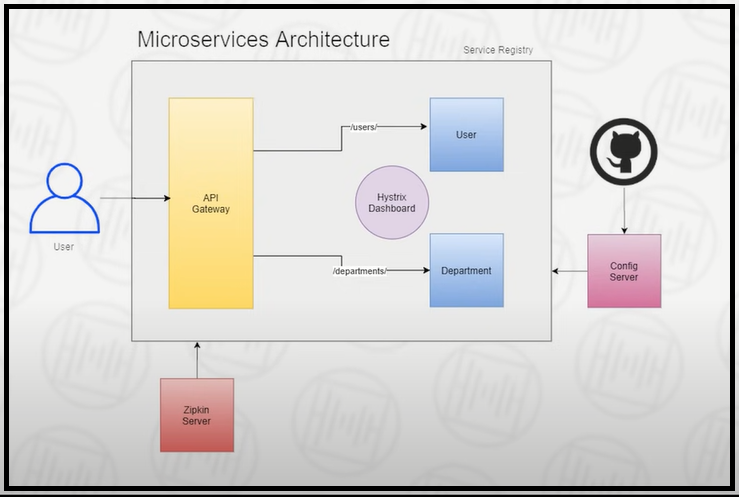
**Spring Boot Micro Service**

**Application Overview**

* **There are two services interacting with each other. Services are User Service And Department Service.**
* **Client can create Department details using Department service.**
* **Department service has two endpoints post to create department details.**
* **Get Endpoint to view details of Department.**
* **Client can create User details using Department service. User service has two endpoints post to create User details**
* **.While creating the user details client needs to enter department id.**
* **Get Endpoint to view details of User. This Get Endpoint internally calls department service to fetch department details based on id.**
* **Final Response returned from Get Endpoint of User will have user details along with department.**

