

Amazon Web Services

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Overview of AWS

AWS (Amazon Web Services) is a comprehensive, evolving cloud computing platform provided by Amazon that includes a mixture of infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS) and packaged-software-as-a-service (SaaS) offerings. AWS services can offer an organization tools such as compute power, database storage and content delivery services.

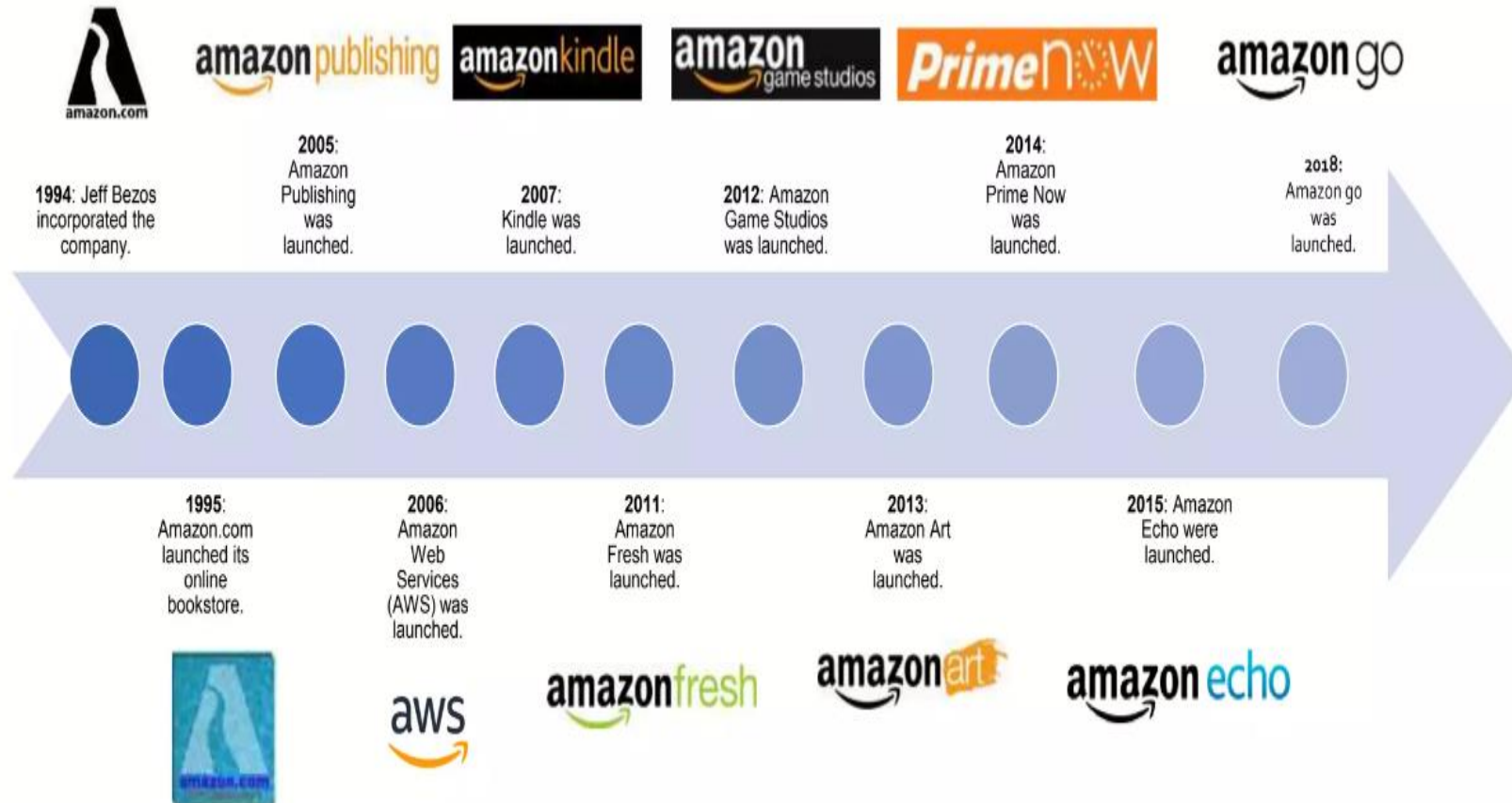
How AWS works

AWS is separated into different services; each can be configured in different ways based on the user's needs. Users can see configuration options and individual server maps for an AWS service.

