

### Elastic Load Balancing

**Load Balancing Service** Distributes application traffic across services

Ensures that one resource won't get overloaded, and that the traffic is spread out.

### Services to run containerized applications

ECS - Elastic Container Service      EKS - Elastic Kubernetes Service

### AWS Cloud Resource Provisioning

AWS Management Console	AWS Command Line Interface	Software Development Kits
Web GUI	Automate API requests, services, actions	To access and manage AWS services through an API
Software Development Kits	to access and manage AWS services.	The API is fitted to the platform or programming language that you use.

### AWS Cloud Provision Services:

With AWS Elastic Beanstalk, you provide code and configuration settings to: Adjust capacity Load balancing Automatic scaling Application health monitoring

With AWS CloudFormation, you can treat your infrastructure as code build an environment by writing lines of code

### AWS Organization

A container for your AWS accounts.

comes with an organization root user by default. It allows you to manage permissions of your organization's accounts.

### AWS Pricing

#### Free Tier

Always - do not expire.	Free for the first 12 months	Trials - Short term offers
Always Free is available to everyone.	With more data to work with	For specific services

free for the first 12 months

#### Pricing Models:

Pay for what you use:	Pay less when you reserve:	Pay Less with Volume-Based Discount When You Use More
No need for licensing agreements.	Requires a commitment for future consumption.	Pricing per unit gets lower when you cross a threshold.

This option is for those who know that they need the resources in the future.

#### Cost Explorer:

To visualize cost and usage.

### AWS Pricing (cont)

**Cost Explorer** has a web-based dashboard. Filters and groups help you to drill down to find insights.

The Pricing Calculator lets you create a cost estimate for the use of AWS resources. The Billing Dashboard lets you pay your AWS bill, monitor usage, and analyze costs.

### Innovate with AWS Cloud

Machine Learning - ML	Artificial Intelligence - AI	Serverless Applications
SageMaker reduces the development time and complexity of ML.	Service to build voice and text chatbots - Amazon Lex Service that can convert text to speech - Amazon Transcribe Service that can discover text patterns - Amazon Comprehend Service that can detect potential fraud activities online - Amazon Fraud Detection	In AWS, you can run the serverless application with a service called AWS Lambda.



### Cloud Migration and Innovation

Cloud Adoption Framework			
Business	People	Governance	Platform
Ensures that business and IT objectives meets the investment.	Skills, requirements, and roles in your organization	minimizing the risk. And simultaneously, to maximize the business value.	To deploy new cloud solutions.

Cloud Migration Strategies			
Rehosting	Replatforming	Refactoring	Repurchasing
=lift-and-shift.	=lift, tinker and shift.	Changing application foundations	SAAS from traditional model

### Serverless and Servers

Containers	AWS Lambda	AWS EC2
Let you package code in a single object.	Deploy Code for building and maintain apps	Provides virtual server instances (VSI).

### Serverless and Servers (cont)

Container orchestration	Security	Operations
services help you deploy, manage, and scale your containerized applications. security objectives	Ensures that the and organ- zation's security objectives	code 1. Ensuring that the business operations meet the expect-

### AWS networking

AWS Virtual Private Cloud	VPC is a service that lets you isolate your AWS resources in an isolated network.
AWS Internet Gateway	How traffic can be allowed through a VPN necessary apps
AWS Virtual Private Gateway	Used to access private resources in the VPC

AWS Direct Connect	Dedicated private connection between a data center and VPC
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AWS Subnet	A section of VPC
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AWS Access Control Lists (ACL)	A firewall that controls the traffic, both inbound and outbound.
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AWS Security Group	Stateless Packet filtering Firewall that controls inbound and outbound traffic
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AWS Config-uration	Specific to an AWS EC2 instance Adding custom rules for the traffic.
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AWS Route 53	Lets someone access your website from their browser Like a phone book
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### AWS EBS and AWS S3

AWS EBS	AWS S3
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Block Store	Object Store
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Block =< 17.6 terabytes	Object <= 5 terabytes
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Faster performance	Data does not suffer loss, degradation, or a corruption for a very long time
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Data can be modified	Data can not be modified, unless re-uploaded
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### Database Migration Service - AWS DMS

Helps move data between a source database and a target database.

