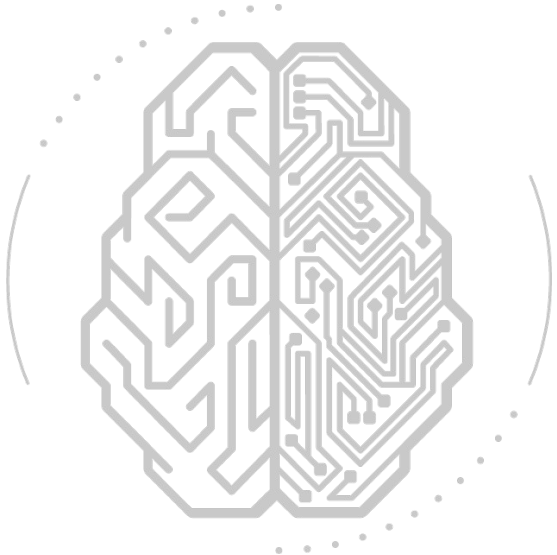
Cloud Practitioner



What's in it for you

AWS Cloud Practitioner	
S.NO.	**AGENDA**
1	Introduction to Cloud Computing
2	Introduction to AWS
3	AWS Services Overview

Speaker

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Introduction to Cloud Practitioner

Introduction

The AWS Certified Cloud Practitioner (CLF-C01) exam is intended for individuals who can effectively demonstrate an overall knowledge of the AWS Cloud independent of a specific job role. The exam validates a candidate's ability to complete the following tasks:

- Explain the value of the AWS Cloud
- Understand and explain the AWS shared responsibility model
- Understand security best practices
- Understand AWS Cloud costs, economics, and billing practices
- Describe and position the core AWS services, including compute, network, databases, and storage
- Identify AWS services for common use cases

Download the exam guide »

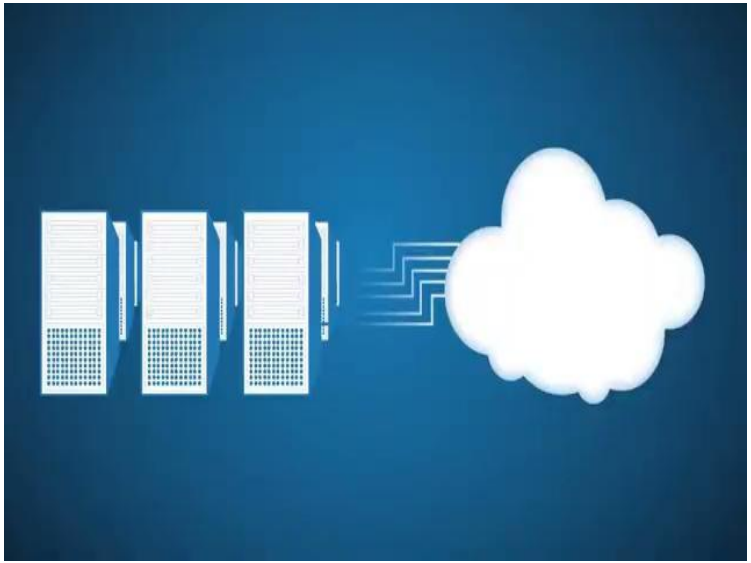
Download the sample questions »

