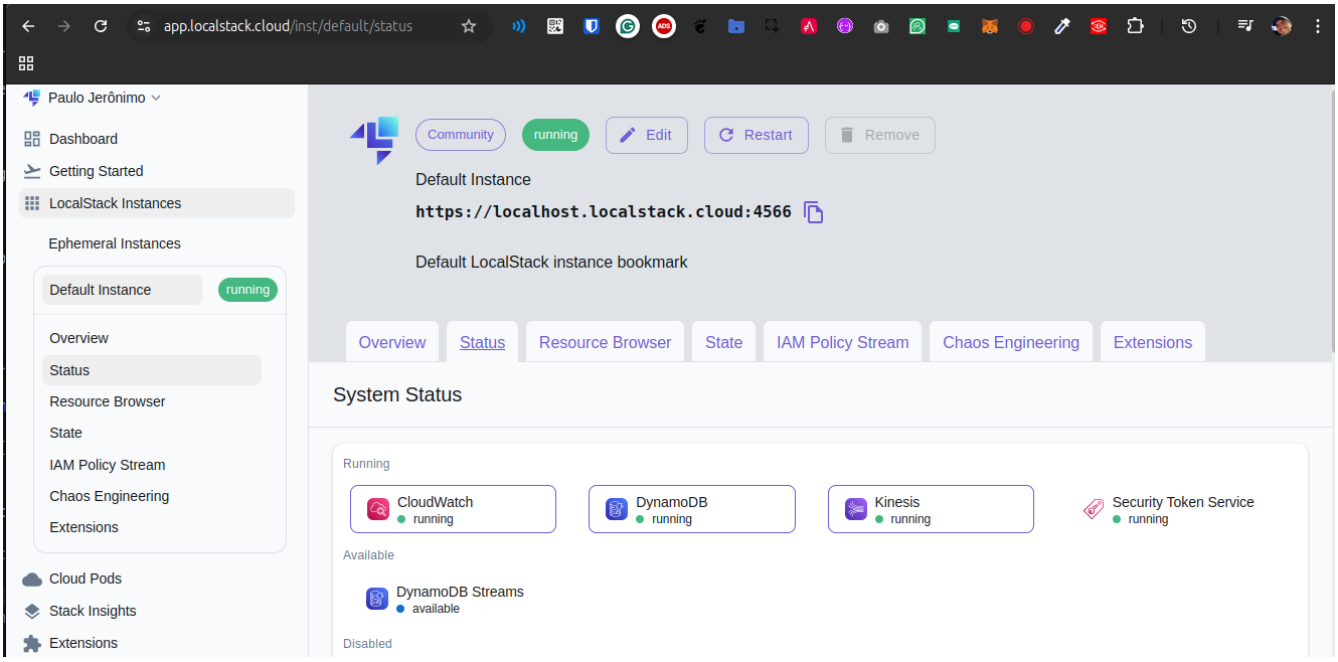


Step 4 → (optional) Open the LocalStack UI to see some details about the infrastructure