### Monitoring and Analysis

AWS CloudWatch	AWS CloudTrail	Trusted Advisor
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To monitor resources	Logs actions inside your AWS environment.	Checks account, evaluates, and recommends.
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- Trust finder evaluates best practice in:
- Cost optimization
  - Performance
  - Security
  - Fault tolerance
  - Service limits

### Identity and access management

AWS Account Root User	IAM Users	IAM Policies	IAM Groups	IAM Roles
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### Identity and access management (cont)

Created entity deny or collection when (person allow of IAM first or an permis- users start an applic- sions to AWS ation) that AWS resources account interacts resources with AWS and services. and services.

Full access to all of the accounts resources and AWS services.

aim to map AWS groups to specific roles within your organization, and apply the policy to the group instead

Multi-factor Authentication: I May come in the form of a security code that is sent to your mobile device or an email.

### AWS Support Plans

Basic Developer Business Enterprise

### AWS Cloud EC2

A virtual server in the AWS Cloud

To work with EC2:

1. Launch with template config: The config includes the operating system, application server, or applications.
2. Connect Programs and applications
3. Use Execute commands to install software, add storage, copy, and organize files, and much more.

Instance Types:

### AWS Cloud EC2 (cont)

Generally Balances computing, memory, and networking resources

Compute For high-performance and compute-intensive needs

Optimized: Compute

Memory When huge amounts of data need to be preloaded before running the app

Optimized Instances:

Accelerated Boost the data processing. For graphics applications and streaming.

Storage when you have large datasets on local storage. Eg Warehouses, online transaction systems, large file systems

### AWS Instance Stores

Instance Stores A storage volume that acts as a physical hard drive

AWS EBS - Elastic Block Store Provides storage volumes.

Used for data that needs to persist

Backup the data with AWS EBS snapshots.

Cloud Storage - AWS S3 Also called AWS Simple Storage Service.

Allows uploading any type of file.

Object-level storage contains: Data - any type of file

### AWS Instance Stores (cont)

Metadata - information about what the data is

Key - unique identifier

### AWS S3 Storage Classes:

S3 Standard Ideal for data accessed often

S3 Standard-Infrequent Access Lower storage price but higher data retrieval price.

S3 One Zone-IA (S3 One Zone-Infrequent Access) It stores data in one Availability Zone, cheaper

S3 Intelligent-Tiering Requires automation and monitoring

S3 Glacier For archiving data, retrieve objects within a few minutes.

S3 Glacier Deep Archive Has the lowest cost, can retrieve objects within 12 hours.

### AWS Well-Architected Framework

#### Operational Excellence Pillar

The operational excellence pillar is a capacity to manage and monitor systems. It improves supporting systems processes and procedures.

It includes:

- Making small and reversible changes
- Prediction of system disruptions
- Performing code tasks
- Making documentation notes

#### Security Pillar

The security pillar consists of protecting systems and data.



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### AWS Well-Architected Framework (cont)

Well-Architected Framework applies security at all levels.

It protects both stored and in-transit data.  
When possible, best security practices are automatically applied.

#### Reliability Pillar

The reliability pillar is the ability to minimize disruptions of the system.

It obtains computing resources as needed.

It entails boosting system availability.

It automatically recovers the system from disruptions.

#### Performance Efficiency Pillar

The performance efficiency pillar is the capacity to accurately use computing resources.

It satisfies the efficiency on demand.

#### Cost Optimization Pillar

Cost optimization pillar helps you run your cloud services at the lowest price points.

Cost optimization performs operations such as:

Analysis of your costs

Operating managed services

Makes sure you only pay for what you use



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