A REVIEW PAPER ON AWS

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ABSTRACT

Amazon Web Services (AWS) is a cloud computing platform that offers a wide range of services, including computing power, storage, and database, to help businesses scale and grow. With AWS, complains can access resources on an as-needed basis, allowing them to only pay for what they use. This flexible and cost-effective model enables organizations to quickly deploy applications and scale their infrastructure without the need for large upfront investments in hardware. Additionally, AWS provides a secure and reliable environment for storing and managing data .Overall AWS empowers businesses to innovate and operate more efficiently by leveraging the power of cloud computing technology. Cloud computing has emerged as the preeminent computing platform for multiple enterprises. AWS is the most trusted provider of cloud computing which not only provides excellent cloud security but provides excellent cloud storage services. This is one of the major reasons many enterprises of choosing AWS cloud computing.

INTRODUCTION

Cloud computing is a technology that allows businesses to access and use computing resources, such as servers, databases, networking, software, and analytic, over the internet. This means that businesses no longer need to invest in physical infrastructure or maintain it themselves. Instead, they can rely on cloud service providers like Amazon Web Services (AWS) to handle the infrastructure and provide access to these resources on a pay-as-you-go basis. AWS is one of the leading cloud computing platforms of all sizes and industries. These services include computing power through virtual servers (EC2), storage options (S3), database (RDS), networking solutions (VPS), analytic tools (Redshift), and machine learning services (Sage Maker), among others. By leveraging AWS, businesses can benefit from increased flexibility, scalability, and cost- effectiveness. They can quickly deploy new applications, scale resources up or down as needed, and only pay for what they use. Additionally, AWS offers a high level of security and reliability, with data encryption, compliance certifications, and built-in backup and disaster recovery options. Cloud computing is attractive to business owners as it eliminates the requirement for users to plan ahead for provisioning, and allows enterprise to start from the small and increase resources only when there is a rise in service

demand. Overall, AWS businesses with the opportunity to innovate and grow without being hindered by traditional IT constraints. It allows them to focus on their core business activities while leaving the infrastructure management to the expects at AWS. AS a result, businesses can operate more efficiently and effectively in today`s digital landscape. Cloud computing is a network of remote servers that store and retrieve data over the internet. It provides a variety of IT services, including: Servers, Databases, Software, and Virtual Storage Networking.

Clouds are divided by two parts
- ➢ Based on the cloud computing environment.
- ➢ On the based one of services provided.

