AWS Services:

Amazon EC2 (Elastic Compute Cloud)

Amazon EC2 is a core component of Amazon Web Services (AWS) that provides scalable computing capacity in the cloud. It allows users to deploy virtual machines, known as EC2 instances, which can be configured to meet specific needs regarding hardware, operating systems, and applications.

- Virtual Machines in Cloud: EC2 instances are essentially virtual servers that run in the AWS cloud, allowing users to launch as many or as few as needed.
- Deployment of Servers: Users can deploy their own servers in the cloud without needing to invest in physical hardware.
- OS-Level Control: EC2 provides users with control over the operating system and hardware configurations. AWS manages updates related to hardware and the operating system.

AWS Snowball

AWS Snowball is a data transfer solution designed to move large amounts of data into and out of AWS securely and efficiently. It is particularly useful for transferring terabytes to petabytes of data when network conditions are inadequate.

- Data Transfer Process:
    1. Create a job for transferring data via the AWS Management Console.
    2. Connect the Snowball appliance to your local network.
    3. Copy the data to the Snowball appliance.
    4. Once completed, return the appliance to AWS, where the data is transferred to Amazon S3 (Simple Storage Service).
-

Amazon CloudWatch

Amazon CloudWatch is a monitoring service that provides visibility into resource utilization, application performance, and operational health within an AWS environment.

- Monitoring Metrics: CloudWatch collects metrics from various AWS resources like EC2 instances, RDS databases, etc., allowing users to visualize performance through charts and graphs.

- Alarms: Users can set alarms based on specific thresholds for metrics, enabling proactive monitoring and alerting based on resource performance.

Elastic Transcoder

Elastic Transcoder is an AWS service that facilitates media file conversion. It allows users to change video formats and resolutions for compatibility with various devices.

- Media File Conversion: Users can convert media files stored in Amazon S3 into formats suitable for different playback devices.

Virtual Private Cloud (VPC)

A Virtual Private Cloud (VPC) allows users to create isolated networks within the AWS environment. This setup enhances security and control over networking configurations.

- Networking Configuration: Users can define access permissions for different roles (e.g., HR, Sales, Development) within their organization.
- Security Features: VPCs utilize private IP addresses and internet gateways along with security groups to manage access and protect resources.

Amazon S3 (Simple Storage Service)

Amazon S3 is an object storage service that offers various storage classes tailored for different use cases:

- Storage Classes:
    - S3 Standard: For frequently accessed data.
    - S3 Infrequent Access: For less frequently accessed data.
    - S3 Reduced Redundancy Storage: For non-critical data with lower durability requirements.
    - Amazon Glacier: For archival storage at a lower cost.
-

Instance Types

EC2 instances come in various types designed for different workloads:

- T2 and T3 Instances: These instances provide moderate baseline performance with the ability to burst higher performance levels when needed.

Key Pairs and Security

AWS uses key pairs for secure login to EC2 instances:

- Key Pairs: Consist of a public key stored by AWS and a private key kept secure by the user. This cryptographic method ensures secure access to instances.

Types of Cloud Computing

Cloud computing can be categorized into three main types:

- Public Cloud: Services offered over the internet by third-party providers.
- Private Cloud: Dedicated infrastructure maintained within an organization.
- Hybrid Cloud: A combination of public and private clouds, allowing for greater flexibility and resource optimization.

Cloud Service Models

Cloud services are structured into several models based on their offerings:

- Software as a Service (SaaS): Applications delivered over the internet (e.g., Gmail, Salesforce).
- Platform as a Service (PaaS): Platforms for developing applications without managing underlying infrastructure (e.g., Microsoft Azure).
- Infrastructure as a Service (IaaS): Virtualized computing resources over the internet (e.g., AWS EC2).