What are microservices?

Microservices is an approach to developing a single application as a suit of small services, each running in its own process and communicating with light weight mechanisms, built around business capabilities and independently deployable by fully automated deployment machinery.

Advantages:

* Easy to develop, test, and deploy.
* Increase agility.
* Ability to scale horizontally.
* Parallel development
* Modeled around a business domain.

Dis-Advantages:

* Complexity
* Infrastructure overhead
* Security concerns

**Monolithic V/s SOA V/s Microservices**

What is monolithic?

Back a decade, all the applications used to be deployed as a single unit where all functionality deployed together inside a single server. We call this architecture approach as Monolithic.

Advantages:

* Simpler development and deployment for smaller teams and applications
* Fewer cross-cutting concerns
* Better performance due to no network latency

Dis-Advantages:

* Difficult to adopt new technologies.
* Limited agility
* Single code base and difficult to maintain.
* Not Fault tolerance.
* Tiny update and feature development always need a full development.

**The SOA (Service-Oriented Architecture):**

|  |  |  |  |
| --- | --- | --- | --- |
| **FEATURES** | **MONOLITHIC** | **SOA** | **MICROSERVICES** |
| Parallel development | Low | Medium | High |
| Agility | Low | Medium | High |
| Scalability | Low | Medium | High |
| Usability | Low | Medium | High |
| Complexity & Operational Overhead | Low | Medium | High |
| Security Concerns & Performance | Low | Medium | High |

**Docker**

docker build . -t docker\_account\_username/name:tag\_name

mvn spring-boot:build-image

docker run -d -p 8081:8080 reposityory\_name:tag\_name

docker ps

docker images

docker image push docker.io/reposityory\_name/tag\_name

docker compose up -d

docker compose down