**CLOUD COMPUTING**

* All clouds are data centers made up of compute and storage resources connected by a network. these data centers are virtual, which you can’t access them physically. Cloud computing can be high efficiency and less cost that traditional data centers.
* You just have to pay and use the predefined infrastructures and services rather than building your own, just like electricity.
* In simple words **“RENT RATHER THAN BUY”.**
* Benefits of cloud computing:

**Pay per use.**

**Elasticity.**

**Scalability.**

**Security.**

* Cloud computing has 3 types:

**PUBLIC CLOUD** = These public cloud will hosted by a cloud service provider remotely. The customer has limited visibility and no control over the computing infrastructure. But, you can use these services anytime from the internet. In public cloud, several organizations share the computing resources. But, each organizations data, application and infrastructure are separated by others and can be accessed only that organization’s authorized personal.

**PRIVATE CLOUD** = These private cloud will be hosted by organization itself in a separate data center, which is not exposed to public. So, only the organization has access to it and can manage it.

**HYBRID CLOUD =** It is a combination of both public and private cloud. Where sensitive application resides in private cloud, which can be accessed only by organization and other services hosted in public cloud which can be accesses by public over the internet.

* Types of cloud computing services:

**SaaS (software as a service)** = It is a software distribution model, where cloud provider hosts applications and makes them available to the customers over the internet. These applications often called as **“web services”.**

Ex: salesforce, netsuite.

**IaaS (infrastructure as a service) =** cloud provider hosts servers, storage and virtualized computing and make them available to customers over the internet.

Ex: aws, azure, google app engine.

**PaaS (platform as a service)** = Cloud provider hosts application development platforms and tools on its own infrastructure and makes them available to customers over the internet.

Ex: aws elastic beanstalk, google app engine.

**CONNECT TO EC2 WITHOUT KEY-PAIR**

* For the first time, login with key pair and create a password for the users and root.
* Set **PASSWORD AUTHENTICATION YES** in **/etc/ssh/sshd\_config** file.
* To login with root user, uncomment the **root permit** line in /etc/ssh/sshd\_config file.
* Logout of the instance and connect to instance without key-pair. It will ask that user password. Enter the correct password and that's it.

**CONNECT TO EC2 IF KEY-PAIR IS LOST**

* If you lost a key-pair for an instance, you can't restore the key-pair. But there are methods to connect to that instance without key-pair.
* If you created a password for user you can login without key-pair. but if you didn't have password . There are two methods :
* **1**. Create an image from that instance and create an new instance from that image with a new key-pair.
* **2**. Stop the instance. Create a new instance, Detach the root volume of old instance and attach it to new instance and mount it.
* Login to new instance. Copy the key-pair of new instance which is present in ssh/authorized\_keys and paste it in the old volume **/ssh/authorized\_keys** directory.
* Do this process in both root and normal users. Before copying the new key-pair remove the old key-pair in both users.
* Remove the old volume from the instance and attach it to its original instance and make it as root volume.
* Now You can successfully connect to old instance with this new key-pair.