

Aiven for Apache Kafka, InfluxDB & Grafana

In this tutorial, we are going to see an introduction to services provided by Aiven like Apache kafka, InfluxDB and Grafana.

We will use a COVID testing simulator which produces streaming data in python to publish a message in kafka and

We are going to create three services:

- Aiven for Apache kafka
- Aiven for InfluxDB
- Aiven for Grafana

1. Aiven for Apache kafka

Create a new service

Service: Apache Kafka, Service Name: kafka-covid-test-stream

[For details on creating a kafka service in aiven console please follow this documentation](#)

<https://docs.aiven.io/docs/products/kafka/getting-started.html>

Click on the service name [kafka-covid-test-stream]

The overview page of the service opens which shows status, connection parameters and configuration option

Copy **Service URI**

Download the following connection parameters:

- **Access Key** : service-name --> Overview Connection information --> service.key
- **Access Certificate** : service-name --> Overview Connection information --> service.cert
- **CA Certificate** : service-name --> Overview Connection information --> ca.pem


Enable Apache kafka for REST API:

Apache Kafka REST API
(Karapace)

HTTP REST based interface to the Apache Kafka cluster.
See the [Karapace project](#) on Github for documentation.



Go to Topics, click on 'Add Topic' --> 'covid-test-stream'


kafka-covid-test-stream

Apache Kafka 3.2.1


EOL : 2023-06-27 : OK

Running

Nodes ●●●

Open support ticket

Overview
Network
Metrics
Logs
Users
ACL
Topics
Connectors
Schemas




Organize your events with topics

Topics store the events that you stream. It's a good idea to create these before you start streaming. Learn more about creating topics in our documentation.

Learn more

Add topic


kafka-covid-test-stream

Apache Kafka 3.2.1

EOL : 2023-06-27 : OK

Running

Nodes ●●●

Open support ticket

Delete service

Power off service

Overview
Network
Metrics
Logs
Users
ACL
Topics
Connectors
Schemas

Add topic

1 Topic

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Topic ↑	Partitions	Replication	Min. Insync Replicas	Retention Hours	Retention Bytes	Cleanup Policy	Status
covid-test-stream	1	2	1	168 hours	unlimited	delete	ACTIVE ***

2. Aiven for InfluxDB

Create Service: InfluxDB, Service Name: influx-covid-test-stream




3. Aiven for Grafana

Create Service: Grafana, Service Name: grafana-covid-test-stream


Once all the services are running, we will integrate with Grafana and Kafka services.

Current services

[+ Create a new service](#)

Search services by name, plan, cloud and tags...				
Service	Nodes	Plan	Cloud	Created
 grafana-covid-test-stream Grafana • Running	●	Startup-1 2 CPU / 1 GB RAM	Amazon Web Services: us-west-1 United States, California	12 hours
 influx-covid-test-stream InfluxDB • Running	●	Startup-4 2 CPU / 4 GB RAM / 16 GB storage	Amazon Web Services: us-west-1 United States, California	12 hours
 kafka-covid-test-stream Apache Kafka • Running	●●●	Startup-2 2 CPU / 2 GB RAM / 90 GB storage - 3-node high availability set	Amazon Web Services: us-west-1 United States, California	12 hours

Right now, there are no integrations present




Service integrations

Aiven integrations transform the Aiven platform into a true data cloud. In just a few clicks, you can leverage the power of logs, metrics, dataflow/replication and authentication integrations among your Aiven products and with external applications.

[Read more](#) [Set up integration](#)

open InfluxDB service Overview page --> Service Integrations section --> Set up integration

- Grafana service



Grafana Metrics Dashboard

Visualize service backed metrics on a pre-configured Grafana Dashboard

[Use integration](#)

Dashboard integration for influx-covid-test-stream

Which Grafana service would you like to use as a dashboard for influx-covid-test-stream?


☒ Existing service
☐ New service

Service name

grafana-covid-test-stream

[Go back](#) [Enable](#)

- Kafka service



Metrics

Receive service metrics from another service

Use integration

Metrics integration for influx-covid-test-stream ×

From where would you like to receive metrics?

