Report

Diagram

Description automatically generated

The Pub/Sub system is made up of 3 Publishers, 10 Subscribers, 3 Topics and 3 Brokers(Kafka).

●  The 3 publishers publish the climatic data from the following countries using the world bank open source data and API:

* USA
* Canada
* Mexico

●  There is a provision to fetch climatic data that includes either the temperature or the precipitation during the following years:

* 1920 to 1939
* 1940 to 1959
* 1960 to 1979
* 1980-1999

The above two aspects are limited for the ease of understanding. The scope of this project extends to far more broader areas and much more data can be obtained using the Climatic data API from the world bank.

**Implementation Details:**

●  The above architectural diagram gives an overview of how the system was defined on a high level.

●  The three brokers are separate Docker containers and they communicate with each other using the Apache Kafka.

●  The above diagram has the details in visual form.

●  There is no direct communication between Publishers and Subscribers, it is all via one of the Brokers.

**Working:**

●  The Publisher has the functionality to either Publish the message based on the topics subscribed by the corresponding subscribers or they can Advertise it common to its subscribers as something that is upcoming.

●  The Subscriber subscribes or unsubscribes to the topics and all operations are done by their corresponding Brokers, the request is posted from the Subscriber to the Broker, similar is the case for the Publisher who sends the data fetched from the API to the Broker and the Broker writes it to the Database.

●  If the Subscribers assigned to their default Brokers does not have the topics that they are looking for, then the request rerouted to the next nearest Broker and so forth until the topic is found.

●  The Subscribers can see the data that they are subscribed to, at the bottom part of the landing page that directs them to a trigger the log in the docker that contains the information to their subscriptions and the data published by the publishers that they are subscribed to.

**Contributions:**

●  This project was done by Amrit Sreekumar and Nikhil Ramesh.

●  Both of us contributed equally to the project.

●  Amrit Sreekumar was responsible for writing up the producer consumer manipulation and internal logic.

●  Nikhil Ramesh was responsible for dockerzing the producer consumer file.

●  Both our ideas were combined to implement the broker clustering. Partitioning, replication,

●  This Document was a combined effort and so is the Readme that details how to run the system, attached with the Zip folder.

A screenshot of a computer

Description automatically generated with medium confidenceA screenshot of a computer

Description automatically generated with medium confidence