

# Amazon Web Services

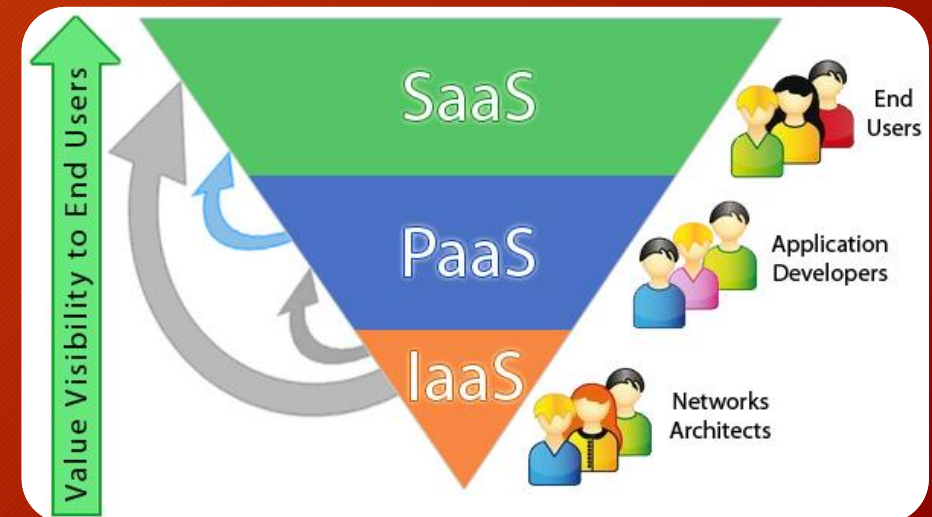


Peter Alagna Jr.

# Cloud Computing



- IT Infrastructure on the internet (cloud).
- It can be:
  - IaaS: Infrastructure as a service.
    - *Processors, Memory, Hard Drives, Operating Systems.*
    - *Resiliency and Scalability.*
  - PaaS: Platform as a service.
    - *Application Servers, Web Servers, Database Systems.*
  - SaaS: Software as a service.
    - *Salesforce, Oracle, SAP.*

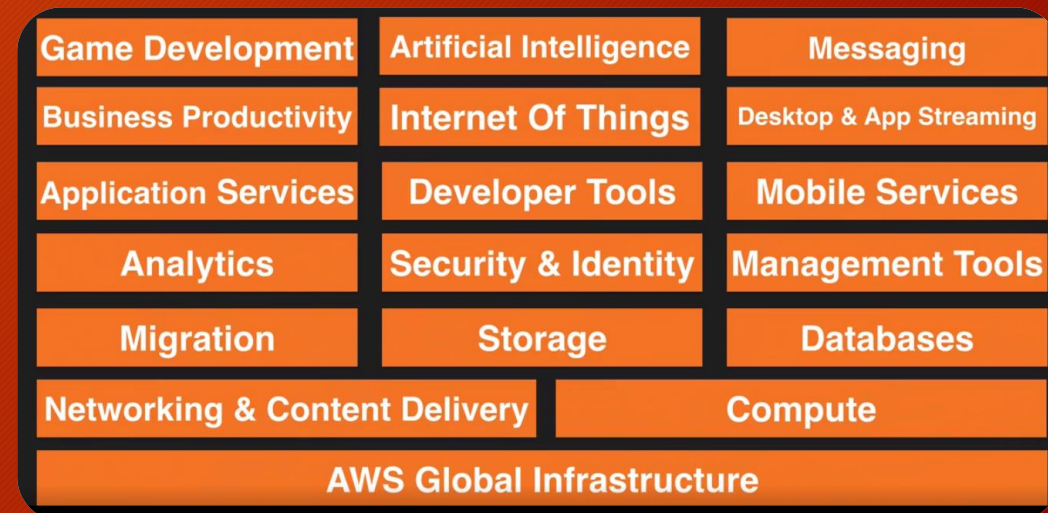




# Amazon Web Services (AWS)



- Cloud computing services.
- It offers IaaS and PaaS.
- Currently has 16 regions and 44 availability zones.
- It provides hundreds of different services that grow every year.
- Leading the cloud computing industry for many years.
- Pay for what you use.



