**AMAZON WEB SERVICES**

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**INTRODUCTION:**

Amazon Web Services (AWS) offers a vast array of cloud computing services, catering to various needs of businesses and developers. Here's a breakdown of some key AWS services.

**VARIOUS SERVICES:**

1. Compute Services
2. Storage Services
3. Database Services
4. Networking Services
5. Developer Tools
6. Security and Identity Service

**Compute Services:**

Compute services in AWS provide scalable computing resources for running applications and workloads in the cloud.

**1. Amazon EC2 (Elastic Compute Cloud):**

* Virtual servers in the cloud, offering scalability and flexibility.
* Users have complete control over computing resources and can choose from various instance types and pricing options.

**2. AWS Lambda:**

* Serverless compute service that executes code in response to events.
* Users upload code, and AWS Lambda handles scaling and resource management automatically.

**3. Amazon ECS (Elastic Container Service):**

* Managed container orchestration service for Docker containers on EC2 instances or AWS Fargate.
* Simplifies the deployment and management of containerized applications at scale.

**4. AWS Batch:**

* Service for running batch computing workloads in the cloud.
* Automatically scales compute resources based on workload demands, managing dependencies and scheduling.

**Storage Services:**

The storage service provided by the AWS are explained below

**1. Amazon S3 (Simple Storage Service):**

* Highly scalable object storage.
* Offers multiple storage classes for cost-effectiveness.
* Industry-leading durability and availability.

**2. Amazon EBS (Elastic Block Store):**

* Block-level storage volumes for EC2 instances.
* Persistent and high-performance storage.
* Replicated within Availability Zones for durability.

**3. Amazon Glacier:**

* Low-cost storage for long-term data archiving.
* Three retrieval options: Expedited, Standard, and Bulk.
* Suitable for compliance and regulatory requirements.

**4. Amazon EFS (Elastic File System):**

* Fully managed file storage for EC2 instances.
* Supports NFSv4 protocol and scales automatically.
* Ideal for shared file storage needs.

**5. Amazon FSx (File System):**

* Fully managed file storage for Windows File Server and Lustre file systems.
* Integrates with other AWS services like AWS Backup and AWS Directory Service.
* Suitable for Windows-based applications and high-performance computing.

**Database Services:**

**Amazon RDS (Relational Database Service):**

* Managed service for relational databases like MySQL, PostgreSQL, Oracle, SQL Server, and Amazon Aurora.
* Automates database provisioning, patching, backups, and scaling.
* Offers high availability and durability with multi-AZ deployments.

**Amazon DynamoDB:**

* Fully managed NoSQL database service.
* Provides seamless scalability and high availability.
* Supports key-value and document data models.

**Amazon Aurora:**

* High-performance, fully managed relational database compatible with MySQL and PostgreSQL.
* Offers up to five times the performance of standard databases.
* Provides automatic failover and replication across multiple AZs.

**Amazon Redshift:**

* Fully managed data warehousing service for analytics and BI workloads.
* Utilizes columnar storage and MPP architecture for high query performance.
* Integrates with popular BI tools for data visualization and analysis**.**

**Networking Services:**

**Amazon VPC (Virtual Private Cloud):**

* Allows you to create a virtual network in the AWS cloud with customizable IP address range, subnets, and routing tables.
* Provides isolation and security for your AWS resources.
* Enables connectivity between your AWS resources and your on-premises network using VPN or Direct Connect.

**Amazon Route 53:**

* Scalable DNS web service for domain name resolution.
* Offers routing policies for traffic management, such as weighted, latency-based, and geolocation routing.
* Integrates with other AWS services for seamless DNS management.

**Amazon CloudFront:**

* Content delivery network (CDN) service for fast and secure content delivery.
* Caches content at edge locations close to end-users for reduced latency.
* Supports secure delivery of content over HTTPS and integrates with AWS WAF for enhanced security.

**AWS Direct Connect:**

* Provides dedicated network connections between your datacenter and AWS.
* Offers private connectivity for improved security, reliability, and performance.
* Suitable for hybrid cloud deployments and large data transfers requiring low latency.

**AWS VPN (Virtual Private Network):**

* Establishes encrypted VPN tunnels over the internet between your on-premises network and Amazon VPC.
* Provides secure communication for remote users or entire networks.
* Supports site-to-site VPN connections and client VPN connections.

**Security and Identity Services:**

**AWS IAM (Identity and Access Management):**

* Manages access to AWS services and resources securely.
* Allows creation of users, groups, and roles with granular permissions.
* Supports multi-factor authentication (MFA) and identity federation.

**Amazon GuardDuty:**

* Managed threat detection service for AWS accounts.
* Continuously monitors for malicious activity and unauthorized behavior.
* Provides detailed findings and integrates with AWS CloudWatch and Lambda.

**AWS WAF (Web Application Firewall):**

* Protects web applications from common exploits and vulnerabilities.
* Allows creation of custom rules to filter and monitor HTTP/HTTPS requests.
* Integrates with CloudFront, ALB, and API Gateway for edge or cloud-based protection.

**Developer Tools:**

**AWS CodeDeploy:**

* Automates code deployments to EC2 instances, Lambda functions, and on-premises servers.
* Allows you to deploy applications from GitHub, Bitbucket, or Amazon S3.
* Supports blue/green deployments for zero-downtime updates.

**AWS CodeCommit:**

* Fully managed source control service that hosts secure Git repositories.
* Provides collaboration features like pull requests, code reviews, and integrations with CI/CD pipelines.

**AWS CodePipeline:**

* Continuous integration and continuous delivery (CI/CD) service for automating software release pipelines.
* Integrates with CodeCommit, CodeBuild, CodeDeploy, and third-party tools.
* Allows you to create custom workflows with manual approval steps and parallel execution.