

Written Assignment-2

Explore & compare the similar type of services provided by AWS, Azure & Google Cloud platform.

AWS, Azure & Google Cloud Platform offer a wide range of similar cloud services, catering to various use cases & requirements. While there are many overlapping services across the three providers, each platform also has its unique strengths & offerings.

Compute Services

- 1] AWS:
 - Amazon EC2 (Elastic Compute Cloud): Provides resizable compute capacity in the cloud, allowing users to launch virtual servers.
 - Amazon Lambda: Serverless compute service that allows users to upload code without provisioning or managing servers to run their applications.
 - Amazon ECS (Elastic Container Service): Supports running Docker containers on a scalable cluster of EC2 instances.

Azure:

- Azure Virtual Machines: Provides scalable computing resources in the cloud with support for various operating systems.
- Azure Functions: Serverless compute service for event-driven applications.

- Azure Kubernetes Service: Managed Kubernetes service for deploying, managing & scaling containerized applications.

3) Google Cloud Platform:

- Google Compute Engine: Offers virtual machines that run on Google's infrastructure, providing scalability & flexibility.
- Cloud Functions: Serverless compute services for building & connecting cloud services.
- Google Kubernetes Engine: Managed Kubernetes service for deploying, managing & scaling containerized applications.

4) Storage Services

- i) AWS:
 - Amazon S3 (Simple Storage Service): Object storage service designed for scalability, data availability & security.
 - Amazon EBS (Elastic Block Store): Provides persistent block storage volumes for EC2 instances.
 - Amazon Glacier: Low-cost storage service for data archival.

2] Azure:

- Azure Blob Storage: Scalable object storage for unstructured data.
- Azure Disk Storage: Persistent, high-performance block storage for VM instances.
- Azure Archive Storage: Cost-effective solution for long-term data retention.

3] GCP:

- Google Cloud Storage: Object storage service with global edge caching capabilities.
- Google Persistent Disk: Provides durable & high-performance block storage for VM instances.
- Google Cloud Storage: Managed low-cost storage service for data that is accessed frequently.

Database Services.

1] AWS:

- Amazon RDS (Relational Database Service): Managed database service that supports several databases engines like MySQL, PostgreSQL, Oracle, and others.

- Amazon DynamoDB: Fully managed NoSQL database service with single-digit millisecond latency at any scale.

- Amazon Aurora: MySQL & PostgreSQL compatible relational database built for the cloud.

2] Azure:

• Azure SQL database: fully managed relational database service based on SQL Server.

• Azure Cosmos DB: globally distributed, multi-model database service for building planet-scale applications.

• Azure Database for MySQL & PostgreSQL: Managed database services for MySQL & PostgreSQL workloads.

3] GCP:

• Cloud SQL: Managed database service for MySQL, PostgreSQL, and SQL Server.

• Cloud Spanner: Globally distributed, horizontally scalable relational database service.

• Firestore: fully managed NoSQL document database for building scalable applications.

Security Services.

• AWS IAM (Identity & Access Management):

Manages access to AWS services & resources securely.

• AWS Key Management Service (KMS): Managed service for creating & controlling encryption keys.

• AWS WAF (Web Application Firewall): Protects web applications from common web exploits.

2] Azure:

- Azure Active Directory (AAD): Identity & access management service for controlling access to Azure resources.
- Azure Key Vault: Securely stores & manage secrets, keys & certificates.
- Azure Firewall: Managed firewall service for protecting Azure virtual network resources.

3] GCP:

- Identity & Access Management (IAM): Manages access control for GCP resources & services.
- Cloud Key Management Service (KMS): Manages cryptographic keys for your cloud services the same way do on-premises.
- Cloud Armor: Distributed load balancer.

ij AWS:

- AWS Lambda: Run code without provisioning or managing servers.
- Amazon API Gateway: Fully managed service for creating, publishing, maintaining, monitoring, & securing APIs.
- AWS Step Functions: Serverless orchestration service for coordinating distributed applications & microservices.

2] Azure:

iii) Azure : Functions : event-driven serverless computer service designed to respond quickly to events.

• Azure logic apps : serverless workflow automation service for integrating apps, data, systems, and services.

• Azure Event Grid : event routing service for subscribing to and routing events from any source to any desired destination.

3] General : functions available

ii) Google Cloud Functions : event-driven serverless functions that scale automatically.