# Elastic Cloud Compute (EC2)



- Virtual machines in the cloud.
- It offers four payment types:
  - On Demand, Reserved, Spot, Dedicated hosts.
- It offers ten types specialized in different things:
  - D (Density), R (RAM), M (General), C (Computation), G (Graphics), I (IOPS), F (Code Optimization), T (Micro), P (Pictures), X (Xtreme RAM).
- It can use **Instance Store** (part of the instance) or **Elastic Block Stores (EBS)** for storage.
- It can use **Amazon Machine Images (AMI)** to be started in a certain form (specific OS, specific configuration).





# Elastic Block Store (EBS)



- Virtual volume attached to one EC2 at a time.
- Block Based Storage.
  - We are talking about volumes.
- Can be copied as Snapshots.
  - These snapshots can be stored in S3 for example.
- They can be SSD, HDD and Magnetic type of storage.
  - There are optimized IOPS versions for SSD and HDD.



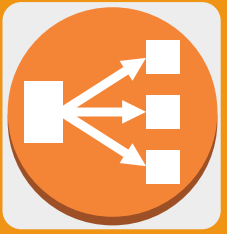
# Amazon Machine Image (AMI)



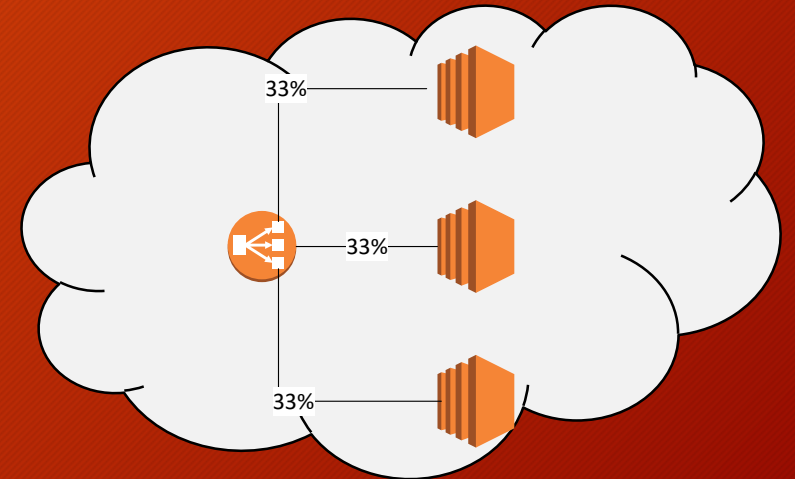
- Provides the information required to launch an instance (EC2).
- AWS offers many base AMI's for EC2 launching.
- You can create your own AMI's based on an EBS snapshot.
  - This way you can dynamically deploy multiple EC2's with the same configuration with Autoscaling.



# Elastic Load Balancer (ELB)



- Balances the load of instances (equitably) that are behind it.
- Makes your infrastructure more resilient (highly available).
- There are two types:
  - Application Load Balancer - Layer 7 (New).
  - Classic Load Balancer - Layer 4.

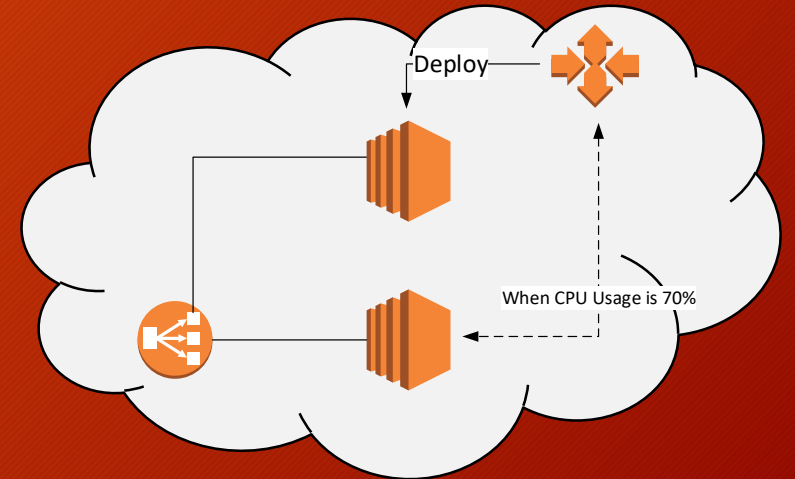




# Autoscaling



- Deploys or shuts down instances depending on a specific metric.
  - For example: when CPU usage reaches 70%.
- New instances can be deployed behind an ELB.
- Like ELB's, they provide your architecture with more resiliency.

