AWS Cloud Infrastructure

Topics : AWS
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Amazon Web Services (AWS) provides a comprehensive set of cloud computing services that collectively make up its cloud infrastructure. These services enable businesses and developers to build, deploy, and scale applications without the need to invest in and manage physical hardware. Here are key components of AWS cloud infrastructure:

1. **Compute Services:**
    - **Amazon EC2 (Elastic Compute Cloud):** Virtual servers in the cloud, allowing users to run applications and workloads.
    - **AWS Lambda:** Serverless computing service for running code without provisioning or managing servers.
2. **Storage Services:**
    - **Amazon S3 (Simple Storage Service):** Object storage service for scalable and secure storage of data.
    - **Amazon EBS (Elastic Block Store):** Block storage service for EC2 instances, providing persistent storage volumes.
    - **Amazon Glacier:** Low-cost, long-term storage service for data archiving and backup.
3. **Database Services:**
    - **Amazon RDS (Relational Database Service):** Managed relational database service supporting multiple database engines.
    - **Amazon DynamoDB:** Fully managed NoSQL database service for scalable and low-latency data storage.
    - **Amazon Redshift:** Fully managed data warehousing service for analytics.
4. **Networking:**
    - **Amazon VPC (Virtual Private Cloud):** Networking service that allows users to create isolated sections of the AWS Cloud.
    - **Elastic Load Balancing:** Distributes incoming application or network traffic across multiple targets for improved availability and fault tolerance.
    - **Amazon Route 53:** Scalable and highly available domain name system (DNS) web service.
5. **Security and Identity:**

- **IAM (Identity and Access Management):** Manages access to AWS services securely by defining and managing users and permissions.
- **AWS Key Management Service (KMS):** Manages encryption keys for securing data.
- **AWS WAF (Web Application Firewall):** Protects web applications from common web exploits.

6. **Management and Monitoring:**
   - **AWS CloudWatch:** Monitors resources and applications, collecting and tracking metrics, and creating alarms.
   - **AWS CloudTrail:** Records AWS API calls for auditing and compliance.
   - **AWS Config:** Tracks changes to AWS resources and ensures compliance with predefined policies.
7. **Developer Tools:**
   - **AWS CodeDeploy:** Automates code deployment to EC2 instances or on-premises servers.
   - **AWS CodePipeline:** Continuous integration and continuous delivery (CI/CD) service that automates the build, test, and deployment phases.
8. **Containers and Serverless:**
   - **Amazon ECS (Elastic Container Service):** Container orchestration service that supports Docker containers.
   - **Amazon EKS (Elastic Kubernetes Service):** Managed Kubernetes service for deploying, managing, and scaling containerized applications.
   - **AWS Fargate:** Serverless compute engine for containers, allowing you to run containers without managing the underlying infrastructure.
9. **AI and Machine Learning:**
   - **Amazon SageMaker:** Fully managed service for building, training, and deploying machine learning models.
   - **Amazon Polly:** Text-to-speech service that turns text into lifelike speech.
   - **Amazon Rekognition:** Image and video analysis service for object and facial recognition.
10. **Analytics and Big Data:**
    - **Amazon EMR (Elastic MapReduce):** Managed big data platform that uses popular frameworks such as Apache Spark and Hadoop.
    - **Amazon Athena:** Query service for analyzing data in Amazon S3 using SQL.
    - **Amazon Kinesis:** Real-time streaming data platform.
11. **Serverless Application Model (SAM):**
    - **Description:** An open-source framework for building serverless applications on AWS. It extends AWS CloudFormation to provide a simplified way of defining serverless applications.