Micro-services Architecture

Micro service is a software development technique. Micro service as the name depicts, the services are small in size, independently deployable, loosely coupled, performs small specific tasks (goals) and highly maintainable. It can be created by any programming languages, databases, hardware and software equipment based on its environment.

In Micro-service Architecture, an application is divided into a number of services where each service will perform a specific task. Each service is developed, deployed and tested individually by a small team. Then, the services are integrated to form an application using API. Thus, developing an application can't look that much difficult while it is divided int simple tasks. Simply, we can say that it is similar to incremental approach in a software development process.

Let us consider an example for developing an online shopping application. Initially, we should understand the business capabilities of this application clearly. Second thing is to divide the application into number of services (focus on specific task). Services are Account service, Inventory service, Shipping service and Storefront web. Three databases are created to maintain Inventory, Shipping and Account. Thus, the architecture of the product is shown in figure 1.

Each service of this application is developed and deployed simultaneously by small team individually on different platform. Deployment of this services proves that it is error free. These developed services are integrated using API(Application Program

Interface). Integration of services in incremental manner helps in easy identification of error.

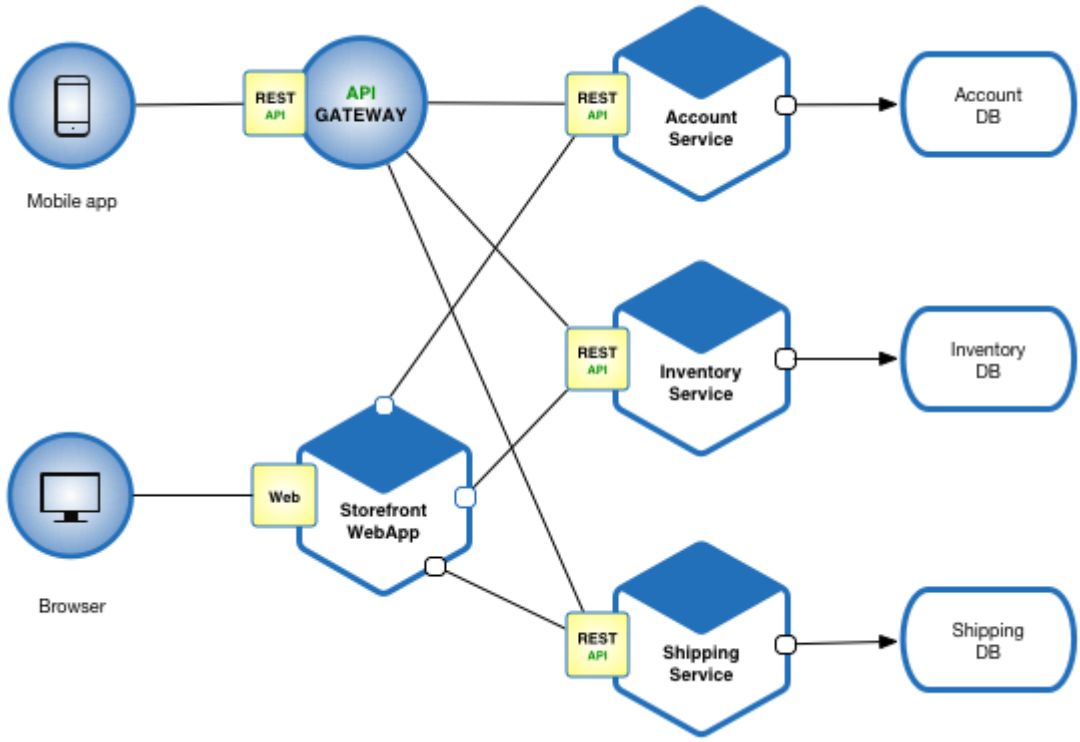

Figure 1 Online Shopping Architecture

It is very important to hide any complexity and implementation details of service. We should have a clear idea about what should be exposed to client, what should be hide to client and so on. In the above architecture, Inventory service need to know some details of Account service to check the payment. We should not link Account and Inventory services directly because the data in Account service should be kept confidentially thus, both the services are linked via StoreFront API.

Application

Micro service is adopted for cloud-native applications, serverless computing and application using light weight container deployment. Some real-time application of Microservice are amazon, Spotify, PayPal, Walmart, Passport scan,..

Benefits:

- ✓ **Small in size** – Services makes the Application to look like small while developing each service.
- ✓ **Focussed** –Each service will focus on specific function thus, focus of one service cannot be diverted at any case.
- ✓ **Autonomous** –Each service can be developed and deployed independently thus, changes in one service do not affect any other services.
- ✓ **Easy deployment** –Deployment of service is very easy as it is specific.

Difference Between SOA and MSA

Component	SOA	Micro-Service Architecture
Design pattern	SOA is a design paradigm for computer software.	Micro Service is a part of SOA. It is a specialized implementation of SOA.
Dependency	Services are dependent on each other.	All services are independent of each other.
Size	Software size is big.	Software size is small.
Deployment	It is time-consuming.	It is very easy.
Nature	Monolithic in nature	Full stack in nature
Focus	Built to perform multiple task.	Built to perform particular task.
Cost	More cost effective.	Less cost effective.
Scalability	Less scaled compared to Microservices.	Fully scaled.