Cloud Run : fully managed serverless platform for deploying and scaling containerized applications.

Cloud Workflows : serverless orchestration service for coordinating workflows with visual pipelines.

Networking Services

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1) AWS: Initial Q1 2020 : Formation of 2019.

- Amazon VPC (Virtual Private Cloud): allows users to provision a logically isolated section of the AWS cloud.
- AWS Direct Connect: establishes a dedicated network connection between the user's network & AWS.
- Amazon Route 53: scalable DNS service for routing traffic to AWS resources.

2]

- Azure Virtual Network: provides a private & isolated network in Azure.
- Azure ExpressRoute: establishes private connections between Azure datacenters & the user's on-premises infrastructure.
- Azure Traffic Manager: DNS-based traffic load balancer for distributing user traffic across multiple locations.

3)

- GCP: Google Cloud Platform: provides a virtual private cloud (VPC) that provides global, reliable, & flexible networking for GCP resources.
- Cloud Interconnect: provides dedicated & enterprise-grade connectivity between GCP & the user's on-premises network.
- Cloud DNS: scalable, reliable & managed DNS service running on the same infrastructure.

• Develop Dev Tools: ~~using protocols~~.

1] AWS:

• AWS CodeCommit: Source control service that hosts Git repositories using S3 buckets.

• AWS CodeBuild: Fully managed build service for compiling source code & running tests.

• AWS CodeDeploy: Automated deployment service for deploying applications to EC2 instances.

• CloudWatch Metrics → CloudWatch Metrics

2] Azure DevOps: 8 d 2029 metrics.

• Azure DevOps: Suite of development collaboration tools, including Azure Repos, Azure Pipelines.

• Azure DevTest Labs: Service for quickly creating environments in Azure, facilitating test & development scenarios.

• Visual Studio Team Services: Provides a comprehensive set of tools for managing the entire software development lifecycle.

• Cloud Source Repositories: Hosted private Git repositories for source control.

• Cloud Build: Fully managed continuous integration & continuous delivery platform that builds, tests & deploys applications.

• Firebase: Platform for developing web & mobile applications with features including

• Cloud Firestore, Cloud Functions, Cloud Storage

• Cloud Functions for Firebase, Cloud Storage, Cloud Firestore, Cloud Functions, Cloud Storage

Analytics Services:

- i) AWS:
Amazon Redshift: Fully managed data warehouse service for analysing large datasets.
Amazon EMR (elastic mapReduce): Big data platform for processing & analysing large datasets.
Amazon Athena: Serverless query service for analysing data in S3 using standard SQL.

2] Azure:

- Azure Data Lake Analytics: On demand analytics services for big data processing & querying.
Azure Synapse Analytics: Unified analytics service for querying data using serverless on-demand or provisioned resources.

- 3] Google Cloud Platform:
BigQuery: Fully managed data warehouse for analytics, offering fast SQL queries using the processing power of Google's infrastructure.
Dataflow: Managed stream & batch processing service for ingesting, transforming & analysing data.

content delivery Network (CDN) services:

- i) AWS:
Amazon CloudFront: CDN service that surely delivers data, videos, applications, & APIs to customers globally.
AWS Global Accelerator: Improves the availability & performance of applications.
AWS media services: A fully managed services for processing, packaging & delivering video content at scale.

2) Acme:

Acme CDN: Provides a global CDN for delivering high-bandwidth content to users worldwide.

Acme Front Door: Scalable & secure entry point for fast delivery of global applications.

3) GCP:

Google Cloud CDN: Content delivery network service for delivering contents hosted on GCP, designed for high performance.

Google Cloud Armor: Security service that provides distributed denial-of-service protection.

4) Monitoring Services

AWS:

Amazon CloudWatch: monitoring & observability service.

Amazon CloudTrail: Auditing & monitoring service for tracking user activity & API usage.

2)

Acme Application Insights: Application performance monitoring service for developers.

Acme Monitor: Comprehensive monitoring service for collecting, analyzing, & acting on telemetry data.

3)

Stackdriver: Monitoring, logging & diagnostics suite for GCP.

Cloud Trace: Distributed tracing service for collecting latency data from applications.

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Mini project

Title: Online Face Recognition System using AWS.

Technology used:

React.js, Flask, Python

AWS services : S3 buckets, Lambda functions,
- DynamoDB, IAM users.

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