Introduction to Cloud Practitioner

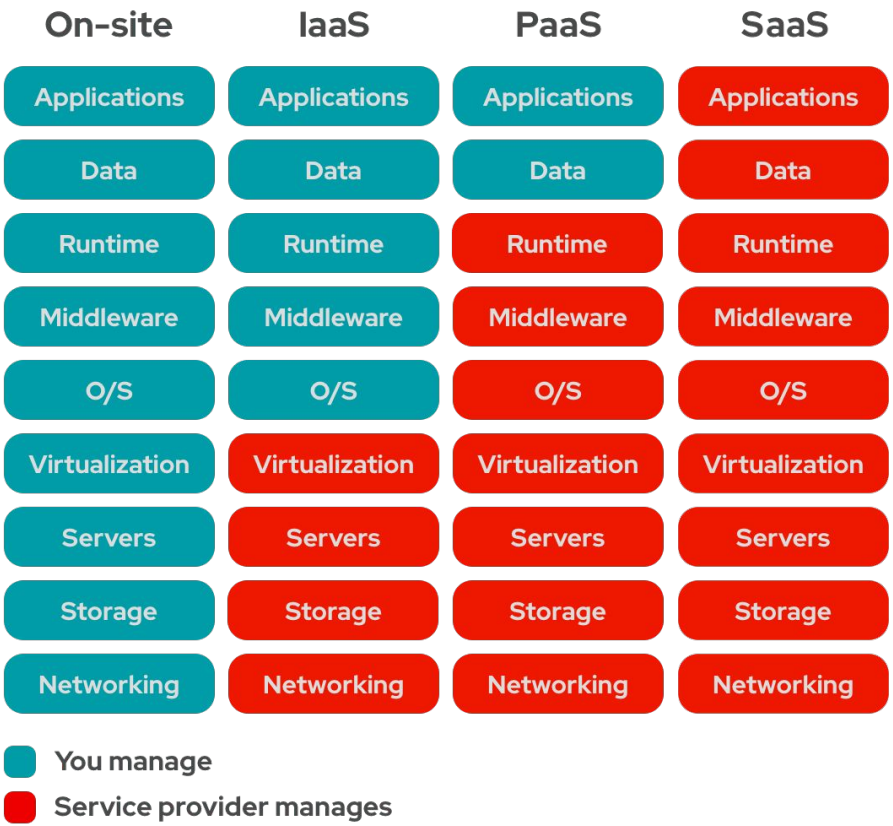
Overview

- Cloud computing is a general term for anything that involves delivering hosted services over the internet.
- Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources through a cloud services platform via the internet with pay-as-you-go pricing.
- Cloud computing has three main types:

  ➔ *Infrastructure as a Service (IaaS)*
  ➔ *Platform as a Service (PaaS)*
  ➔ *Software as a Service (SaaS)*

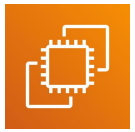


Types of Cloud Computing



Example of Cloud Computing Types

- Infrastructure as a Service:
  - Amazon EC2 (on AWS)
  - GCP, Azure, Digital Ocean



Amazon EC2

- Platform as a Service:
  - Elastic Beanstalk (on AWS)
  - Heroku, Google App Engine (GCP), Windows Azure (Microsoft)

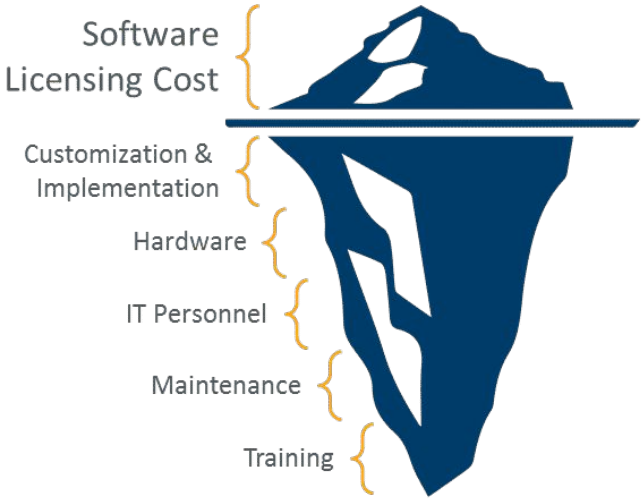
AWS ElasticBeanstalk

- Software as a Service:
  - Many AWS services (ex: Comprehend for Machine Learning)
  - Google Apps - (Gmail, Google drive), Chime

Amazon Comprehend

On-Premise vs Cloud Computing

On-Premises



Ongoing Costs

- Apply patches, upgrades
- Downtime
- Performance tuning
- Rewrite customizations
- Rewrite integrations
- Upgrade dependent applications
- Ongoing burden on IT (hardware)
- Maintain/upgrade network
- Maintain/upgrade security
- Maintain/upgrade database

