* Summarize the benefits of AWS.
* Describe differences between on-demand delivery and cloud deployments.
* Summarize the pay-as-you-go pricing model.
* Describe the benefits of Amazon EC2 at a basic level.
* Identify the different Amazon EC2 instance types.
* Differentiate between the various billing options for Amazon EC2.
* Summarize the benefits of Amazon EC2 Auto Scaling.
* Summarize the benefits of Elastic Load Balancing.
* Give an example of the uses for Elastic Load Balancing.
* Summarize the differences between Amazon Simple Notification Service (Amazon SNS) and Amazon Simple Queue Service (Amazon SQS).
* Summarize additional AWS compute options.
* You can provision and launch an Amazon EC2 instance within minutes.
* You can stop using it when you have finished running a workload.
* You pay only for the compute time you use when an instance is running, not when it is stopped or terminated.
* You can save costs by paying only for server capacity that you need or want.
* Amazon EC2 Auto Scaling
* Elastic Load Balancing
* Amazon Simple Notification Service (Amazon SNS)
* Amazon Simple Queue Service (Amazon SQS)

Docker :

* Amazon Elastic Container Service (**Amazon ECS**)
* Amazon Elastic Kubernetes Service (**Amazon EKS)**
* AWS Fargate
* Summarize the benefits of the AWS Global Infrastructure.
* Describe the basic concept of Availability Zones.
* Describe the benefits of Amazon CloudFront and edge locations.
* Compare different methods for provisioning AWS services.

Region :

**Compliance with data governance and legal requirements**

**Proximity to your customers**

**Available services within a Region**

**Pricing**

An **edge location** is a site that Amazon CloudFront uses to store cached copies of your content closer to your customers for faster delivery.

* AWS Regions and Availability Zones
* Edge locations and Amazon CloudFront
* The AWS Management Console, AWS CLI, and SDKs
* AWS Elastic Beanstalk
* AWS CloudFormation
* Describe the basic concepts of networking.
* Describe the difference between public and private networking resources.
* Explain a virtual private gateway using a real life scenario.
* Explain a virtual private network (VPN) using a real life scenario.
* Describe the benefit of AWS Direct Connect.
* Describe the benefit of hybrid deployments.
* Describe the layers of security used in an IT strategy.
* Describe the services customers use to interact with the AWS global network.
* Structuring and connecting to a VPC
* Securing VPC resources with network access control lists and security groups
* Using Amazon Route 53 and Amazon CloudFront to deliver content
* Summarize the basic concept of storage and databases.
* Describe the benefits of Amazon Elastic Block Store (Amazon EBS).
* Describe the benefits of Amazon Simple Storage Service (Amazon S3).
* Describe the benefits of Amazon Elastic File System (Amazon EFS).
* Summarize various storage solutions.
* Describe the benefits of Amazon Relational Database Service (Amazon RDS).
* Describe the benefits of Amazon DynamoDB.
* Summarize various database services.

An Amazon EBS volume stores data in a **single** Availability Zone.

Amazon EFS is a regional service. It stores data in and across **multiple** Availability Zones.

**Amazon RDS database engines**

Amazon RDS is available on six database engines, which optimize for memory, performance, or input/output (I/O). Supported database engines include:

* Amazon Aurora
* PostgreSQL
* MySQL
* MariaDB
* Oracle Database
* Microsoft SQL Server

[**Amazon Aurora**](https://aws.amazon.com/rds/aurora/) is an enterprise-class relational database. It is compatible with MySQL and PostgreSQL relational databases. It is up to five times faster than standard MySQL databases and up to three times faster than standard PostgreSQL databases.

[**Amazon DynamoDB**](https://aws.amazon.com/dynamodb/) is a key-value database service. It delivers single-digit millisecond performance at any scale.

[**Amazon Redshift**](https://aws.amazon.com/redshift) is a data warehousing service that you can use for big data analytics. It offers the ability to collect data from many sources and helps you to understand relationships and trends across your data.