☒ Existing service

☐ New service

Service name

kafka-covid-test-stream ▼

Go back Enable

To know details about service integration, [refer this document](#)

Now we are ready for our COVID testing data simulator as a kafka-producer. We are going to simulate COVID testing done at a pharmacy with the help of Faker library in python. Each object has information about a person and the COVID test result along with UUID and timestamp in JSON format. For example,

```
covid_data = {  
    "Name" : get_name(gender),  
    "Gender" : gender,  
    "Date of Birth" : str(fake.date_of_birth(maximum_age=90)),  
    "Address" : fake.address(),  
    "Email Id" : fake.email(),  
    "Phone" : fake.numerify('#####'),  
    "Test result" : get_test_result(),  
    "Timestamp" : datetime.now().isoformat()  
}
```

You will need to install python3 on your machine.

```
git clone https://github.com/kvartak2/Aiven-SA-Homework
```

```
pip install -r requirements.txt
```

In the 'covid_test_producer.py', replace

- **SERVICE_URI** with service URI which we copied in step 1

Save and run the program

```
python covid_test_producer.py
```

You will see the stream data as following and these messages will be sent continuously to kafka until we enter CTRL+C.

```
{
  "id": "7d7cd4d1-47e7-4ff0-99bf-a01fb8d4edcf"
},{
  "Name": "Peter Monroe",
  "Gender": "M",
  "Date of Birth": "1932-05-28",
  "Address": "8440 Cooper Wells Apt. 683\nNorth Emily, CT 75636",
  "Email Id": "ismith@example.org",
  "Phone": "6355218783",
  "Test result": "Positive",
  "Timestamp": "2022-10-05T14:15:05.907080"
}
{
  "id": "12d95cbf-e3fe-4f13-bd5a-cb81dc19a21a"
},{
  "Name": "Christy Flores",
  "Gender": "F",
  "Date of Birth": "1981-11-13",
  "Address": "USS Lopez\nFPO AE 51618",
  "Email Id": "nicole99@example.com",
  "Phone": "9909218665",
  "Test result": "Negative",
  "Timestamp": "2022-10-05T14:15:06.303597"
}
```

Now let's verify if we can see the messages in kafka service

Go to 'kafka-covid-test-stream' service --> **Topics** (select Topic 'covid-test-stream') --> **Messages**

The screenshot shows a 'Topic info' modal window. It has tabs for 'Configuration', 'Partitions', 'Consumer groups', and 'Tags'. The 'Configuration' tab is active. It displays the 'Topic name' as 'covid-test-stream' with buttons for 'Messages', 'Modify', and 'Remove'. Below this is the 'Topic configuration' section showing 'Partitions: 1' and 'Replication: 2'. The 'Broker configuration' section lists 'cleanup_policy: delete', 'message_format_version: 3.0-IV1', 'segment_bytes: 209715200', and 'unclean_leader_election_enable: false'. At the bottom is a link for 'Kafka default configuration'.

Change **Format** to **JSON** and click on **Fetch Messages**

The screenshot shows the 'kafka-covid-test-stream' service page. The 'Topics' tab is selected in the top navigation bar. The 'Messages' section is active, showing filters for 'PARTITION', 'OFFSET', 'TIMEOUT (S)', 'MAX BYTES', and 'FORMAT'. The 'FORMAT' dropdown menu is open, showing options: 'binary', 'json' (selected with a checkmark), and 'avro'. Below the filters, there is a text prompt: 'Provide the desired filters and click "Fetch Messages" to view messages from a specific partition and offset range.' Buttons for 'Fetch messages' and 'Produce message' are visible.

You can see that messages have been received in kafka service in a topic.

▼ PARTITION: **Show all** ▼ ▼ OFFSET: **0** ▼ ▼ TIMEOUT (S): **3** ▼ ▼ MAX BYTES: **Unlimited** ▼ ▼ FORMAT: **json** ▼


Messages 1-10 of 27 · Page 1

Meta	Key	Value
		<small>({"Address":"7969 Laura Drive\nNorth Adrian, AL 80051","Date of Birth":"1972-09-22","Email Id":"wilsonbrandon@example.net","Gender":</small>
OFFSET: +26 PARTITION: 0	<small>({"id":"f6365ecf-68d1-4c63-a07c-50ced26797dd"})</small> ▼ { id: "f6365ecf-68d1-4c63-a07c-50ced26797dd" }	▼ { Address: "7969 Laura Drive North Adrian, AL 80051", Date of Birth: "1972-09-22", Email Id: "wilsonbrandon@example.net", Gender: "F", Name: "Brenda Davis", Phone: "4912541965", Test result: "Negative", Timestamp: "2022-10-05T14:15:13.232731" }
		<small>({"Address":"3414 Diane Land\nThomaston, NJ 34187","Date of Birth":"1982-11-20","Email Id":"ugill@example.org","Gender":"M","Name</small>
OFFSET: +25 PARTITION: 0	<small>({"id":"1dd63197-7e89-4790-8709-0ba552f42d28"})</small> ▼ { id: "1dd63197-7e89-4790-8709-0ba552f42d28" }	▼ { Address: "3414 Diane Land Thomaston, NJ 34187", Date of Birth: "1982-11-20", Email Id: "ugill@example.org", Gender: "M", Name: "Joshua Reyes", Phone: "5906242056", Test result: "Positive", Timestamp: "2022-10-05T14:15:12.801268" }

