LivePlay

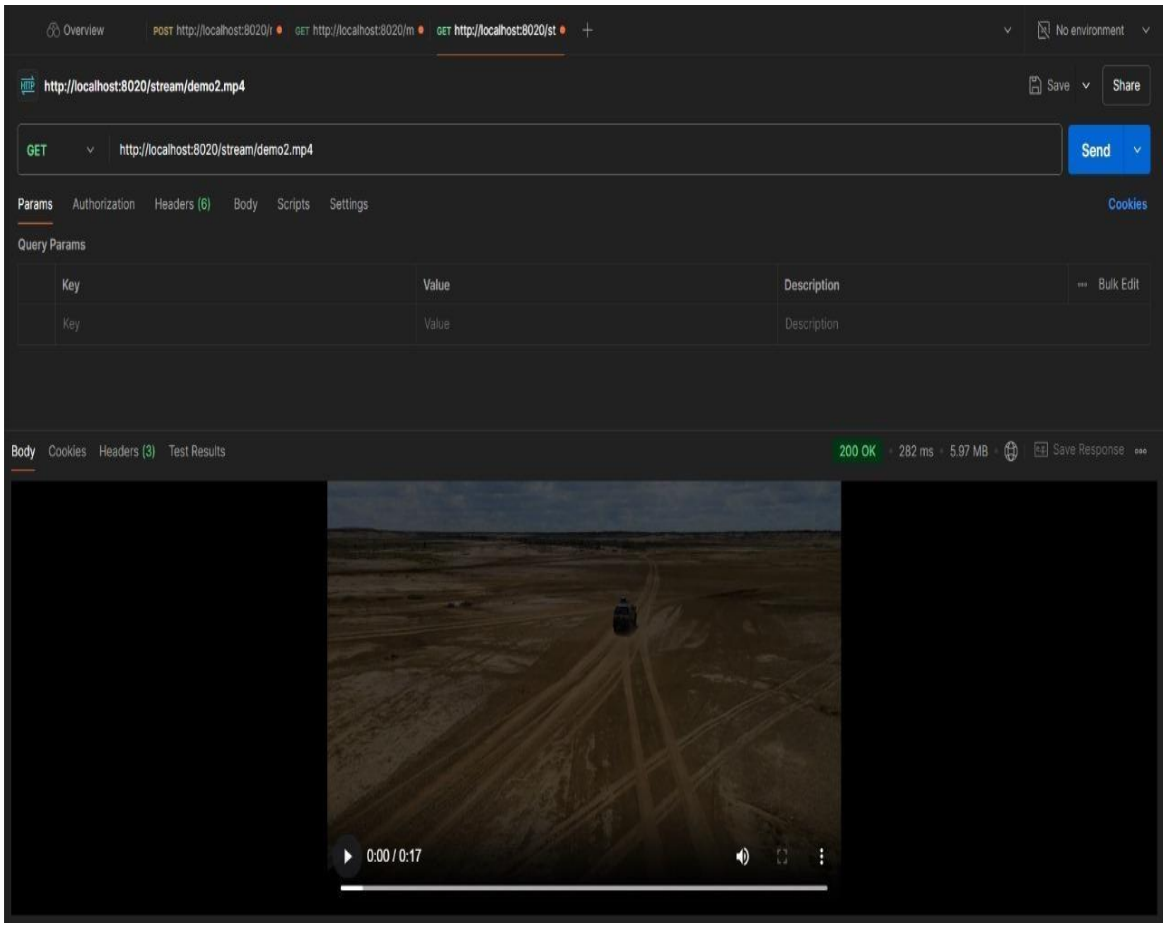
1. Introduction

- **Overview:** This project is a microservice-based video streaming platform developed using Spring Boot and PostgreSQL. It consists of various services that manage video streaming, movie data, and related operations, utilizing components like API Gateway, Eureka, a Configuration Server, and Zipkin.
- **Objective:** To efficiently manage and stream videos while ensuring scalability, fault tolerance, and ease of maintenance in a microservices environment.