[**AWS Database Migration Service (AWS DMS)**](https://aws.amazon.com/dms/) enables you to migrate relational databases, nonrelational databases, and other types of data stores.

[**Amazon ElastiCache**](https://aws.amazon.com/elasticache) is a service that adds caching layers on top of your databases to help improve the read times of common requests.

[**Amazon DynamoDB Accelerator (DAX)**](https://aws.amazon.com/dynamodb/dax/) is an in-memory cache for DynamoDB.

* Explain the benefits of the shared responsibility model.
* Describe multi-factor authentication (MFA).
* Differentiate between the AWS Identity and Access Management (IAM) security levels.
* Explain the main benefits of AWS Organizations.
* Describe security policies at a basic level.
* Summarize the benefits of compliance with AWS.
* Explain additional AWS security services at a basic level.

[**AWS Identity and Access Management (IAM)**](https://aws.amazon.com/iam/) enables you to manage access to AWS services and resources securely.

* IAM users, groups, and roles
* IAM policies
* Multi-factor authentication

An **IAM user** is an identity that you create in AWS. It represents the person or application that interacts with AWS services and resources. It consists of a name and credentials.

An **IAM policy** is a document that allows or denies permissions to AWS services and resources.

Suppose that your company has multiple AWS accounts. You can use [**AWS Organizations**](https://aws.amazon.com/organizations)to consolidate and manage multiple AWS accounts within a central location.

[**AWS Artifact**](https://aws.amazon.com/artifact) is a service that provides on-demand access to AWS security and compliance reports and select online agreements. AWS Artifact consists of two main sections: AWS Artifact Agreements and AWS Artifact Reports.

The [**Customer Compliance Center**](https://aws.amazon.com/compliance/customer-center/) contains resources to help you learn more about AWS compliance.

* AWS answers to key compliance questions
* An overview of AWS risk and compliance
* An auditing security checklist

A **denial-of-service (DoS) attack** is a deliberate attempt to make a website or application unavailable to users.

[**AWS Key Management Service (AWS KMS)**](https://aws.amazon.com/kms) enables you to perform encryption operations through the use of **cryptographic keys**. A cryptographic key is a random string of digits used for locking (encrypting) and unlocking (decrypting) data. You can use AWS KMS to create, manage, and use cryptographic keys. You can also control the use of keys across a wide range of services and in your applications.

[**AWS WAF**](https://aws.amazon.com/waf) is a web application firewall that lets you monitor network requests that come into your web applications.

* Summarize approaches to monitoring your AWS environment.
* Describe the benefits of Amazon CloudWatch.
* Describe the benefits of AWS CloudTrail.
* Describe the benefits of AWS Trusted Advisor.

[**Amazon CloudWatch**](https://aws.amazon.com/cloudwatch/) is a web service that enables you to monitor and manage various metrics and configure alarm actions based on data from those metrics. With CloudWatch, you can create [**alarms**](https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/AlarmThatSendsEmail.html) that automatically perform actions if the value of your metric has gone above or below a predefined threshold.

[**AWS CloudTrail**](https://aws.amazon.com/cloudtrail/) records API calls for your account. The recorded information includes the identity of the API caller, the time of the API call, the source IP address of the API caller, and more. You can think of CloudTrail as a “trail” of breadcrumbs (or a log of actions) that someone has left behind them.

[**AWS Trusted Advisor**](https://aws.amazon.com/premiumsupport/technology/trusted-advisor/) is a web service that inspects your AWS environment and provides real-time recommendations in accordance with AWS best practices.

* Describe AWS pricing and support models.
* Describe the AWS Free Tier.
* Describe key benefits of AWS Organizations and consolidated billing.
* Explain the benefits of AWS Budgets.
* Explain the benefits of AWS Cost Explorer.
* Explain the primary benefits of the AWS Pricing Calculator.
* Distinguish between the various AWS Support Plans.
* Describe the benefits of AWS Marketplace

The [**AWS Pricing Calculator**](https://calculator.aws/#/) lets you explore AWS services and create an estimate for the cost of your use cases on AWS. You can organize your AWS estimates by groups that you define. A group can reflect how your company is organized, such as providing estimates by cost center.

