**Devops for Java Devlopers**

**What is a microservice?**

Microservice is a small and focused that is also autonomous, that is it can be built and deployed on its own without impacting other services. Each microservices communicates with each other with API network calls.

**What are advantages using microservices ?**

1. **Heterogenous** : Each of our microservice can be written in a different programming language and they can run on different platform or operating system and they communicate with APIs they expose.
2. **Robustness** : When one microservice is down its wont effect the whole application.
3. **Scalability** : If huge load is coming for one or two microservice we need to just deploy an another for that two services only, but in case of monolith application whole application must be deployed.
4. **Reusability and Replaceable** : One microservice can be used by another microservices and if we want to replace an microservice with third party vendor it will be easy.

**What is cloud computing?**

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. Large clouds often have functions distributed over multiple locations, each location being a data center.

In the simplest terms, cloud computing means storing and accessing data and programs over the internet instead of your computer's hard drive. ... When you store data on or run programs from the hard drive, that's called local storage and computing.

Types of Cloud :

* public : AWS, GCP, AZURE
* private : DELL, 3M, Siemens
* Hybrid: public + private

CLOUD PROVIDERS: Cloud providers are like AWS, GCP, AZURE and they provide cloud computing platform.

**Service Models** : A service model is the way that a firm offers intangible value to customers.

Cloud computing is offered in three different service models which each satisfy a unique set of business requirements. These three models are known as Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).

Graphical user interface, application

Description automatically generated

**IaaS** : When you use IaaS you need take care from O/S to Application, , and rest i.e from Networking to Virtualization will be taken care by cloud provider.

**PaaS** : When you use PaaS, you need to take care Application and data, and rest i.e from Networking to runtime will be taken care by cloud provider.

**Saas** : When you use Saas we need concentrate only on Application and rest everything will be taken care by cloud provider.

**AWS**

IAM user : Identity And Access Management.

**EC2 : Elastic cloud compute**

Steps to lauch an EC2 instance :

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](https://aws.amazon.com/ec2/instance-types/) about instance types and how they can meet your computing needs.

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](https://docs.aws.amazon.com/console/ec2/launchinstance/storage) about storage options in Amazon EC2.

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.  
A copy of a tag can be applied to volumes, instances or both.

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below.

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**SSH** : SSH stands for Secure Shell, it uses port 22 to communicate between client and remote machine.