Cloud Computing

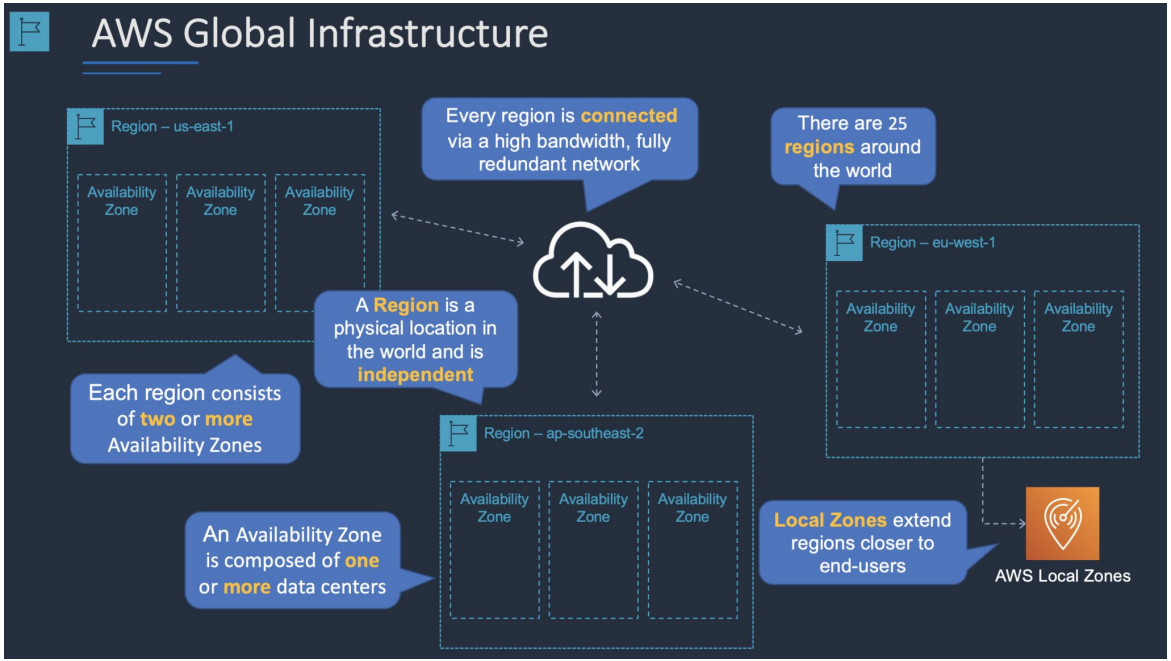
Ongoing Costs

- Subscription fees
- Training
- Configuration
- System Administration

Introduction to AWS

- Amazon Web Services (AWS) is a secure cloud services platform offering compute power, database storage, analytics, application and deployment services that help organizations move faster, lower IT costs, and scale applications.

- AWS provides services from dozens of data centers spread across availability zones (AZs) in regions across the world.



AWS Global Infrastructure Map

The AWS Cloud spans 81 Availability Zones within 25 geographic regions around the world, with announced plans for 21 more Availability Zones and 7 more AWS Regions in Australia, India, Indonesia, Israel, Spain, Switzerland, and United Arab Emirates (UAE).

- **US East (N. Virginia)** us-east-1
- US East (Ohio) us-east-2
- US West (N. California) us-west-1
- US West (Oregon) us-west-2

- Africa (Cape Town) af-south-1

- Asia Pacific (Hong Kong) ap-east-1
- Asia Pacific (Mumbai) ap-south-1
- Asia Pacific (Seoul) ap-northeast-2
- Asia Pacific (Singapore) ap-southeast-1
- Asia Pacific (Sydney) ap-southeast-2
- Asia Pacific (Tokyo) ap-northeast-1

- Canada (Central) ca-central-1

- Europe (Frankfurt) eu-central-1
- Europe (Ireland) eu-west-1
- Europe (London) eu-west-2
- Europe (Paris) eu-west-3
- Europe (Stockholm) eu-north-1

- Middle East (Bahrain) me-south-1

- South America (São Paulo) sa-east-1

How to choose an AWS Region?

1. Compliance with data governance and legal requirements: data never leaves a region without your explicit permission
2. Proximity to customers: reduced latency
3. Available services within a Region: new services and new features aren’t available in every Region
4. Pricing: pricing varies region to region and is transparent in the service pricing page

Introduction to AWS

1. **Ways to interact with the services:**
   - AWS Management Console
   - Command-line Interface
   - API Calls

2. **Features:**
   - **Easy to use** - AWS Management Console, CLI or APIs can be used to access AWS' application hosting platform.
   - **Flexible** - Allows to select OS, programming language, web application platform, database, and other services.
   - **Cost-Effective** - Pay only for the compute power, storage, and other resources you use, with no long-term contracts.
   - **Scalable & High-Performance** - AWS tools, Auto Scaling, and Elastic Load Balancing help applications to scale up or down based on demand.
   - **Secure** - AWS utilizes an end-to-end approach to secure and harden infrastructure, including physical, operational, and software measures.