**Micro service Architecture.**

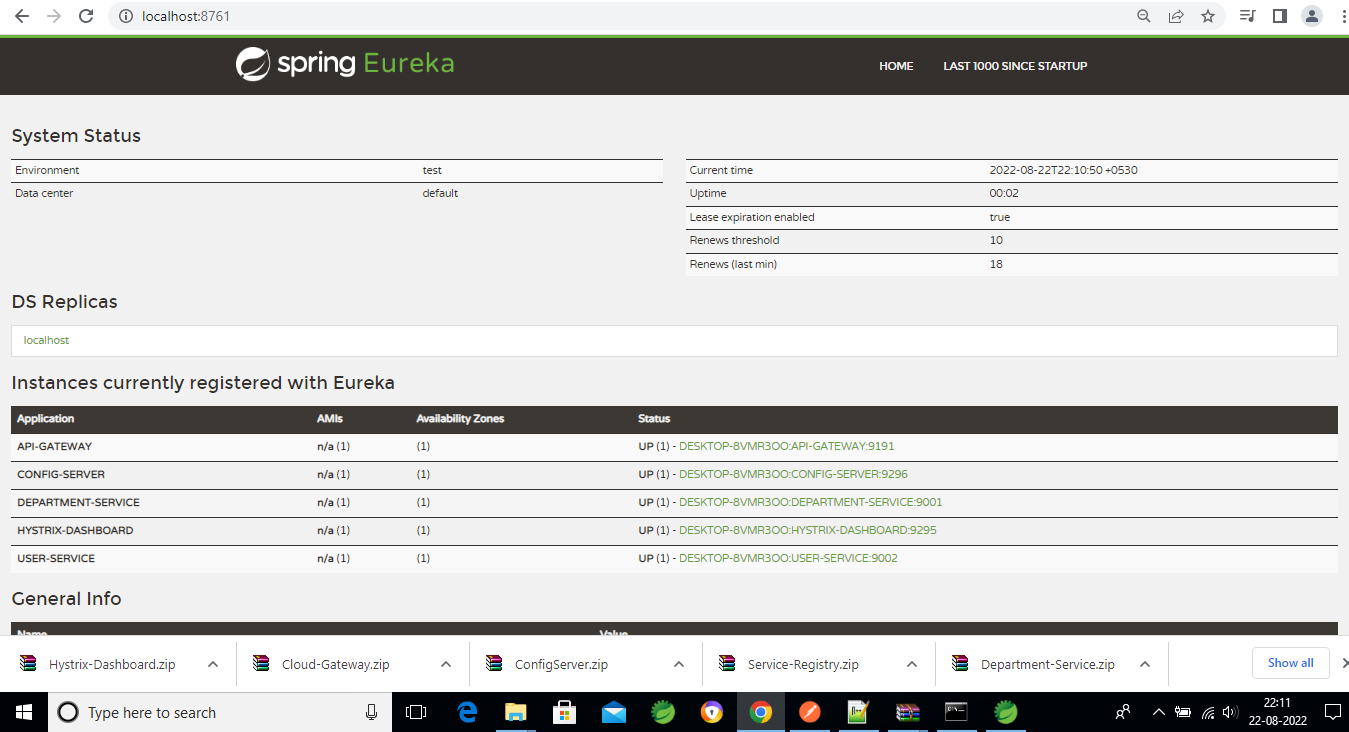


**Microservice Components**

|  |  |  |
| --- | --- | --- |
| **Sr No** | **Component Name** | **Component Significance.** |
| **1** | **Deparment Service** | **1)This service has apis related to deparment like post and get. 2)User can create department and get department information by id. 3)Department information will be stored in In-Memory Database.** |
| **2** | **User Service** | **1)This service has apis related to User like post and get. 2)Service allows to create user and get user with department information by id. 3)Department information will be stored in In-Memory Database.** |
| **3** | **Service Registry** | **The Service Discovery mechanism helps us know where each instance is located.**  **In this way, a Service Discovery component acts as a registry in which the addresses of all instances are tracked.   The instances have dynamically assigned network paths. Consequently, if a client wants**  **to make a request to a service, it must use a Service Discovery mechanism.** |
| **4** | **Api Gateway** | **The API Gateway is a server. It is a single entry point into a system. API Gateway encapsulates the internal system architecture.**  **It provides an API that is tailored to each client. It also has other responsibilities such as authentication, monitoring, load balancing, caching, request shaping and management, and static response handling.**  **API Gateway is also responsible for request routing, composition, and protocol translation. All the requests made by the client go through the API Gateway. After that, the API Gateway routes requests to the appropriate microservice.** |
| **5** | **Cloud Config Server** | **Spring Cloud Config Server provides an HTTP resource-based API for external configuration (name-value pairs or equivalent YAML content).** |
| **6** | **Hystrix Dashboard** | **One of the main benefits of Hystrix is the set of metrics it gathers about each HystrixCommand. The Hystrix Dashboard displays the health of each circuit breaker in an efficient manner.** |
| **7** | **Zipkin And Sleuth** | [**Zipkin**](https://zipkin.io/)**is a very efficient tool for distributed tracing in the microservices ecosystem. Distributed tracing, in general, is the latency measurement of each component in a distributed transaction where multiple microservices are invoked to serve a single business usecase.**  [**Sleuth**](https://cloud.spring.io/spring-cloud-sleuth/)**is another tool from the Spring cloud family. It is used to generate the trace id, span id and add this information to the service calls so that It can be used by tools like Zipkin and**[**ELK**](https://howtodoinjava.com/microservices/elk-stack-tutorial-example/)**etc. to store, index and process log files.** |

