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1 EC2 (Elastic compute cloud)

Amazon EC2 (Elastic Compute Cloud) is a web service by AWS that provides scalable virtual servers, known as instances, in the cloud. It allows users to run applications flexibly without investing in physical hardware. With various instance types, customizable operating systems, and pay-as-you-go pricing, EC2 supports a wide range of use cases including web hosting, machine learning, and data processing.

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2 Identity and Access Management- IAM

AWS Identity and Access Management (IAM) is a service that enables you to securely manage access to AWS services and resources.

2.1 Features:-

1. IAM is provided at no additional cost i.e it is free to use.
2. It manages all permissions from a single place.
3. It enhances security with multi-factor authentication.

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3 Global Infrastucture

AWS is built on a global network of data centers to deliver high availability, fault tolerance, and low latency.

3.1 Region

A Region is a geographic area that contains multiple data centers. Each region is isolated from others to provide data sovereignty and fault isolation. You choose a region to deploy resources closer to your users or to comply with local regulations.

3.2 Availablity Zones

An Availability Zone is one or more physically separate data centers within a region. Each zone has independent power, networking, and cooling. Zones are connected with low-latency, high-bandwidth links. Using multiple zones increases fault tolerance and high availability.

3.3 Edge Location

Edge Locations are data centers that deliver content to end users with low latency. It is used primarily by services like Amazon CloudFront (CDN) and AWS Global Accelerator. They cache copies of your content closer to users for faster performance.It is located in hundreds of cities globally, beyond AWS regions and AZs.

3.4 Point of Location

A Point of Presence includes both Edge Locations and Regional Edge Caches. PoPs are the network endpoints for AWS services like CloudFront, Route 53, and WAF. They help optimize performance and reliability for global users. PoPs work to reduce latency, improve throughput, and handle DNS and DDoS protection.

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4 VPC-Virtual Private Cloud

Amazon VPC allows you to launch AWS resources in a logically isolated virtual network that you define. You have full control over your networking, including IP address ranges, subnets, route tables, and gateways.

4.1 Subnet

A subnet is a segment of a VPC's IP address range where you can place AWS resources like EC2 instances.

4.1.1 Public Subnet

It is connected to the Internet via an Internet Gateway (IGW).The resources (like EC2 instances) in this subnet can send/receive traffic from the internet.It is used for web servers, bastion hosts, etc.

4.1.2 Private Subnet

It hs no direct internet access. It is typically used for databases, internal services, or backend servers.It can access the internet indirectly via a NAT Gateway/Instance (for updates, etc.).

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5 S3 -Simple Storage Service

Amazon S3 (Simple Storage Service) is a highly scalable, durable, and secure object storage service provided by AWS. It allows users to store and retrieve any amount of data from anywhere on the internet. Data in S3 is stored as objects within buckets, with each object containing the data itself, metadata, and a unique identifier. S3 offers multiple storage classes to optimize cost and performance based on usage patterns, including options for frequent access, infrequent access, and long-term archival