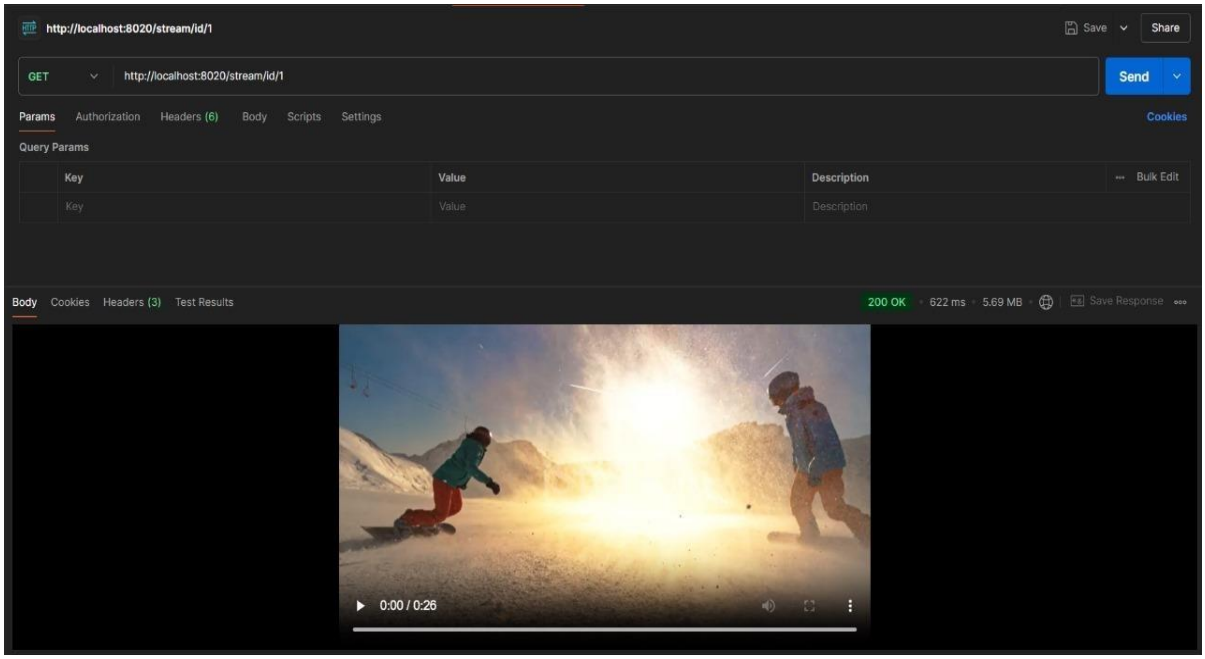
2. Project Architecture

2.1 Microservices

- **Video Service:** Manages video streaming functionalities and metadata.
  - **APIs:**
    - `@GetMapping("/stream/{videoPath}")`: Streams a video by its file path.

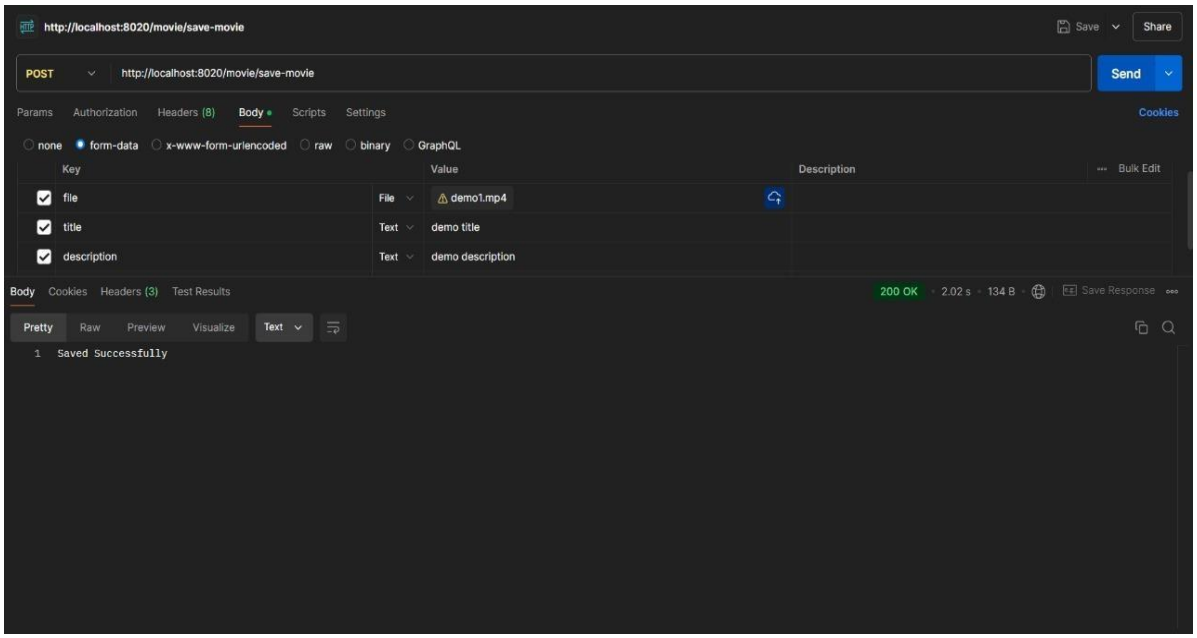


- `@GetMapping("/stream/id/{videoID}")`: Streams a video using its unique ID.