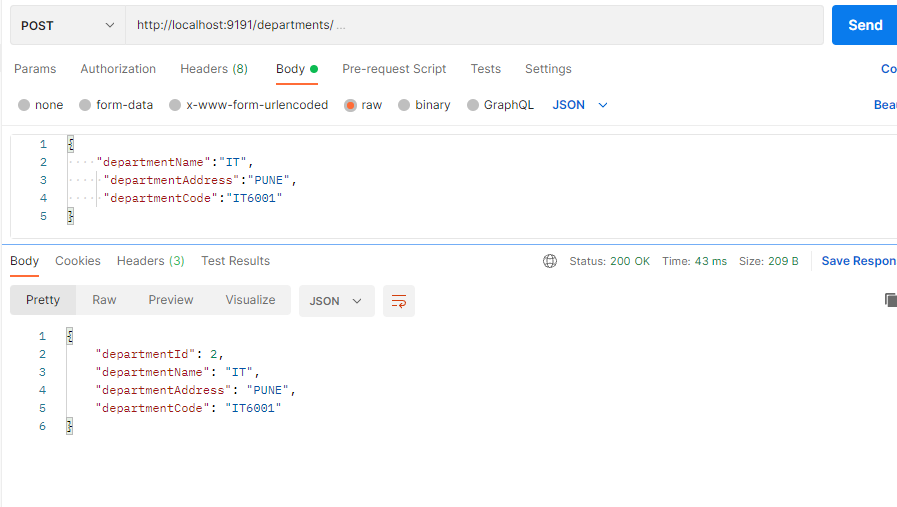
**Port Information**

|  |  |  |
| --- | --- | --- |
| Sr No | Service Name | Port Number |
| 1 | Department Service | 9001 |
| 2 | User Service | 9002 |
| 3 | Eureka Server | 8761 |
| 4 | Api Gateway | 9191 |
| 5 | Hystrix Dashboard | 9295 |
| 6 | Config Server | 9296 |

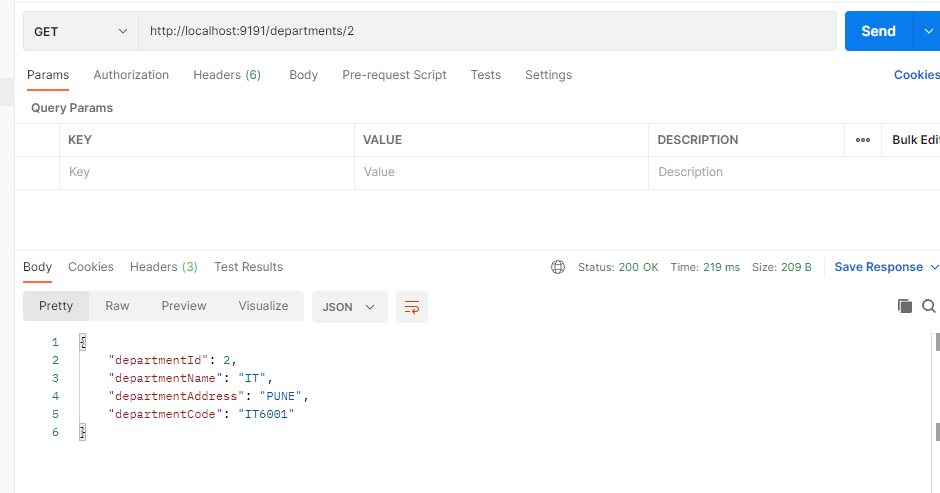
After starting all services, Eureka service will have look like this  