Now, lets open Grafana dashboard and see the data flowing from Kafka --> InfluxDB --> Grafana

Go to Grafana service --> Overview --> connection information

Copy username and password to login to Grafana dashboard







**grafana-covid-test-stream**

Grafana 8.5.13 Running Nodes

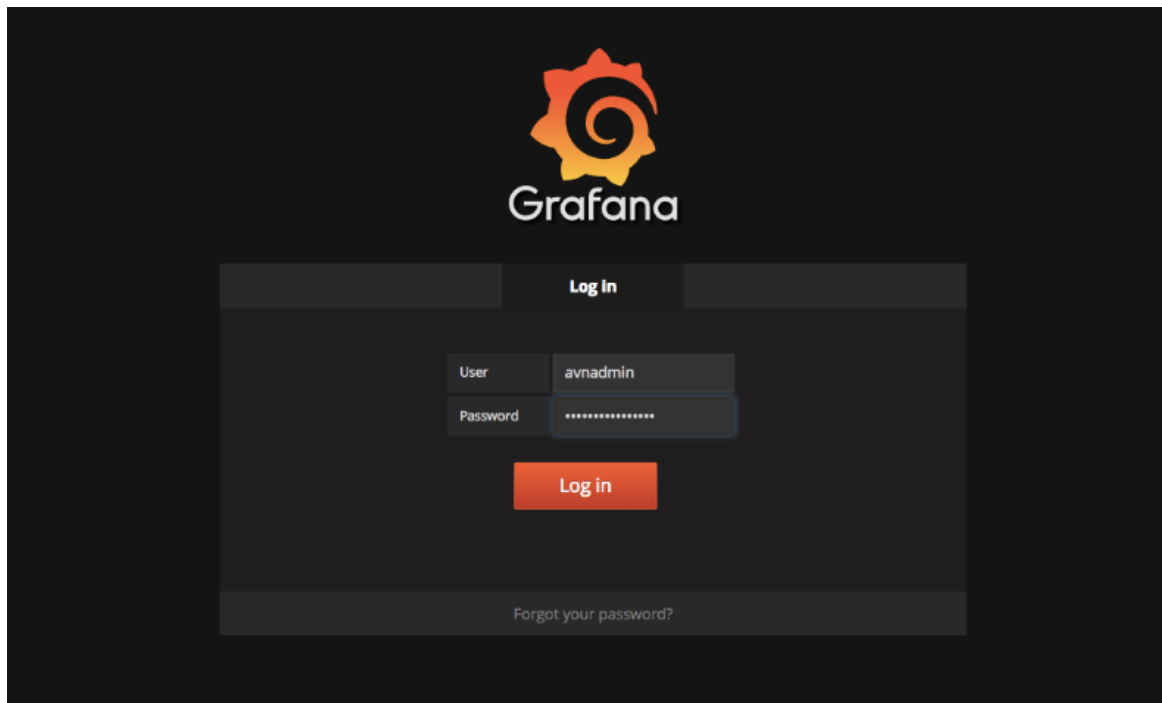
Overview **Network** Metrics Logs Backups