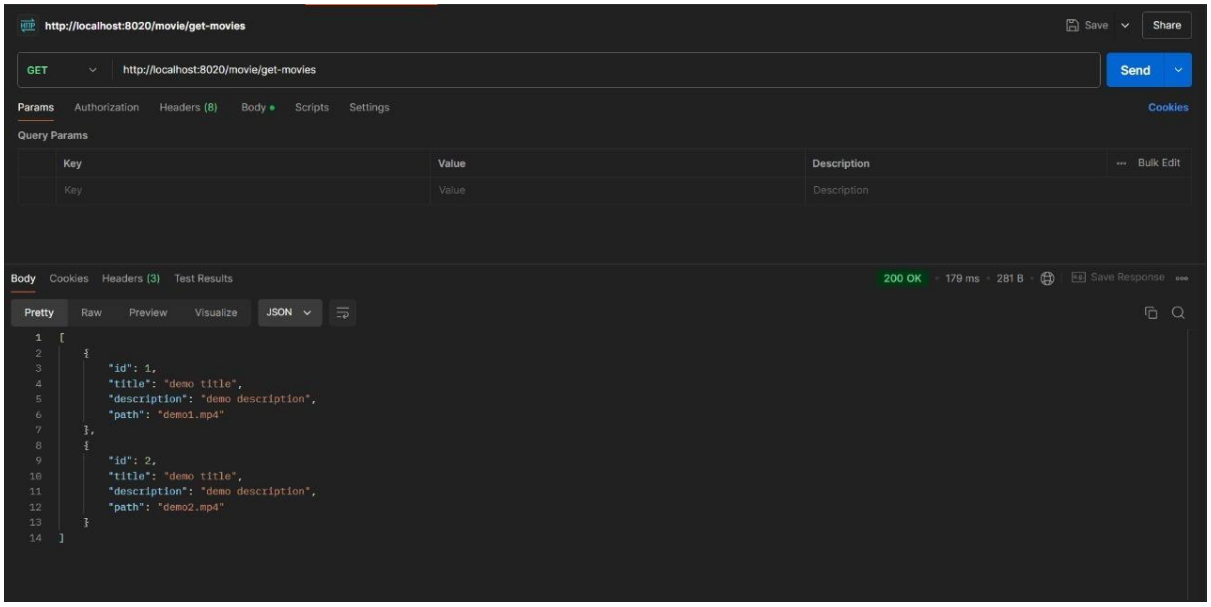


- `@GetMapping("/movie/get-path/{movieID}")`: Retrieves the video path by movie ID for **Interprocess communication**.

- **Movie Service:** Manages movie-related data.
  - **APIs:**
    - `@PostMapping("/movie/save-movie")`: Saves movie details.