**Executing Requests via Api Gateway**

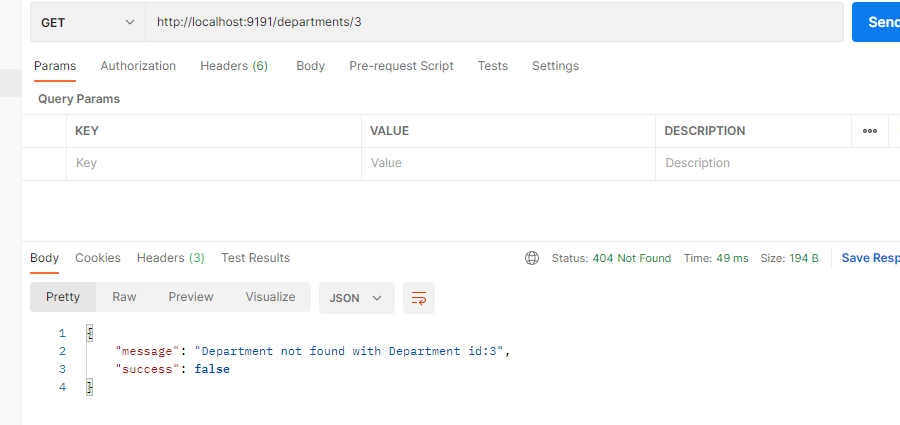
1)Adding a Department



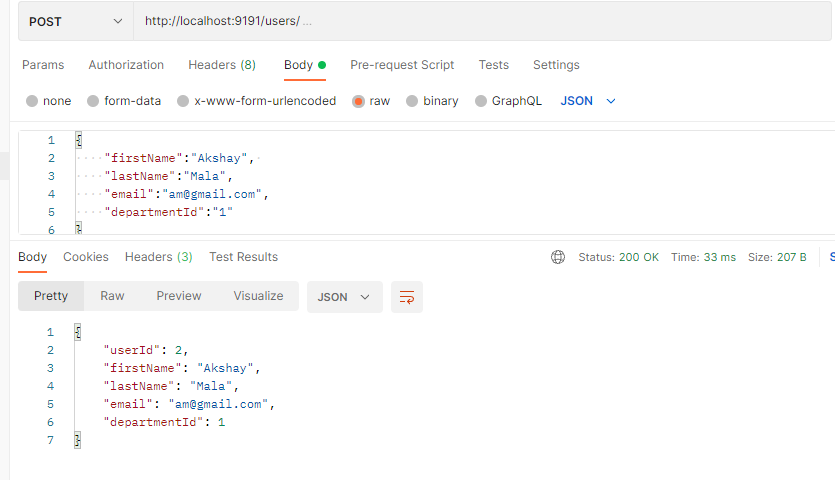
2)Get department information



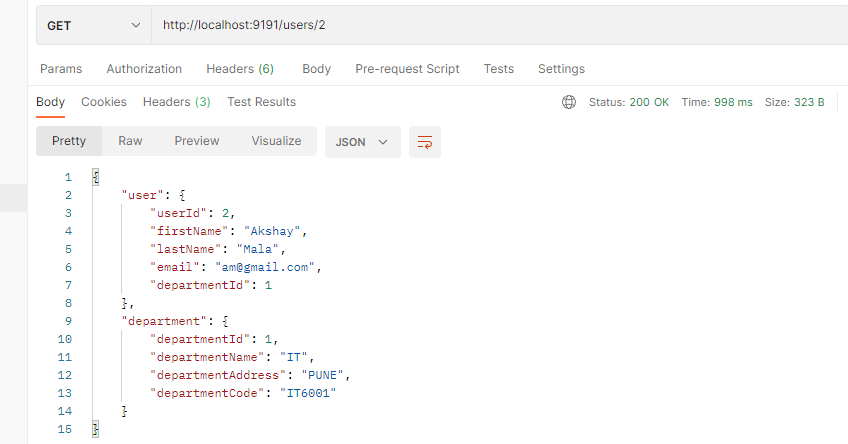
3)Trying to Get Department that doesn’t exist



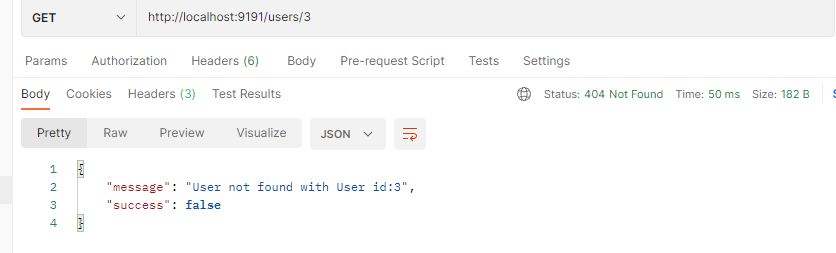
4)Creating User Detail



5)Getting User Detail



6)Trying to get User that doesn’t exist



7)If Department Service goes down, User tries to get department details, then circuit breaker will handle failure and give below error message.