History of AWS

- 2002- AWS services launched
- 2006- Launched its cloud products
- 2012- Holds first customer event
- 2015- Reveals revenues achieved of \$4.6 billion
- 2016- Surpassed \$10 billion revenue target
- 2016- Release snowball and snowmobile
- 2019- Offers nearly 100 cloud services
- 2021- AWS comprises over 200 products and services

Introduction and History of AWS



13+ years of commercial service experience
The originator of cloud computing

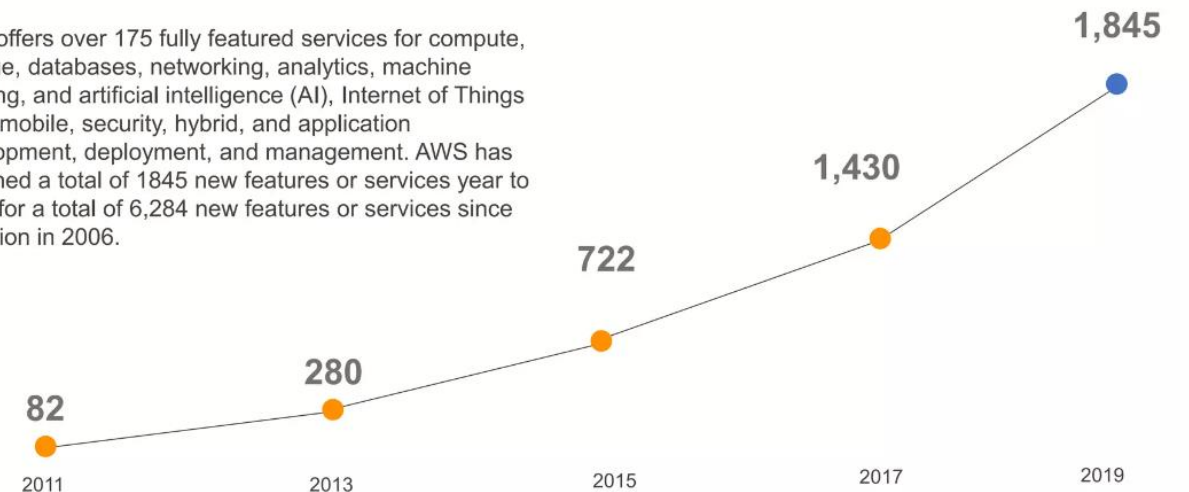
- Launched the first service Amazon S3 on Mar. 14, 2006
- 13 years of commercial experience
- 165 cloud services
- 4800 third-party products
- Millions of active customers
- Tens of thousands of partners

Introduction and History of AWS

- Enable businesses and developers to use web services to build scalable, sophisticated applications.



AWS offers over 175 fully featured services for compute, storage, databases, networking, analytics, machine learning, and artificial intelligence (AI), Internet of Things (IoT), mobile, security, hybrid, and application development, deployment, and management. AWS has launched a total of 1845 new features or services year to date* for a total of 6,284 new features or services since inception in 2006.



* As of December 2019

32 Launched Regions

each with multiple Availability Zones
(AZs)

102 Availability Zones

550+ Points of Presence

and 13 Regional Edge Caches

35 Local Zones

29 Wavelength Zones

for ultralow latency applications

245 Countries and Territories Served

115 Direct Connect Locations

Why Cloud Infrastructure Matters

The AWS Global Cloud Infrastructure is the most secure, extensive, and reliable cloud platform, offering over 200 fully featured services from data centers globally. Whether you need to deploy your application workloads across the globe in a single click, or you want to build and deploy specific applications closer to your end-users with single-digit millisecond latency, AWS provides you the cloud infrastructure where and when you need it.