Clouds Modal Types
- **Deployment Modal:** Refer to the management of the cloud`s infrastructure. It also tells the nature and purpose of the cloud.
- **Service Modal:** Cloud computing is a broad term that holds a more extensive range of services. It is composed of a particular type of service; a cloud computing platform allows its users to access.
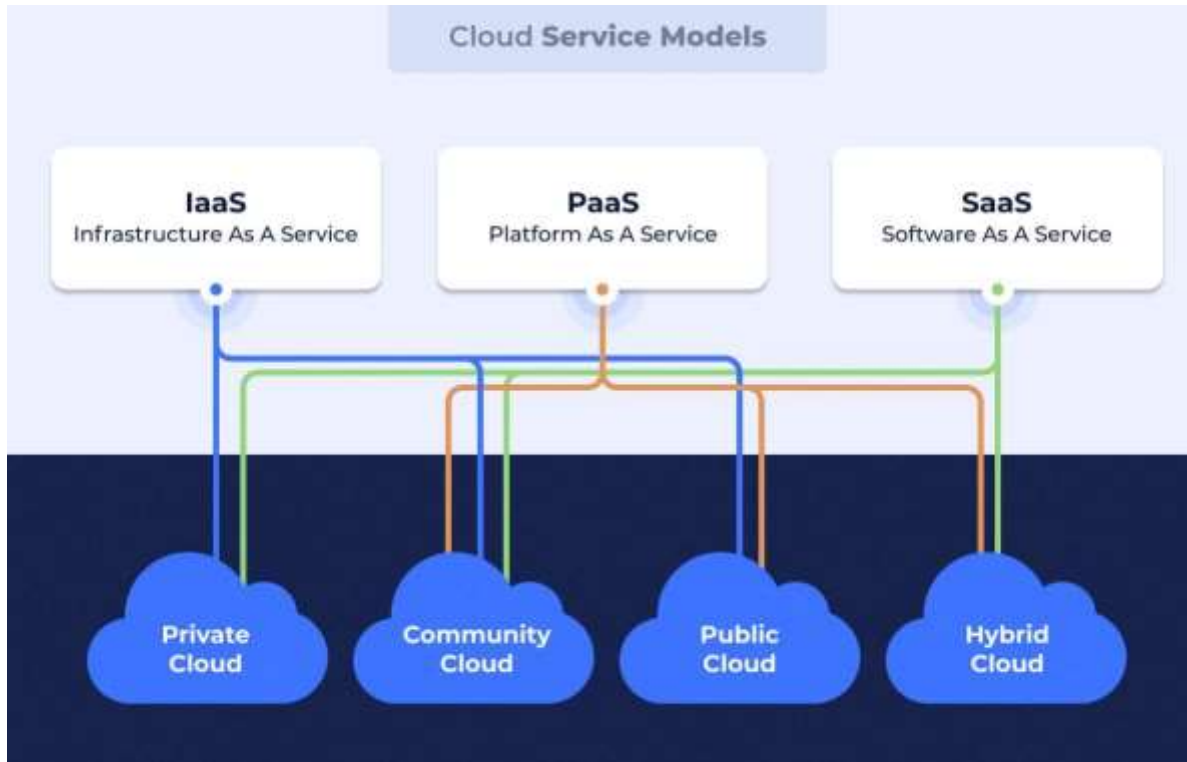
Explaining the Deployment Modal in cloud computing:
Deployment modal in cloud computing refer to the different ways in which cloud services can be deployed and accessed. There are four main deployment models:

A. **Public Cloud:** In a public cloud deployment, cloud services are provided over the internet by a third party cloud provider, such as AWS, Microsoft Azure, or Google Cloud Platform. These services are made available to the general public and are accessible to anyone who wants to use them.

B. **Private Cloud:** A private cloud is a infrastructure that is dedicated to a signal organization. It can be physically located on-premises or hosted by a third-party service provider. Private cloud offer greater control, security, and customization options, making them suitable for organizations with specific compliance or security requirements.

C. **Hybrid Cloud:** A hybrid cloud deployment modal combines public and private cloud resources, allowing data and application to be share between them. This modal provides the flexibility to move workloads between public and private clouds based on business needs, as well as the ability to maintain sensitive data in a private cloud while leveraging the scalability of public cloud resources.

D. **Community Cloud:** A community cloud is shared by several organizations with common concerns, such as regulatory compliance or industry-specific requirement. It can be managed by the organizations themselves and offers a balance between the benefits of public and private clouds.

Type of the cloud computing services:
There are three main type of cloud computing services models that you can select based on the level of control, flexibility and management own business needs:-

▪ **Infrastructure as a service(IaaS):** Infrastructure as a service(IaaS) offers on-demand access to IT infrastructure services, including compute, storage, networking, and virtualization. It provides the highest level of control own IT resources and most closely resembles traditional on-premises It resources.

▪ **Platform as a service(PaaS) :** Platforms as a service(PaaS) offers all the hardware and software resources needed for cloud application development. With PaaS, companies can focus fully on application development without the burden of managing and maintaining the underlying infrastructure.

▪ **Software as a service (SaaS):** Software as a Service delivers a full application stack as a service, from underlying infrastructure to maintenance and updates to the app software itself. A SaaS solution is often an end-user application, where both the service and the infrastructure is managed and maintained by the cloud service provider.