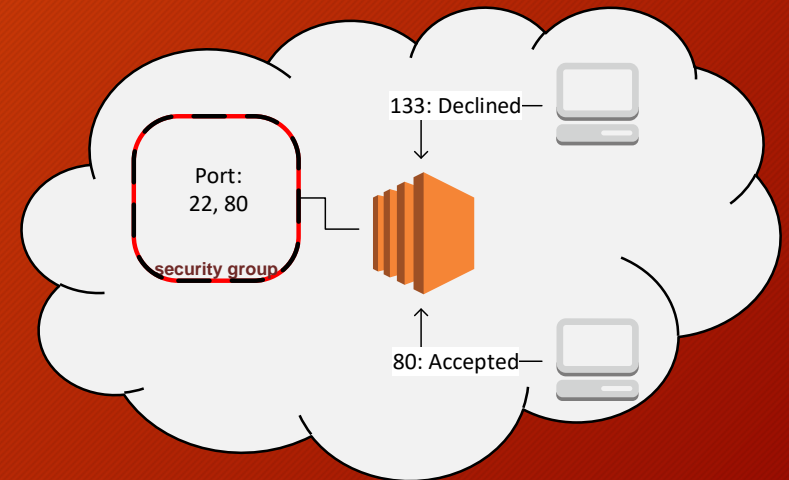




# Security Groups



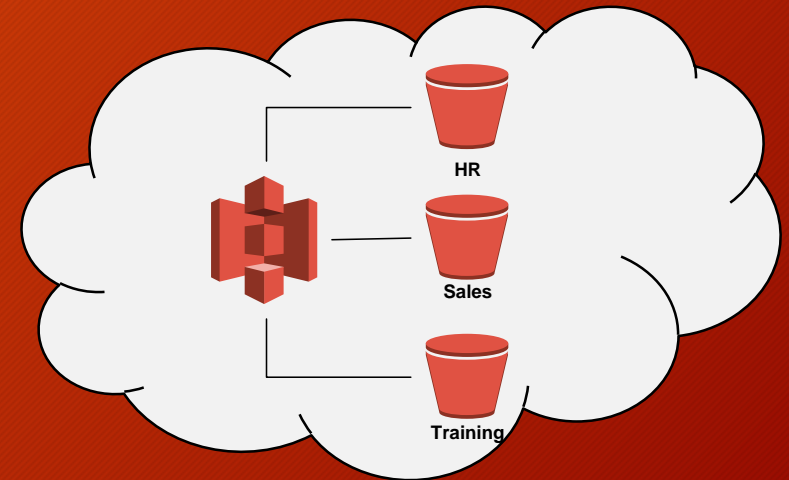
- All instances in AWS need to form part of a Security Group.
- They provide transport layer security for your instances.
- By default, all network traffic is denied.
  - You must open specific ports that your system needs.
  - Opening all ports is **INSECURE**.
- Many of your instances can use the same Security Group.



# Simple Storage Service (S3)



- Provides highly available and scalable cloud storage out of the box.
- Object Based Storage.
  - Objects are: plain files, images, videos, etc.
- Objects are stored in Buckets.
- Handles cross-region replication and versioning.
- User friendly web interface and very cheap.
- Dropbox uses S3 for it's infrastructure.





# Relational Database Service (RDS)



- Out of the box database systems in the cloud deployed and preconfigured in EC2 instances.
- AWS handles the updates and maintenance.
- Automatic backups periodically.
- Is not resilient by default.
  - Multi Availability Zone or Read Replicas are needed.
- Many different RDBMS available.



# Materials



- Tutorial videos: [https://aws.amazon.com/training/intro\\_series/](https://aws.amazon.com/training/intro_series/)
- Certification Preparation: <https://acloud.guru/>