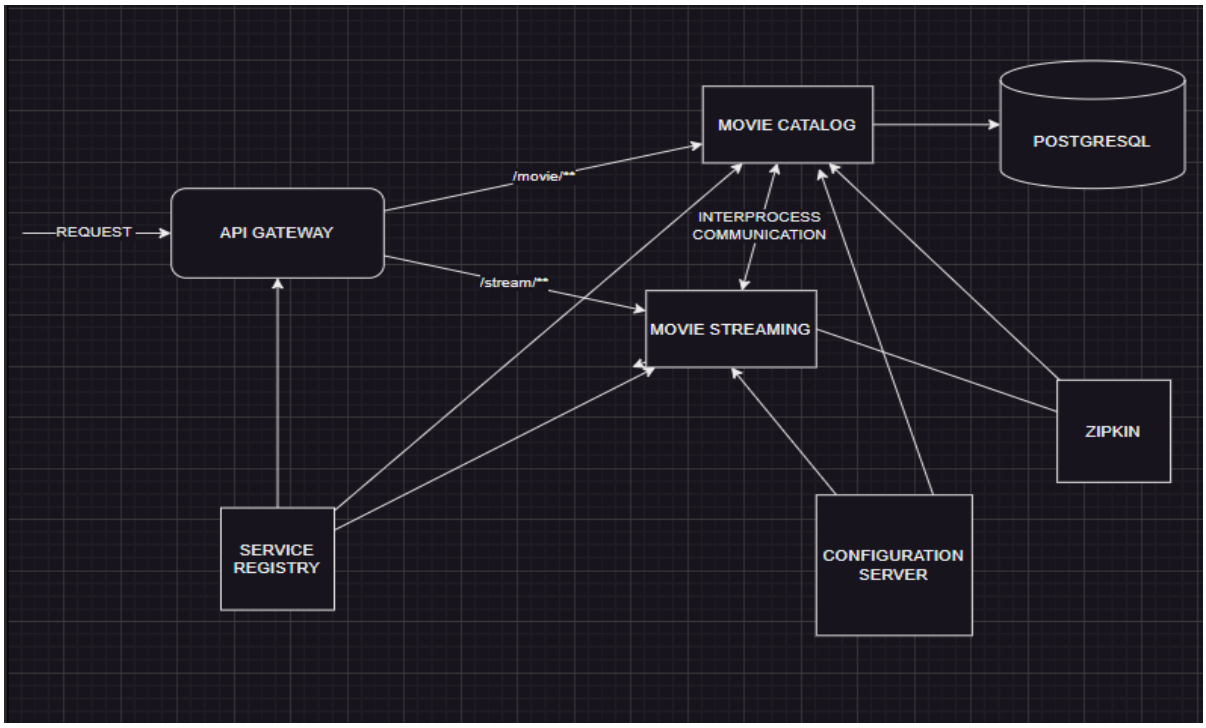


- `@GetMapping("/movie/get-movies")`: Fetches all available movies.



- **API Gateway:** Acts as a central entry point for clients, routing requests to the appropriate services.
- **Eureka Service Discovery:** Facilitates dynamic registration and discovery of services, allowing them to locate one another without hardcoded URLs.
- **Configuration Server:** Centralizes management of configurations across services.

3. Implementation Details

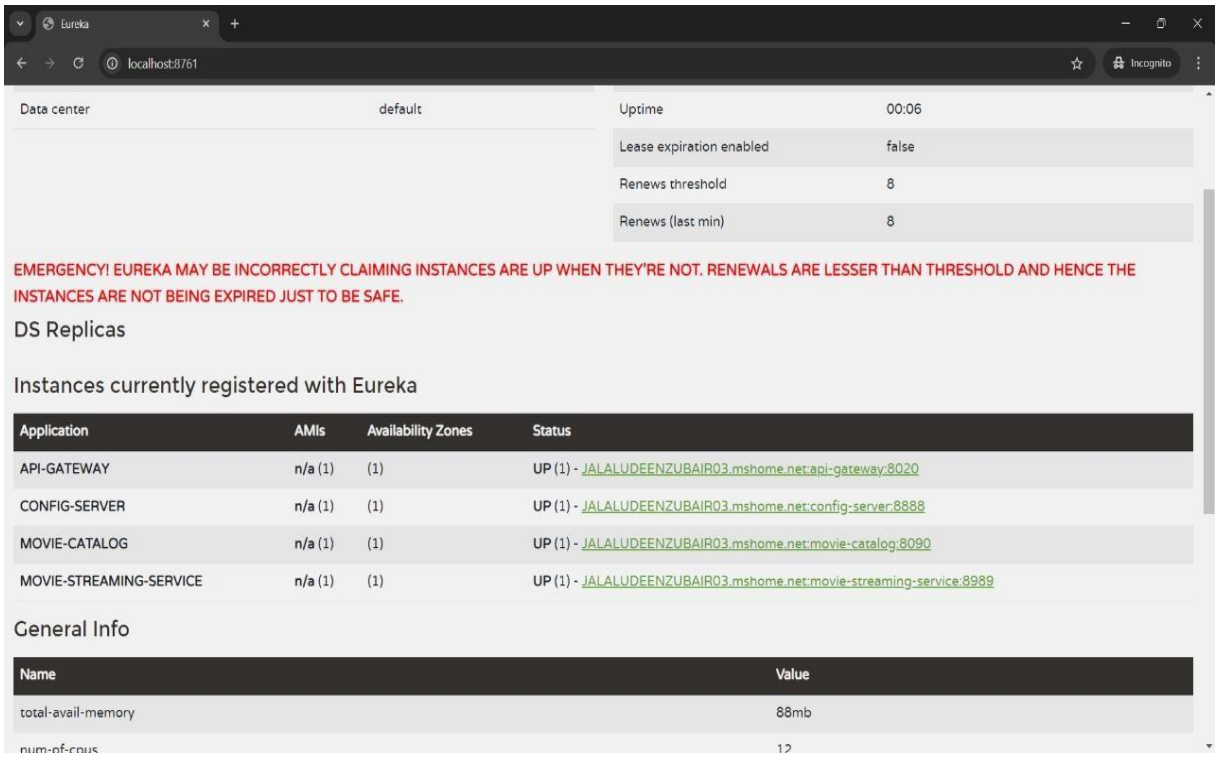


3.1 API Gateway

- **Routing Configuration:** Routes incoming requests to appropriate microservices, ensuring efficient traffic management.