LITERATURE REVIEW
AWS (Amazon Web Service)
Amazon Web Service (AWS) is a cloud computing platform that offers a variety of products. These products include: Compute, Storage, Database, Analytics, Networking, Mobile, Developer tools, Management tools, IOT, Security. AWS also offers enterprise applications. These products are available on-demand, with pay-as-you-go pricing. AWS was founded in March 2006 by Amazon. The CEO of is Adam Selisky. AWS has revenue of $80,000,000,000.
Some of the products launched at AWS Invent2023 Include:

    I.   Amazon Q AI-powered assistant
    II.   New thin-client hardware

III. Graciton4 chip

AWS does not require coding knowledge. Many simple operations can be accomplished without coding. AWS is good choice for beginners who want to start a career in technical background. AWS is a cloud compiler provider. AWS provides the required resources. The customer must pay for the services they use regularly. AWS provides flexibility depending on the number of services the customer needs.

Security of cloud is the responsibility of AWS but Security in the cloud is Customer`s Responsibility. The Performance efficiency in the cloud has four main areas:
  i.   Selection
  ii.   Review
  iii.   Monitoring
  iv.   Tradeoff

Accessibility:- In these refers to the design and implementation of features and services that ensure people with disabilities can access and use AWS products and resources.

- **AWS AI and ML services**: Create an Amazon Cognito user pool and identity pool. Grant permissions to access AWS AI services. Clone the GitHub repository and edit the configuration file. Deploy the mobile web app to the AWS Amplify console.
- **Performance Dashboard on AWS**: This open source solution helps organizations build, deploy, and maintain customizable dashboards.
- **Service accessibility:** Identify the sources of traffic for services. Identify a highly available external DNS provider for internet services. Identify load balancers for internet or private network traffic.
- **Amazon EFS file system**: Create mount targets in a VPC for your file system. Use those mount targets to provide access to the file system.
- **Amazon Cognito**: Add user login and access control features to web applications and mobile apps.
- **Voluntary Product Accessibility Template (VPAT):** Available to customers using AWS Artifact.
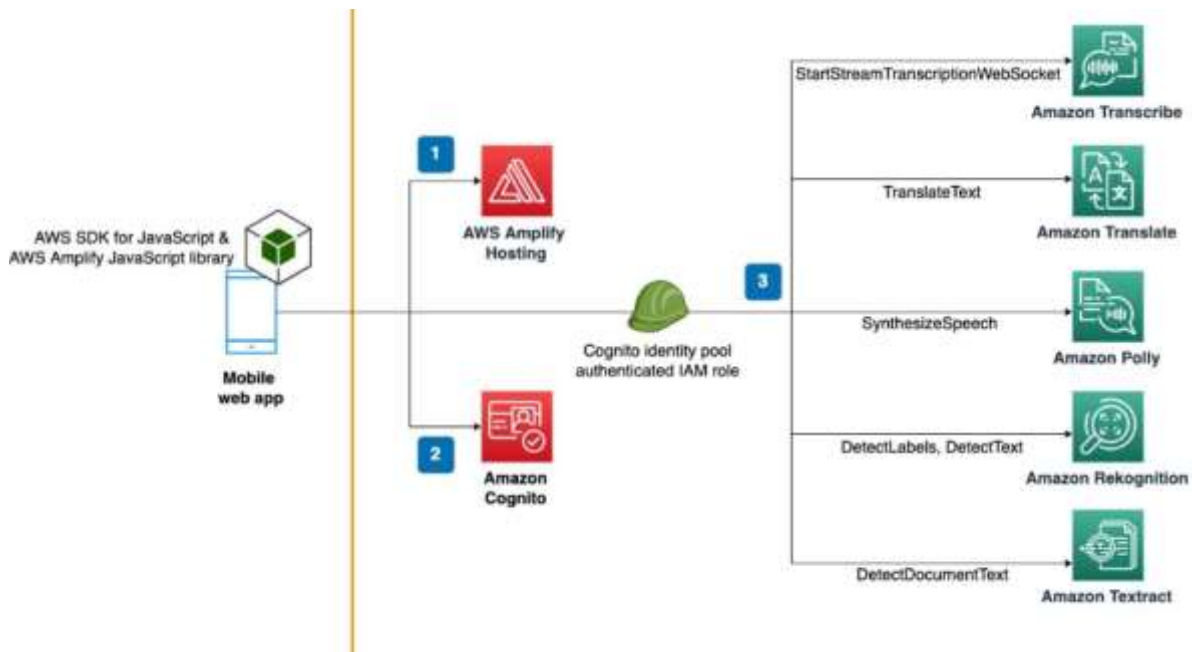
COMPARISON BETWEEN AWS AND OTHER CLOUD COMPUTING PLATFROM