3. **Pricing:**
   - **Per Second Billing** - Customers are charged only for the time they have actually used the resource.
   - **Discount** - Reserved instances provide up to 75% over equivalent on demand capacity.

Pricing of the Cloud

1. AWS has 3 pricing fundamentals, following the pay-as-you-go pricing model
2. Compute
   - Pay for compute time
3. Storage -
   - Pay for data stored in the Cloud
4. Data transfer OUT of the Cloud
   - Data transfer IN is free
5. Solves the expensive issue of traditional IT


Amazon EC2


AWS ElasticBeanstalk


Amazon EBS


Amazon S3


Data Transfer

AWS Acceptable Use Policy

- No Illegal, Harmful, or Offensive Use or Content
- No Security Violations
- No Network Abuse
- No EMail or Other Message Abuse
- https://aws.amazon.com/aup/

AWS Services - Compute and Serverless

- Amazon Elastic Cloud Compute (EC2) - is a web service that provides resizable computing capacity - literally, servers in Amazon's data centers - to build and host software systems.
- AWS Elastic Beanstalk - helps to quickly deploy and manage applications in the AWS Cloud without worrying about the infrastructure that runs those applications. Handles the details of capacity provisioning, load balancing, scaling, and application health monitoring.
- AWS Lambda - is an event-driven, serverless computing service that runs code in response to events and automatically manages the computing resources required by that code
- AWS Batch - dynamically provisions the optimal quantity and type of compute resources (e.g., CPU or memory optimized instances) based on the volume and specific resource requirements of the batch jobs submitted.
- Amazon Lightsail - is an easy-to-use cloud service that offers you everything needed to deploy an application or website, for a cost effective and easy-to-understand monthly plan. It is ideal to deploy simple workloads, websites, or to get started with AWS.
- Amazon WorkSpaces - is a fully managed, persistent desktop virtualization service that enables your users to access the data, applications, and resources they need, anywhere, anytime, from any supported device

AWS Services - Database

- Amazon Relational Database Service (RDS) - is a web service to set up, operate, and scale a relational database. Provides cost-efficient, resizable capacity for an industry-standard relational database and manages common database administration tasks.
- Amazon Redshift - is a fast, fully managed, petabyte-scale data warehouse service that makes it simple and cost-effective to efficiently analyze all the data using existing business intelligence tools.
- Amazon DynamoDB - is a key-value and document database that delivers single-digit millisecond performance at any scale.
- Amazon Aurora - is up to five times faster than standard MySQL databases and three times faster than standard PostgreSQL databases. It provides the security, availability, and reliability of commercial databases at 1/10th the cost
- Amazon ElastiCache - allows you to seamlessly set up, run, and scale popular open-source compatible in-memory data stores in the cloud, and is a popular choice for real-time use cases like Caching, Session Stores, Gaming, Geospatial Services, Real-Time Analytics, and Queuing.

AWS Services - Developer Tools

- AWS CodeCommit - is a fully-managed source control service that hosts secure Git-based repositories. Makes it easy for teams to collaborate on code in a secure and highly scalable ecosystem.

- AWS CodeBuild - is a fully managed continuous integration service that compiles source code, run tests, and produces software packages that are ready to deploy.

- AWS CodeDeploy - is a deployment service that enables developers to automate the deployment of applications to instances and to update the applications as required.

- AWS CodePipeline - is a fully managed continuous delivery service that helps you automate the build, test, and deploy phases of your release process every time there is a code change, based on the release model you define

AWS Services - Management, Monitoring, and Governance

- Amazon CloudWatch - provides actionable insights to monitor applications, understand and respond to system-wide performance changes, optimize resource utilization and collects monitoring and operational data in the form of logs, metrics, and events.

- Amazon CloudTrail - is a service that enables governance, compliance, operational auditing, and risk auditing of the AWS account. Provides event history of the AWS account activity, including actions taken through the AWS Console, AWS SDKs, command line tools, and other AWS services.