3.2 Eureka Service Discovery

- **Server Configuration:** The Eureka server enables other services to register and discover each other dynamically.
- **Client Configuration:** Each microservice registers with the Eureka server for easy discovery and communication.



3.3 Configuration Server

- **Server Setup:** The configuration server serves centralized configurations for all microservices.
- **Client Setup:** Each microservice fetches its configuration from the configuration server during startup.

3.4 Interprocess Communication

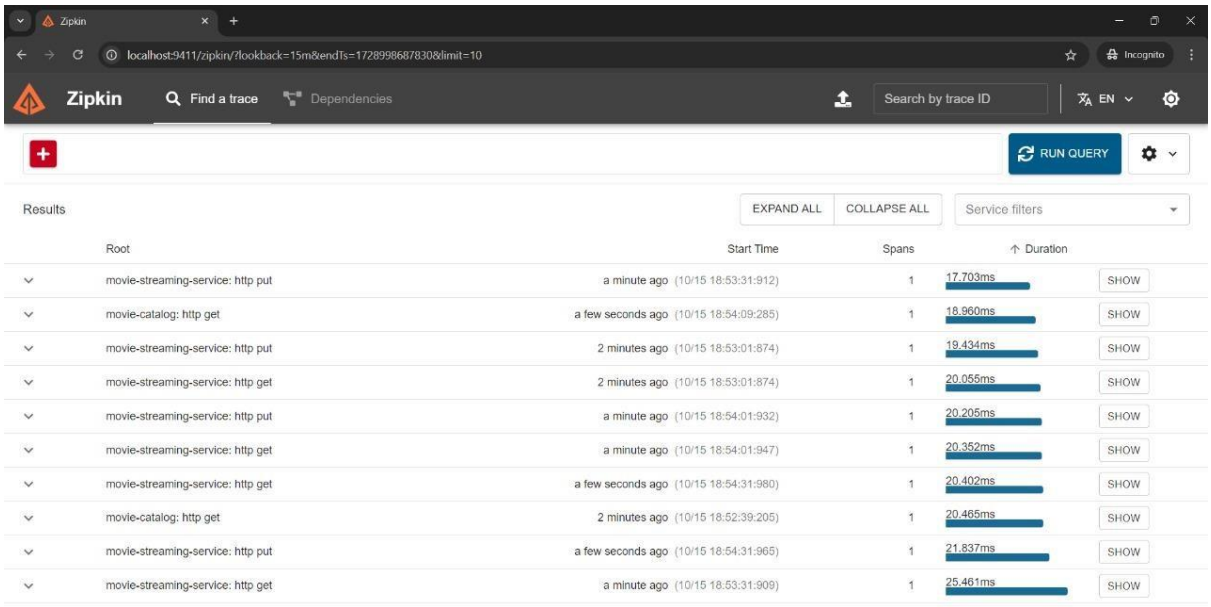
- **Feign Clients:** Utilize Feign Clients for declarative REST communication between services. The API `@GetMapping("/movie/get-path/{movieID}")` is a key example, where the Video Service calls the Movie Service to retrieve the path of a video associated with a specific movie ID.

3.5 Circuit Breaker

- **Resilience Implementation:** Implement Resilience4j or Hystrix to handle service failures gracefully, ensuring the system remains robust during downtime.

3.6 Distributed Tracing with Zipkin

- **Zipkin Integration:** Integrate Zipkin for distributed tracing, allowing you to monitor and visualize request flows across microservices. This helps in identifying latency issues and understanding service interactions.
    - Ensure that each service sends trace data to the Zipkin server to facilitate this monitoring.



4. Key Components

- **API Gateway:** Routes requests to microservices.
- **Eureka:** Enables service discovery.
- **Configuration Server:** Centralizes configuration management.
- **Zipkin:** Provides distributed tracing capabilities for performance monitoring.

5. Conclusion

This documentation outlines the setup of a video streaming platform using Spring Boot with a microservice architecture, focusing on key components such as API Gateway, Eureka, Configuration Server, and Zipkin for distributed tracing. The platform is designed to be scalable and resilient, ensuring a smooth user experience.