Open support ticket

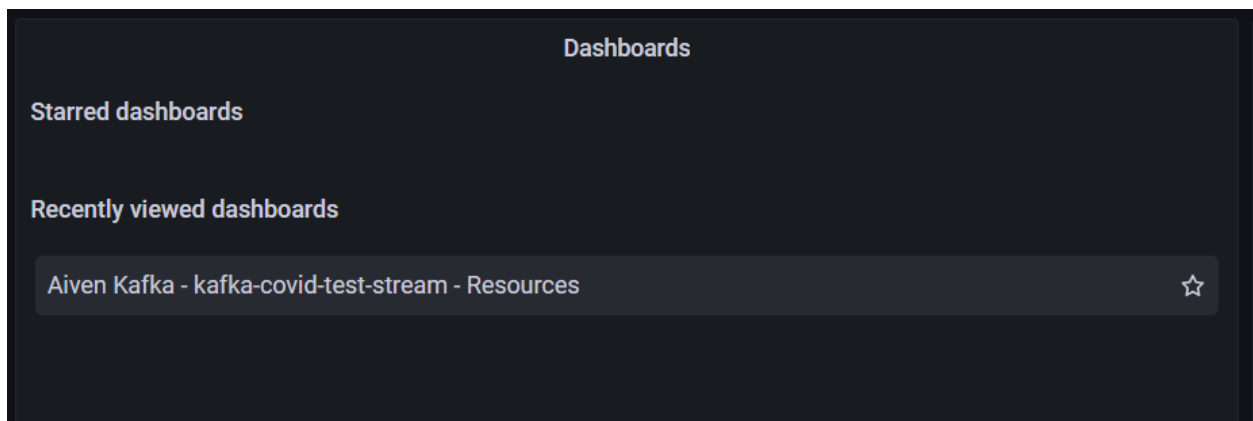
Connection information

Service URI	https://grafana-covid-test-stream-kaths2407-bdae.aivencloud.com	
Host	grafana-covid-test-stream-kaths2407-bdae.aivencloud.com	
Port	443	
User	avnadmin	
Password	*****	  Copied!

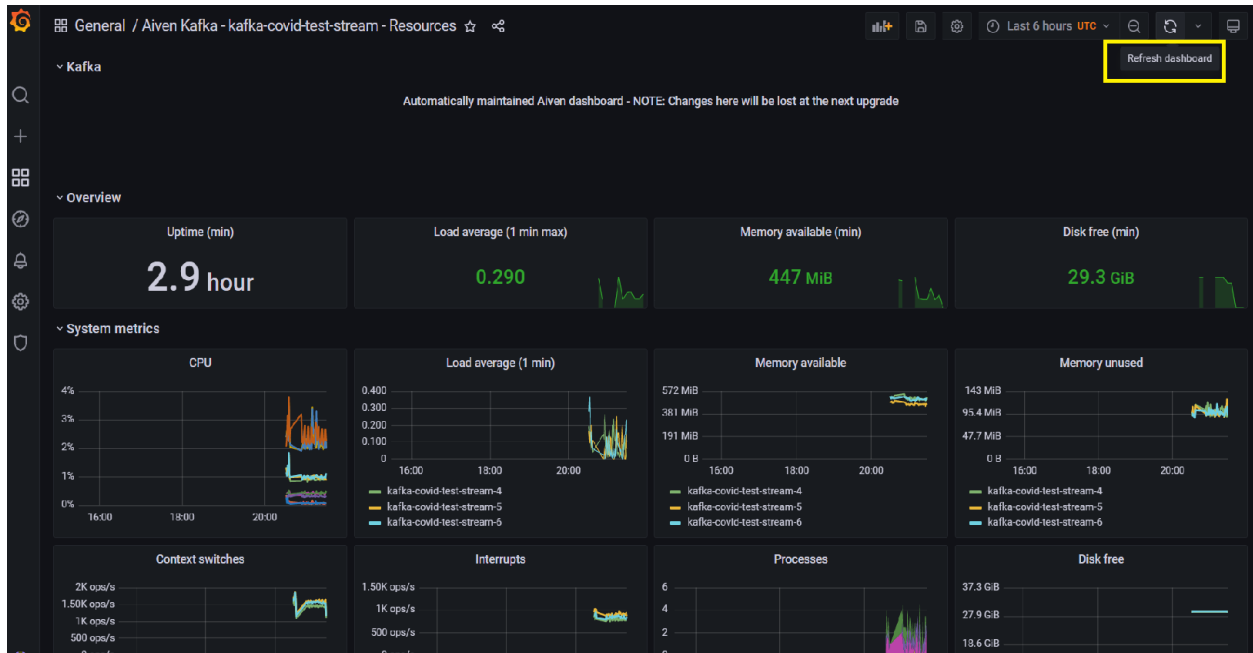
Click on Service URI and login to Grafana dashboard with username(avnadmin) and password saved in the previous step



The Grafana default view opens with one default dashboard



Click on '**Aiven Kafka - kafka-covid-test-stream – Resources**' to see the kafka metrics which is maintained by Avion with refresh button on top right corner.



We can create a custom dashboard from scratch in Grafana as well.

Additionally, we can connect to InfluxDB via command or with the help of a program. [To know more about this refer this documentation.](#)

References:

<https://help.aiven.io/en/articles/1456441-getting-started-with-service-integrations>

<https://docs.aiven.io/docs/products/kafka/howto/connect-with-python.html>