AWS, Azure and GCP are all well-known cloud providers. They have some similarities and differences:
- **Storage:** All three offer fast SSDs, cheaper hard drives, and multiple archiving options. The also offer object, file, persistent block, and other types of cloud storage.
- **Billing:** AWS and Azure offer pay-as-minute billing, while GCP offers pay-per- second billing.
- **Services:** AWS offers a wide range of services. Azure focuses on building and deploying applications. GCP offers data management and machine learning.
- **Integration:** Azure integrates well with other services.
- **Security:** Azure offers better security.
- **Data Backup:** Azure offers a data backup service.
- **Regions:** AWS has 25 geographic regions with 81 availability zones.
- **Products:** GCP allows users to use Google products like Gmail, YouTube, and Google search.

Basis	GCP	Azure	AWS
• Time Span	12 (2008)	10 (2010)	16 (2004)
• Availability	24 geographic regions around the globe	60 geographic regions around the globe	24 geographic regions around the globe
• Compute Services	Compute Engine	Virtual Machine	Elastic Compute Cloud (EC2)
• Networking	Cloud Virtual Network	Virtual Network (VNET)	Virtual Private Cloud (VPC)
• Add Text Here	Add Text Here	Add Text Here	Add Text Here

USECASE

Amazon Web Services (AWS) offers a wide range of cloud computing services that cater to various use cases across different industries. These are some common use for AWS cloud computing:

1. **Scalable Web Applications:** AWS provides scalable infrastructure to host web applications, allowing businesses to scale resources up or down based on demand. Services like Amazon EC2, Amazon S3, and Amazon RDS are commonly used for web application hosting.

2. **Data Storage and Backup:** AWS offers reliable and scalable storage solutions such as Amazon S3 for object storage and Amazon Glacier for long-term archival. These services are used for storing and backing up data, providing high durability and availability.

3. **Big Data Analytics:** AWS provides services like Amazon EMR, Amazon Redshift, and Amazon Athena for processing and analyzing large datasets. These services are commonly used for big data analytics, data warehousing, and business intelligence applications.

4. **Content Delivery:** Amazon Cloud Front is a content delivery network (CDN) service that helps deliver content, including images, videos, and web pages, with low latency and high data transfer speeds. This is useful for improving the performance of websites and applications.

5. **Internet of Things (IoT):** AWS IoT services enable the connection, management, and analysis of IoT devices. This is useful for industries such as manufacturing, healthcare, and smart cities that rely on IoT devices for data collection and automation.

6. **Machine Learning and Artificial Intelligence:** AWS offers a range of machine learning services, such as Amazon Sage Maker, for building, training, and deploying machine learning models. These services are used for various applications, including image recognition, natural language processing, and predictive analytics.

7. **Enterprise IT:** Many organizations use AWS for their overall IT infrastructure, including virtual servers (EC2), storage (S3), databases (RDS), and networking (VPC). This allows businesses to move their on-premises workloads to the cloud, reducing the need for physical hardware and improving flexibility.