- AWS Auto Scaling - monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. Using AWS Auto Scaling, you can setup scaling for multiple resources across multiple services in minutes

- AWS Budgets - allows you to set custom budgets to track your cost and usage from the simplest to the most complex use cases. With AWS Budgets, you can choose to be alerted by email or SNS notification when actual or forecasted cost and usage exceed your budget threshold

- AWS CloudFormation - is a service that helps you model and set up your AWS resources so that you can spend less time managing those resources and more time focusing on your applications that run in AWS

- AWS Config - is a service that enables you to assess, audit, and evaluate the configurations of your AWS resources. Config continuously monitors and records your AWS resource configurations and allows you to automate the evaluation of recorded configurations against desired configurations

AWS Services - Management, Monitoring, and Governance

- AWS Cost and Usage Reports - tracks your AWS usage and provides estimated charges associated with your account. Each report contains line items for each unique combination of AWS products, usage type, and operation that you use in your AWS account

- AWS Organizations - is an account management service that enables you to consolidate multiple AWS accounts into an organization that you create and centrally manage. AWS Organizations includes account management and consolidated billing capabilities that enable you to better meet the budgetary, security, and compliance needs of your business.

- AWS Secrets Manager - helps you protect secrets needed to access your applications, services, and IT resources. The service enables you to easily rotate, manage, and retrieve database credentials, API keys, and other secrets throughout their lifecycle.

- AWS Systems Manager (formerly known as SSM) - is an AWS service that you can use to view and control your infrastructure on AWS. Systems Manager helps you maintain security and compliance by scanning your managed instances and reporting on (or taking corrective action on) any policy violations it detects.

- Parameter Store - a capability of AWS Systems Manager, provides secure, hierarchical storage for configuration data management and secrets management. You can store data such as passwords, database strings, Amazon Machine Image (AMI) IDs, and license codes as parameter values

- AWS Trusted Advisors - provides recommendations that help you follow AWS best practices. Trusted Advisor evaluates your account by using checks. These checks identify ways to optimize your AWS infrastructure, improve security and performance, reduce costs, and monitor service quotas. You can then follow the check recommendations to optimize your services and resources.

AWS Services - Networking and Content Delivery

- Amazon API Gateway - is a fully managed service that makes it easy for developers to create, publish, maintain, monitor, and secure APIs at any scale. API Gateway handles all the tasks involved in accepting and processing up to hundreds of thousands of concurrent API calls, including traffic management, CORS support, authorization and access control, throttling, monitoring, and API version management

- Amazon CloudFront - is a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally with low latency, high transfer speeds, all within a developer-friendly environment.

- AWS Direct Connect - is a cloud service solution that makes it easy to establish a dedicated network connection from your premises to AWS. AWS Direct Connect is compatible with all AWS services accessible over the internet, and is available in speeds starting at 50 Mbps and scaling up to 100 Gbps

- Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service. It is designed to give an extremely reliable and cost effective way to route end users to Internet applications by translating names like www.example.com into the numeric IP addresses like 192.x.x.x that computers use to connect to each other

- Amazon Virtual Private Cloud - is a service that lets you launch AWS resources in a logically isolated virtual network that you define. You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways.

AWS Services - Security, Identity, and Compliance

- AWS Artifact - is your go-to, central resource for compliance-related information that matters to you. It provides on-demand access to AWS' security and compliance reports and select online agreements

- AWS Certificate Manager - is a service that lets you easily provision, manage, and deploy public and private Secure Sockets Layer/Transport Layer Security (SSL/TLS) certificates for use with AWS services and your internal connected resources

- AWS CloudHSM - is a cloud-based hardware security module (HSM) that enables you to easily generate and use your own encryption keys on the AWS Cloud. It is a fully-managed service that automates time-consuming administrative tasks for you, such as hardware provisioning, software patching, high-availability, and backups

- Amazon Cognito - lets you add user sign-up, sign-in, and access control to your web and mobile apps quickly and easily. Amazon Cognito scales to millions of users and supports sign-in with social identity providers, such as Apple, Facebook, Google, and Amazon, and enterprise identity providers via SAML 2.0 and OpenID Connect.

- Amazon Detective - makes it easy to analyze, investigate, and quickly identify the root cause of potential security issues or suspicious activities. Amazon Detective automatically collects log data from your AWS resources and uses machine learning, statistical analysis, and graph theory to build a linked set of data that enables you to easily conduct faster and more efficient security investigations.

- Amazon GuardDuty - is a threat detection service that continuously monitors for malicious activity and unauthorized behavior to protect your AWS accounts, workloads, and data stored in Amazon S3. GuardDuty analyzes tens of billions of events across multiple AWS data sources, such as AWS CloudTrail event logs, Amazon VPC Flow Logs, and DNS logs.

AWS Services - Security, Identity, and Compliance

- AWS Identity and Access Management (IAM) - enables you to manage access to AWS services and resources securely. Using IAM, you can create and manage AWS users and groups, and use permissions to allow and deny their access to AWS resources.