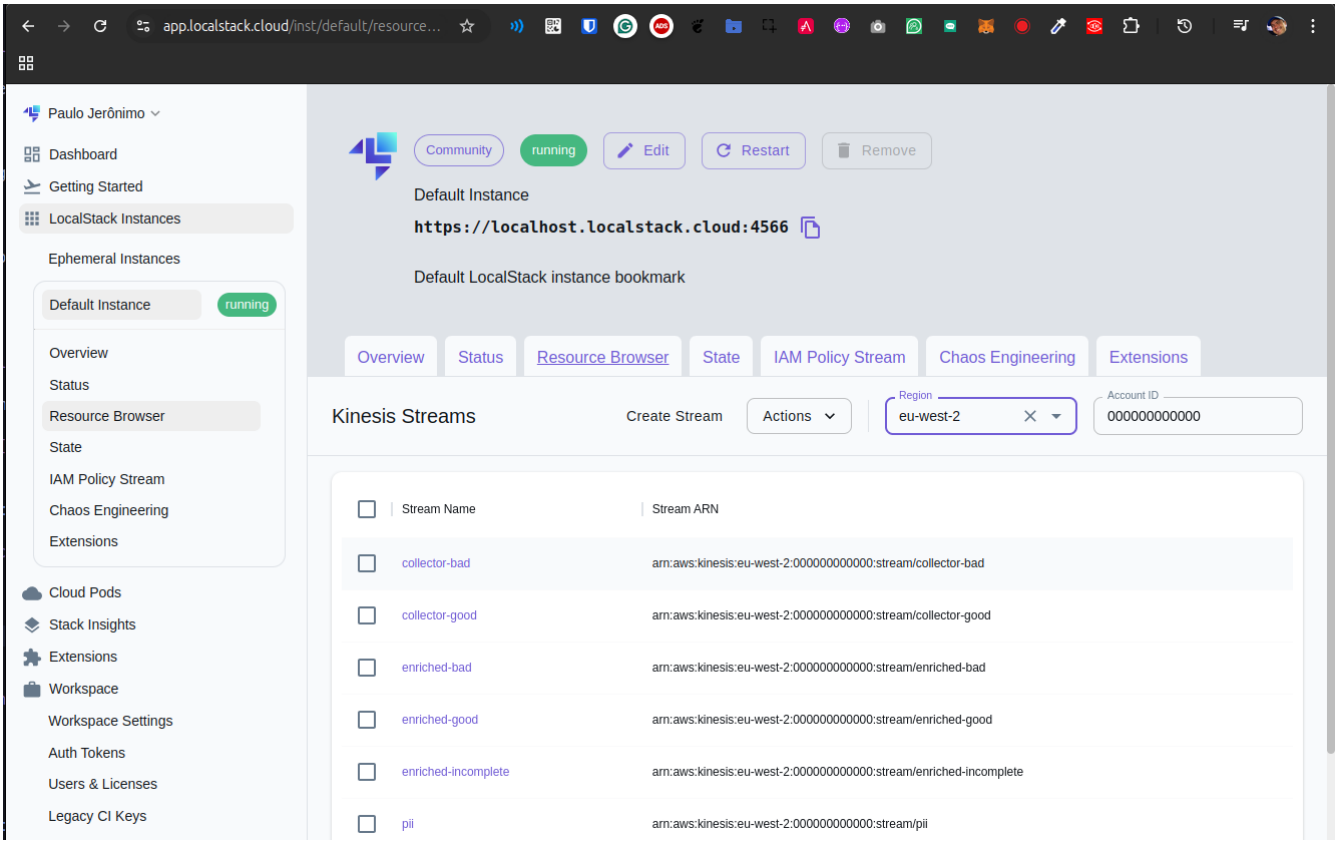
Open this link: https://app.localstack.cloud/ and do the sign-in.



