AWS Certified Cloud Practitioner Certification

IAAS

Infrastructure As A Service (IAAS) is means of delivering computing infrastructure as on-demand services. It is one of the three fundamental cloud service models. The user purchases servers, software data center space, or network equipment and rent those resources through a fully outsourced, on-demand service model. It allows dynamic scaling and the resources are distributed as a service. It generally includes multiple-user on a single piece of hardware.
It totally depends upon the customer to choose its resources wisely and as per need. Also, it provides billing management too.

PAAS

Platform As A Service (PAAS) is a cloud delivery model for applications composed of services managed by a third party. It provides elastic scaling of your application which allows developers to build applications and services over the internet and the deployment models include public, private and hybrid.
Basically, it is a service where a third-party provider provides both software and hardware tools to the cloud computing. The tools which are provided are used by developers. PAAS is also known as Application PAAS. It helps us to organize and maintain useful applications and services. It has a well-equipped management system and is less expensive compared to IAAS.

SAAS

Software As A Service (SAAS) allows users to run existing online applications and it is a model software that is deployed as a hosting service and is accessed over Output Rephrased/Re-written Text the internet or software delivery model during which software and its associated data are hosted centrally and accessed using their client, usually an online browser over the web. SAAS services are used for the development and deployment of modern applications.
It allows software and its functions to be accessed from anywhere with good internet connection device and a browser. An application is hosted centrally and also provides access to multiple users across various locations via the internet.

Multiple regions Advantage

- Low Latency
- Global Footprint
- Adhere to government regulations
- High Availability

Availability Zones

- Each AWS Region consists of multiple, isolated, and physically separate AZ's
- Availability Zones in a Region are connected through low-latency links
- Each Availability Zone: Can have One or more discrete data centers has redundant power, networking, and connectivity
- (Advantage) Increase availability and fault tolerance of applications in the same region
- (Advantage) Achieve high availability and greater fault-tolerance

EC2 (Elastic Compute Cloud

- Create and manage lifecycle of EC2 instances
- Attach storage (& network storage) to your EC2 instances
- Manage network connectivity for an EC2 instance
- Load balancing and auto scaling for multiple EC2 instances

AMI - Amazon Machine Image

- What operating system and what software do you want on the instance?
- Three AMI sources: Provided by AWS
- AWS Market Place: Online store for customized AMIs. Per hour billing
- Customized AMIs: Created by you.

Instance Families

- Optimized combination of compute(CPU, GPU), memory, disk (storage) and networking for specific workloads
- 270+ instances across 40+ types for different workloads

Security Groups

- Virtual firewall to control incoming and outgoing traffic to/from AWS resources (EC2 instances, databases etc)
- Provides additional layer of security - Defense in Depth

EC2 Security - Key Pairs

- EC2 uses public key cryptography for protecting login credentials
- Key pair - public key and a private key
- Public key is stored in EC2 instance
- Private key is stored by customer

IP addresses

- Public IP addresses are internet addressable.

- Private IP addresses are internal to a corporate network
- You CANNOT have two resources with same public IP address. HOWEVER, two different corporate networks CAN have resources with same private IP address
- All EC2 instances are assigned private IP addresses (Remember) When you stop an EC2 instance, public IP address is lost

Amazon S3 - Cloud Object Storage

Object storage built to retrieve any amount of data from anywhere

- Most popular, very flexible & inexpensive storage service
- Store large objects using a key-value approach Also called Object Storage Provides REST API to access and modify objects

Provides unlimited storage:

- (S3 storage class) 99.99% availability & (11 9's - 99.999999999) durability
- Objects are replicated in a single region (across multiple AZs)
- Store all file types - text, binary, backup & archives:
- Media files and archives
- Application packages and logs
- Backups of your databases or storage devices
- Staging data during on-premise to cloud database migration

Different kinds of data can be stored in Amazon S3

- Media files and archives
- Application packages and logs
- Backups of your databases or storage devices
- Long term archives
- Huge variations in access patterns
- Trade-off between access time and cost
- S3 storage classes help to optimize your costs while meeting access time needs

Amazon S3 Storage Class

Storage Class   ====   Scenario AZs

Standard   =Frequently accessed data >=3

Standard-IA =Long-lived, infrequently accessed data (backups for disaster recovery) >=3

One Zone-IA =Long-lived, infrequently accessed, non-critical data (Easily re-creatable data - thumbnails for images) 1

Intelligent-Tiering =Long-lived data with changing or unknown access patterns >=3

Glacier =Archive data with retrieval times ranging from minutes to hours >=3

Glacier Deep Archive = Archive data that rarely, if ever, needs to be accessed with retrieval times in hours >=3

Reduced Redundancy (Not recommended) = Frequently accessed, non-critical data

Elasticity:-

The ability to acquire resources as you need them and release resources when you no longer need them. In the cloud, you want to do this automatically.

Availability:- The percentage of time that a workload is available for use where "available for use" means that it performs its agreed function when required. Availability (also known as service availability) is a commonly used metric to quantitatively measure reliability

Reliability:- The ability of a workload to perform its intended function correctly and consistently when it's expected to. This includes the ability to operate and test the workload through its total lifecycle.

Durability:- The ability of a system to remain functional when faced with the challenges of normal operation over its lifetime.

AWS Billing and cost Management:- Billing and Cost Management is a web service that provides features that helps you pay your bills and optimize your costs. Amazon WebServices bills your account for usage, which ensures that you pay only for what you use.