8. **DevOps and Continuous Integration/Continuous Deployment (CI/CD):** AWS provides tools and services for Dev Ops practices, including AWS Code Pipeline, AWS Code Build, and AWS Code Deploy. These services facilitate the automation of software development, testing, and deployment processes.

9. **Security and Compliance:** AWS provides a secure and compliant infrastructure, allowing businesses to build applications and store data in a secure environment. AWS Identity and Access Management (IAM), AWS Key Management Service (KMS), and AWS CloudTrail are examples of services that enhance security and compliance.

Use of AWS Platform

1. **Netflix (Media Streaming):** Netflix relies heavily on AWS for its streaming services. AWS provides the scalability and reliability required to handle the vast amount of streaming data and user requests.

2. **Airbnb (Hospitality Services):** Airbnb uses AWS to host and scale its online platform. AWS services such as Amazon EC2, Amazon RDS, and Amazon S3 help Airbnb manage its website, handle bookings, and store large amounts of data.

3. **Slack (Collaboration and Messaging):** Slack, a popular team collaboration platform, uses AWS for its infrastructure. AWS helps Slack deliver real-time messaging, file sharing, and collaboration features to millions of users.

4. **Pinterest (Social Media):** Pinterest utilizes AWS for hosting its social media platform. AWS services enable Pinterest to handle image storage, content delivery, and scalability to meet the demands of its user base.

5. **NASA/JPL Mars Rover (Space Exploration):** NASA's Jet Propulsion Laboratory (JPL) uses AWS for its Mars Rover missions. AWS helps process and analyze the vast amount of data transmitted by the rovers on Mars.

6. **Capital One (Finance and Banking):** Capital One uses AWS for various financial services, including online banking and mobile applications. AWS provides the security and compliance features required for the finance industry.

7. **Expedia (Travel and E-commerce):** Expedia, an online travel agency, utilizes AWS for its platform. AWS services help Expedia manage reservations, process transactions, and provide a seamless booking experience for travelers.

8. **Adobe (Creative Software):** Adobe Creative Cloud relies on AWS for its cloud services. AWS infrastructure supports the delivery of Adobe's creative software applications, file storage, and collaboration features for creative professionals.

CONCLUSION

1. **Versatility and Scalability:** AWS provides a wide range of cloud computing services, enabling businesses to build scalable and flexible applications. Its services cover computing power, storage, databases, machine learning, analytics, and more.

2. **Global Reach:** AWS has a global infrastructure with data centers located in multiple regions worldwide. This allows businesses to deploy applications and services close to their end-users, improving latency and providing a better user experience.

3. **Cost-Efficiency:** AWS follows a pay-as-you-go pricing model, allowing users to pay only for the resources they consume. This cost-effective approach is beneficial for businesses of all sizes, as it eliminates the need for upfront capital investment in hardware.

4. **Security and Compliance:** AWS places a strong emphasis on security, providing a secure and compliant cloud infrastructure. It offers tools and features such as identity and access management, encryption, and compliance certifications to help businesses meet their security requirements.

5. **Innovation and Pace of Development:** AWS continuously introduces new services and features, fostering innovation for businesses. This rapid pace of development allows organizations to stay ahead in the rapidly evolving technological landscape.

6. **Reliability and High Availability:** AWS infrastructure is designed for high availability and fault tolerance. Services like Amazon S3 and Amazon EC2 are known for their reliability, ensuring that applications hosted on AWS remain available even in the face of hardware failures or other issues.

7. **Ecosystem and Integration:** AWS has a vast ecosystem of partners, third-party tools, and integrations. This makes it easier for businesses to connect their existing systems and tools with AWS services.

8. **DevOps and Automation:** AWS provides tools and services that support DevOps practices and automation. This allows organizations to automate processes, streamline development workflows, and achieve faster time-to-market for their applications.

9. **Community and Support:** AWS has a large and active user community. Users can access extensive documentation, forums, and support resources to get assistance and share knowledge.

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