Use the [**AWS Billing & Cost Management dashboard**](https://docs.aws.amazon.com/awsaccountbilling/latest/aboutv2/billing-what-is.html) to pay your AWS bill, monitor your usage, and analyze and control your costs.

* Compare your current month-to-date balance with the previous month, and get a forecast of the next month based on current usage.
* View month-to-date spend by service.
* View Free Tier usage by service.
* Access Cost Explorer and create budgets.
* Purchase and manage Savings Plans.
* Publish [AWS Cost and Usage Reports](https://docs.aws.amazon.com/cur/latest/userguide/what-is-cur.html).

In [**AWS Budgets**](https://aws.amazon.com/aws-cost-management/aws-budgets), you can create budgets to plan your service usage, service costs, and instance reservations.

[**AWS Marketplace**](https://aws.amazon.com/marketplace) is a digital catalog that includes thousands of software listings from independent software vendors. You can use AWS Marketplace to find, test, and buy software that runs on AWS.

* Three types of offers included in the AWS Free Tier: 12 months free, Always free, and Trials
* Benefits of consolidated billing in AWS Organizations
* Tools for planning, estimating, and reviewing AWS costs
* Differences between the four AWS Support plans: Basic, Developer, Business, and Enterprise
* How to discover software in AWS Marketplace
* Understand migration and innovation in the AWS Cloud.
* Summarize the AWS Cloud Adoption Framework (AWS CAF).
* Summarize the six key factors of a cloud migration strategy.
* Describe the benefits of AWS data migration solutions, such as AWS Snowcone, AWS Snowball, and AWS Snowmobile.
* Summarize the broad scope of innovative solutions that AWS offers.

At the highest level, the [**AWS Cloud Adoption Framework (AWS CAF)**](https://d1.awsstatic.com/whitepapers/aws_cloud_adoption_framework.pdf) organizes guidance into six areas of focus, called **Perspectives**. Each Perspective addresses distinct responsibilities. The planning process helps the right people across the organization prepare for the changes ahead.

In general, the **Business**, **People**, and **Governance** Perspectives focus on business capabilities, whereas the **Platform**, **Security**, and **Operations** Perspectives focus on technical capabilities.

**6 strategies for migration**

When migrating applications to the cloud, six of the most common [migration strategies](https://aws.amazon.com/blogs/enterprise-strategy/6-strategies-for-migrating-applications-to-the-cloud/) that you can implement are:

* Rehosting
* Replatforming
* Refactoring/re-architecting
* Repurchasing
* Retaining
* Retiring

**AWS Snow Family members**

The [**AWS Snow Family**](https://aws.amazon.com/snow) is a collection of physical devices that help to physically transport up to exabytes of data into and out of AWS.

AWS Snow Family is composed of **AWS Snowcone**, **AWS Snowball**, and **AWS Snowmobile**.

**Innovate with AWS Services**

* The current state
* The desired state
* The problems you are trying to solve
* The AWS Cloud Adoption Framework
* The six strategies for migration
* The AWS Snow Family
* Innovation with AWS services

The [**AWS Well-Architected Framework**](https://d1.awsstatic.com/whitepapers/architecture/AWS_Well-Architected_Framework.pdf) helps you understand how to design and operate reliable, secure, efficient, and cost-effective systems in the AWS Cloud. It provides a way for you to consistently measure your architecture against best practices and design principles and identify areas for improvement.

The Well-Architected Framework is based on five pillars:

* Operational excellence
* Security
* Reliability
* Performance efficiency
* Cost optimizatio

In this section, you will learn about six advantages of cloud computing:

* Trade upfront expense for variable expense.
* Benefit from massive economies of scale.
* Stop guessing capacity.
* Increase speed and agility.
* Stop spending money running and maintaining data centers.
* Go global in minutes.





























































































