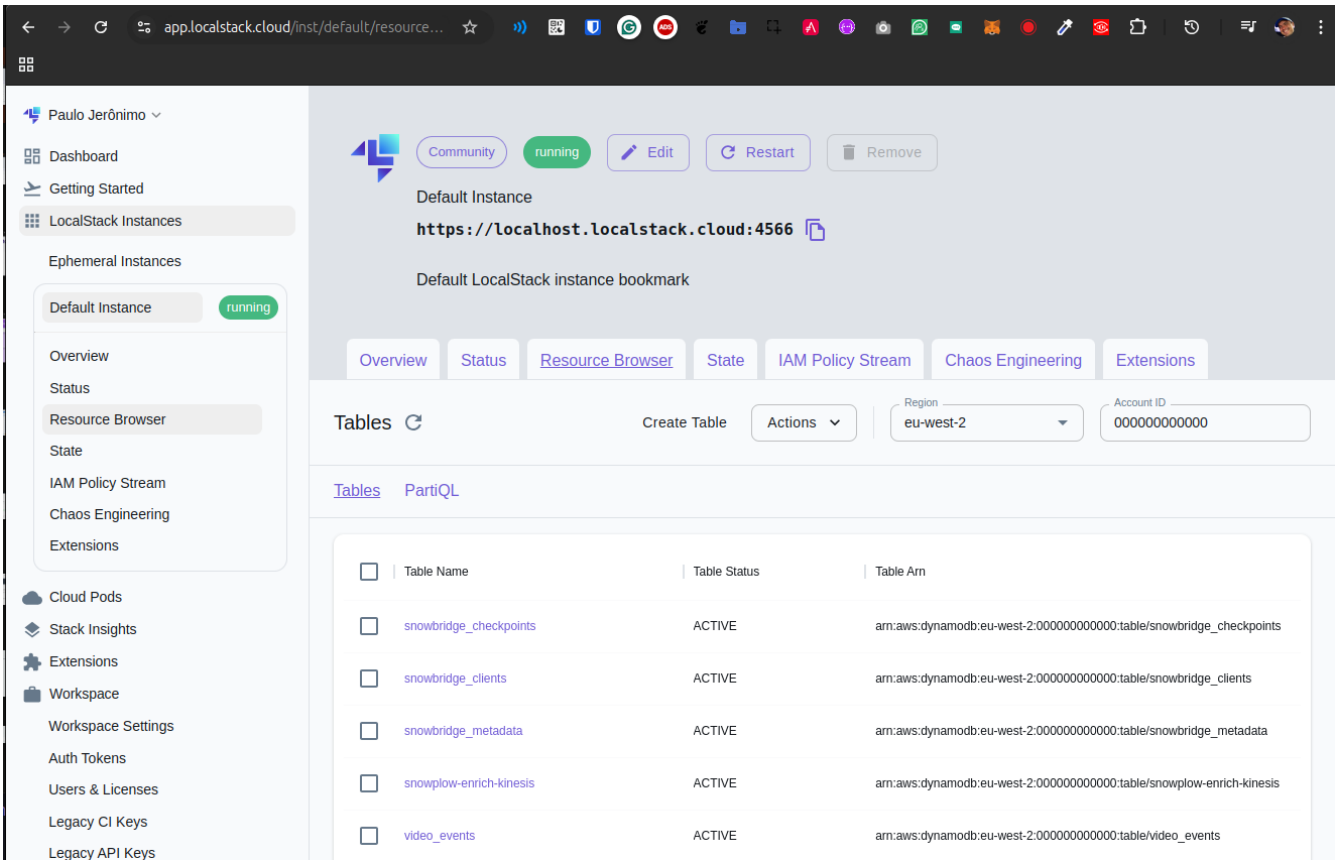
Click on the Status button.



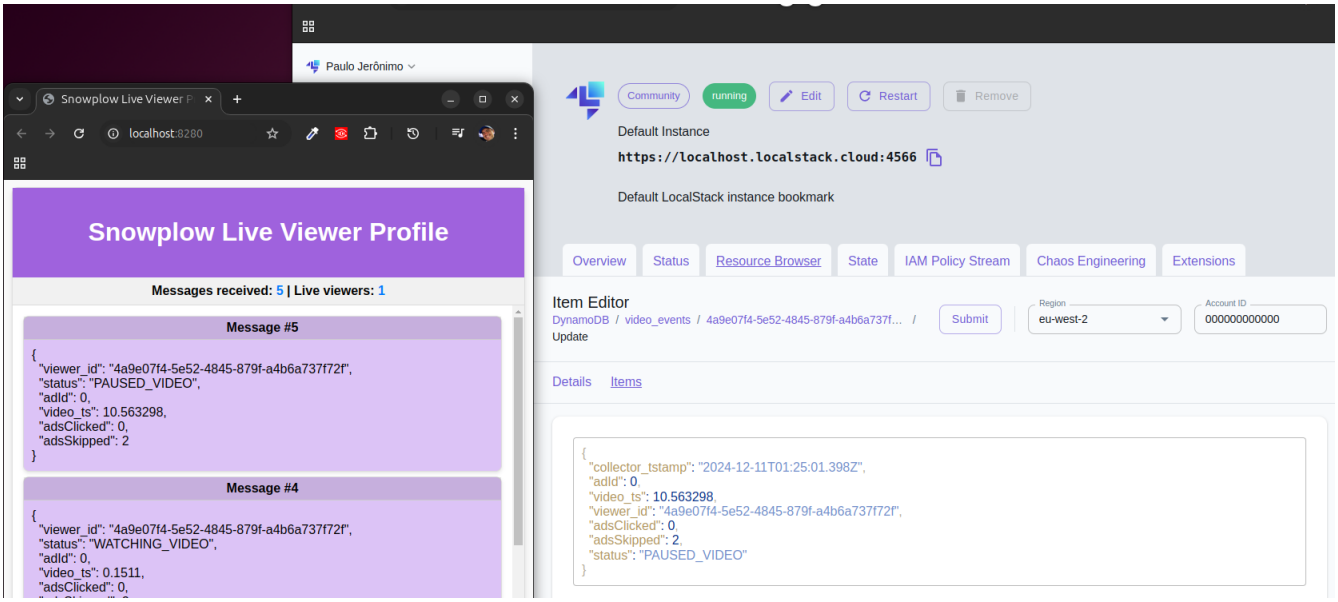
Click on button `Kinesis running`. Select the `eu-west-2` region to see the Kinesis Streams:



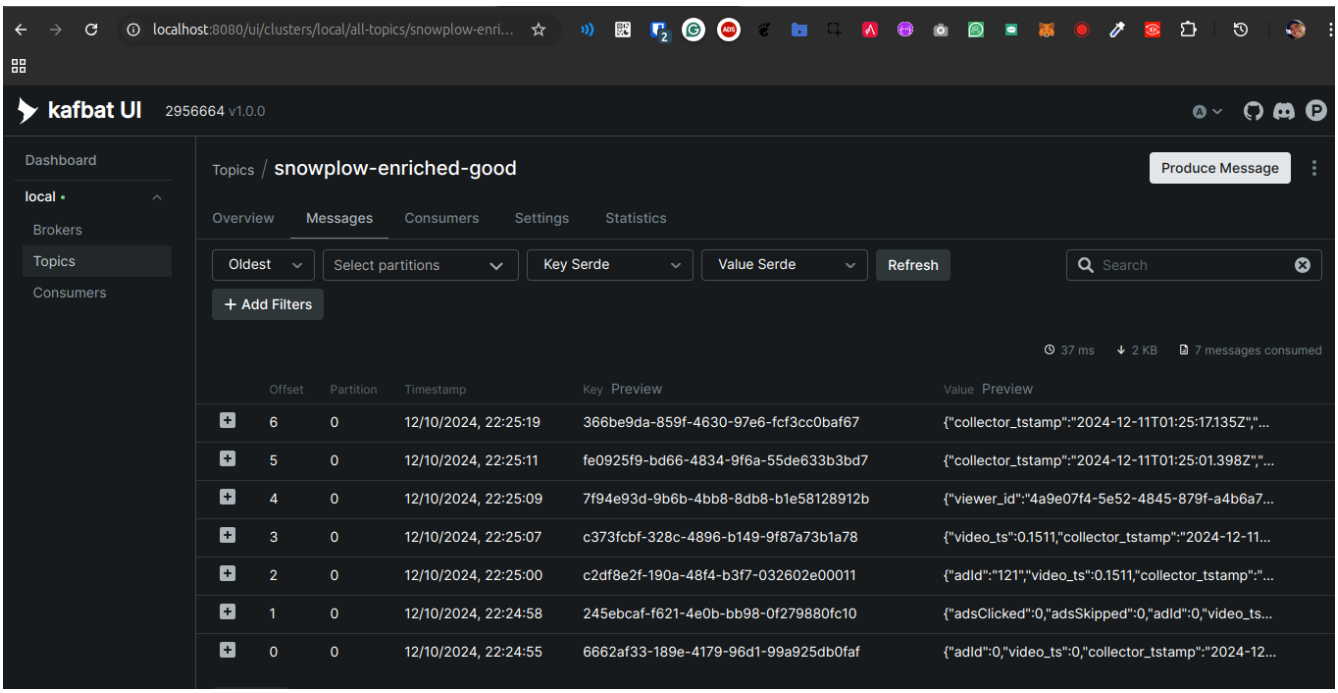
Click on button `Status` to go back to the System Status. Click on button `DynamoDB running`. You will notice a screen like this one:



Navigate on the items in the table `video_events`. Sort the data by the `collector_stamp` to locate the last event registered before you pause the video. You will notice a screen like this one:

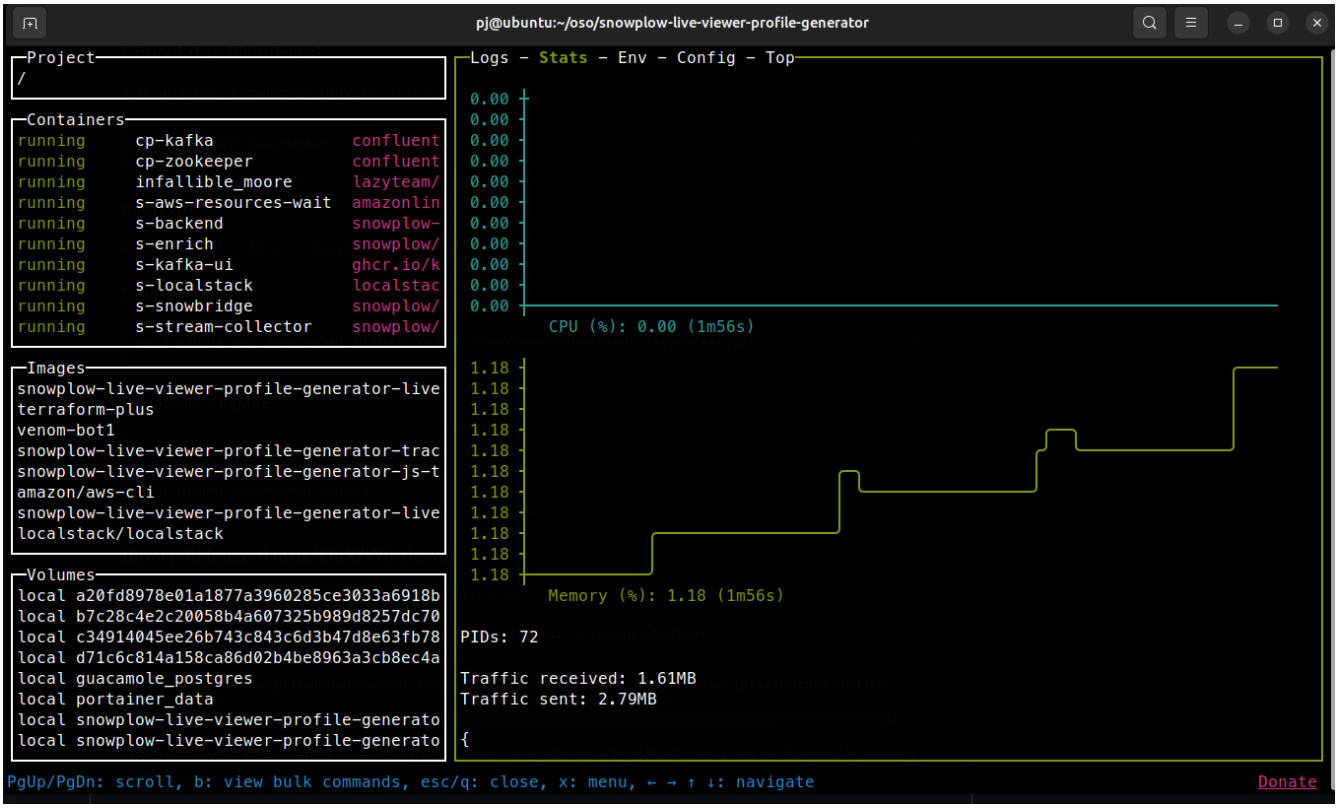


Step 5 → (optional) Open http://localhost:8080 to see the events exported to Kafka UI.



Step 6 → (optional) Use LazyDocker to monitor the containers and logs

```
$ sudo ./lazydocker.sh
```



Step 7 → Stop the containers

To stop all the containers, type:

```
$ ./down.sh
```

Step 8 → Clean up

To remove all the containers and images, type:

```
$ ./clean.sh
```

Warnings:

1. The script `clean.sh` will destroy any data generated by these containers.

5. Demo video

TODO