- Amazon Inspector - is an automated security assessment service that helps improve the security and compliance of applications deployed on AWS. Amazon Inspector automatically assesses applications for exposure, vulnerabilities, and deviations from best practices

- Amazon Macie - is a fully managed data security and data privacy service that uses machine learning and pattern matching to discover and protect your sensitive data in AWS. Macie automatically provides an inventory of Amazon S3 buckets including a list of unencrypted buckets, publicly accessible buckets, and buckets shared with AWS accounts outside those you have defined in AWS Organizations

- AWS Shield - is a managed Distributed Denial of Service (DDoS) protection service that safeguards applications running on AWS. AWS Shield provides always-on detection and automatic inline mitigations that minimize application downtime and latency, so there is no need to engage AWS Support to benefit from DDoS protection.

- AWS WAF - is a web application firewall that helps protect your web applications or APIs against common web exploits and bots that may affect availability, compromise security, or consume excessive resources. AWS WAF gives you control over how traffic reaches your applications by enabling you to create security rules that control bot traffic and block common attack patterns, such as SQL injection or cross-site scripting.

AWS Services - Storage

- Amazon Simple Storage Service (S3) - is storage for the internet to store and retrieve any amount of data at any time, from anywhere on the web.
- Amazon S3 Glacier - is a secure, durable, and extremely low-cost cloud storage service for data archiving and long-term backup. Provides query-in-place functionality to run powerful analytics directly on the archive data at rest.
- Amazon Elastic Block Store (EBS) - provides persistent block storage volumes for use with Amazon EC2. Each Amazon EBS volume is automatically replicated within its Availability Zone to protect from component failure, offering high availability and durability.
- Amazon Elastic File System (Amazon EFS) - provides a simple, serverless, set-and-forget elastic file system for use with AWS Cloud services and on-premises resources. Amazon EFS has a simple web services interface that allows you to create and configure file systems quickly and easily
- AWS Snowball - is a petabyte-scale data transport solution that uses secure appliances to transfer large amounts of data into and out of the AWS cloud. Using Snowball addresses common challenges with large-scale data transfers including high network costs, long transfer times, and security concerns
- AWS Storage Gateway - is a hybrid cloud storage solution that helps customers overcome these challenges and bridge the gap between their on-premises environments and the cloud. Storage Gateway enables on-premises applications to use cloud storage by providing low-latency data access over standard storage protocols.

AWS Services - Analytics & Application Integration

- Amazon Athena - is an interactive query service to analyze data in Amazon S3 using standard SQL. Athena is serverless, so there is no infrastructure to setup or manage, cost is incurred only for the queries that are run.
- Amazon Elastic MapReduce (EMR) - provides a managed Hadoop framework that makes it easy, fast, and cost-effective to process vast amounts of data across dynamically scalable Amazon EC2 instances.
- Amazon QuickSight - is a fast business analytics service to build visualizations, perform ad hoc analysis, and quickly get business insights from the data
- Amazon Simple Queue Service (SQS) - is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications.
- Amazon Simple Notification Service (Amazon SNS) - is a fully managed messaging service for both application-to-application (A2A) and application-to-person (A2P) communication. Using Amazon SNS topics, your publisher systems can fanout messages to a large number of subscriber systems including Amazon SQS queues, AWS Lambda functions and HTTPS endpoints, for parallel processing, and Amazon Kinesis Data Firehose

AWS Services - Containers

- Amazon Elastic Container Service (Amazon ECS) is a fully managed container orchestration service that helps you easily deploy, manage, and scale containerized applications. It deeply integrates with the rest of the AWS platform to provide a secure and easy-to-use solution for running container workloads in the cloud

- Amazon Elastic Kubernetes Service (Amazon EKS) - gives you the flexibility to start, run, and scale Kubernetes applications in the AWS Cloud or on-premises. EKS makes it easy to standardize operations across every environment. You can run fully managed EKS clusters on AWS. You can have an open source, proven distribution of Kubernetes wherever you want for consistent operations with Amazon EKS Distro

AWS Services - Customer Engagement

Amazon Connect - is an easy to use omnichannel cloud contact center that helps you provide superior customer service at a lower cost. Amazon Connect is so simple to set-up and use, you can increase your speed of innovation. With only a few clicks, you can set up an omnichannel contact center and agents can begin talking and messaging with customers right away.

THANK YOU