COMP 9322
Software Service Design and Engineering

Lecture 4 – Part1 Cloud Services and Serverless Computing

What is Cloud Computing

- the delivery of on-demand computing resources — everything from applications to data centres — over the internet on a pay-for-use basis.
- Why?
  - Elastic resources — Scale up or down quickly and easily to meet demand
  - Metered service so you only pay for what you use
  - Self service — All the IT resources you need with self-service access

https://www.ibm.com/au-en/cloud/learn/what-is-cloud-computing

How Cloud Computing can be Deployed

- Public Cloud (e.g., AWS)
- Private Cloud
- Hybrid Cloud

Types of Cloud Offerings

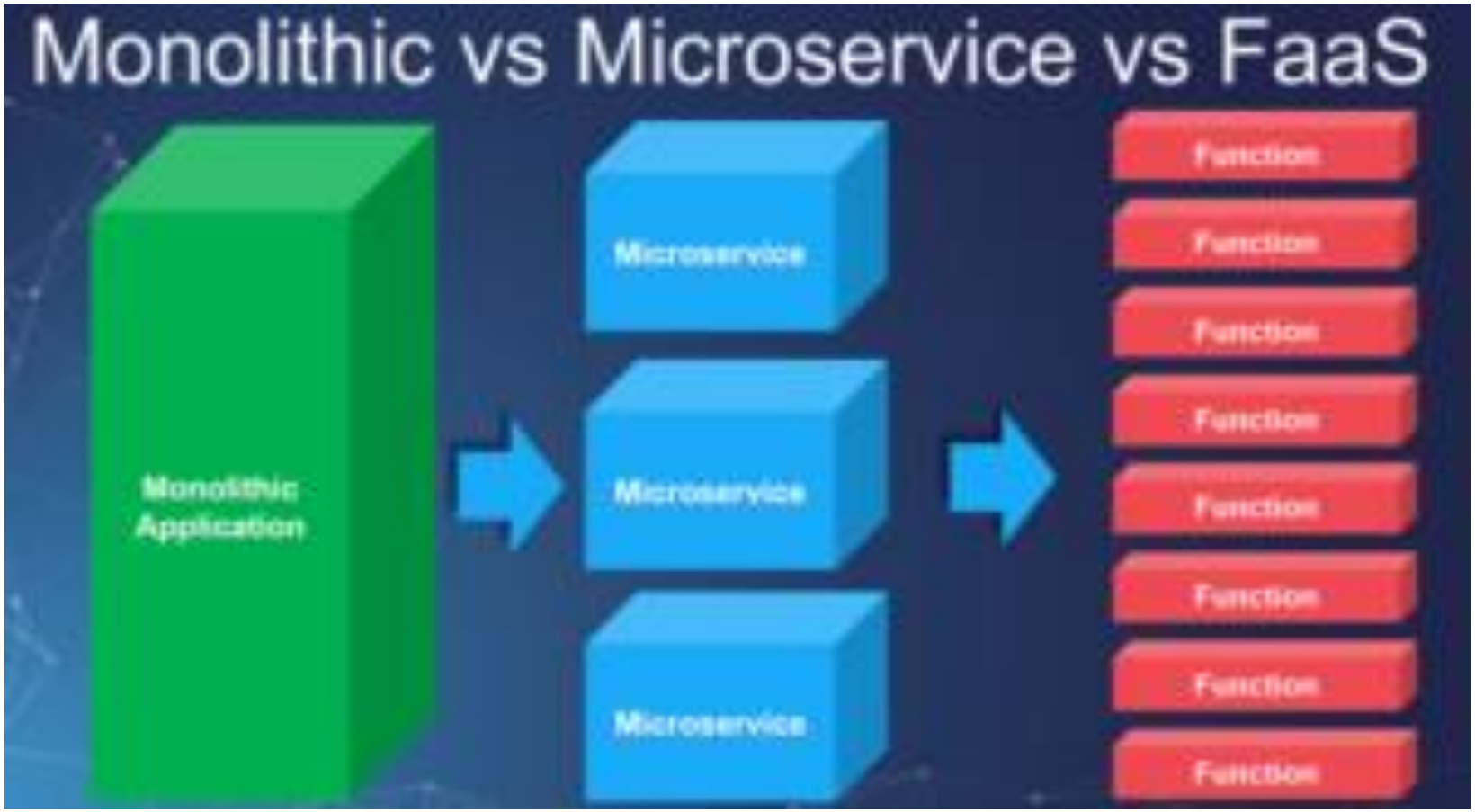
- Infrastructure as a Service (IaaS) (e.g., AWS EC2)
- Platform as a Service (PaaS) (e.g., Heruku)
- Software as a Service (SaaS) (e.g., Facebook)
- Function as a Service (FaaS) (e.g., AWS Lambda)

Function as a Service (Serverless Computing)

- It is a cloud computing model which aims to abstract server management and low-level infrastructure decisions away from developers. In this model, allocation of resources is managed by the cloud provider instead of the application architect.

Pros	Cons
Cost	Not cost effective for long running process
Management	Security issues
Easily scalable	Vendor Lock
Quick Deployment	

Monolithic vs Microservice vs FaaS



https://medium.com/@BoweiHan/an-introduction-to-serverless-and-faas-functions-as-a-service-fb5cec0417b2

AWS Lambda example

```
def handler_name(event, context):
    ...
    return some_value
```

```
def my_handler(event, context):
    message = 'Hello {} {}!'.format(event['first_name'],
                                    event['last_name'])
    return {
        'message' : message
    }
```

Check: https://docs.aws.amazon.com/lambda/latest/dg/python-programming-model-handler-types.html
And
https://medium.com/devopslinks/aws-lambda-serverless-framework-python-part-1-a-step-by-step-hello-world-4182202aba4a

Can We implement Microservices as Serverless Functions?

Can We implement Microservices as Serverless Functions?

- Answer: Yes but it depends
  - How fine grained is your microservice
  - Are you adding extra cost to mange the microservices
  - How many functions do you need?

  - Example:

https://serverless.com/blog/flask-python-rest-api-serverless-lambda-dynamodb/

Can We implement Chatbots using Serverless Functions?

Can We implement ChatBots using Serverless Functions?

- Answer: it looks like it as AWS has their Serveless Bot Framework (https://aws.amazon.com/about-aws/whats-new/2018/07/introducing-the-serverless-bot-framework/)

- More to come…

Questions?