With millions of active customers and tens of thousands of partners globally, AWS has the largest and most dynamic ecosystem. Customers across virtually every industry and of every size, including start-ups, enterprises, and public sector organizations, are running every imaginable use case on AWS.

AWS presence and Globally Robustness

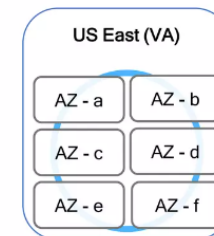


📦 At least 2 Availability Zones per region

📦 Examples:

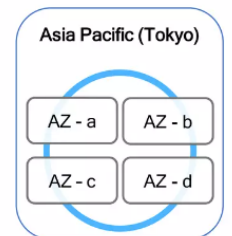
US East (N. Virginia)

us-east-1a
us-east-1b
us-east-1c
us-east-1d
us-east-1e
us-east-1f



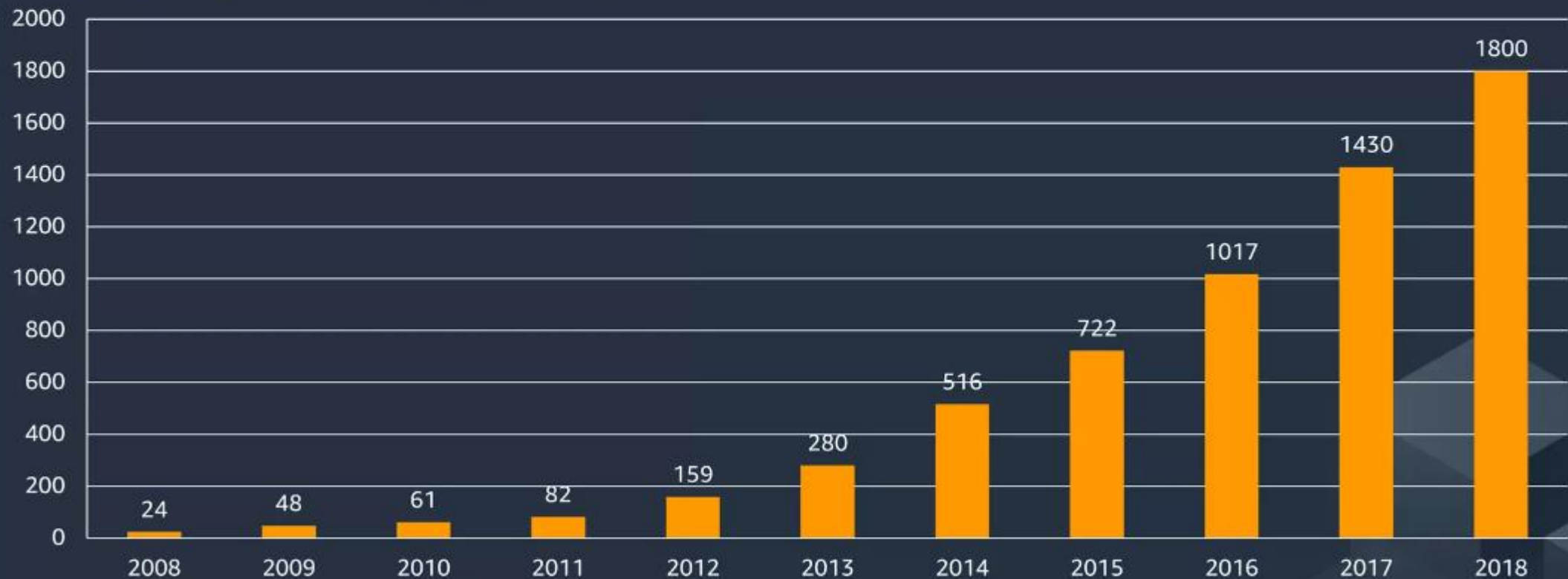
Asia Pacific (Tokyo)

ap-northeast-1a
ap-northeast-1b
ap-northeast-1c
ap-northeast-1d

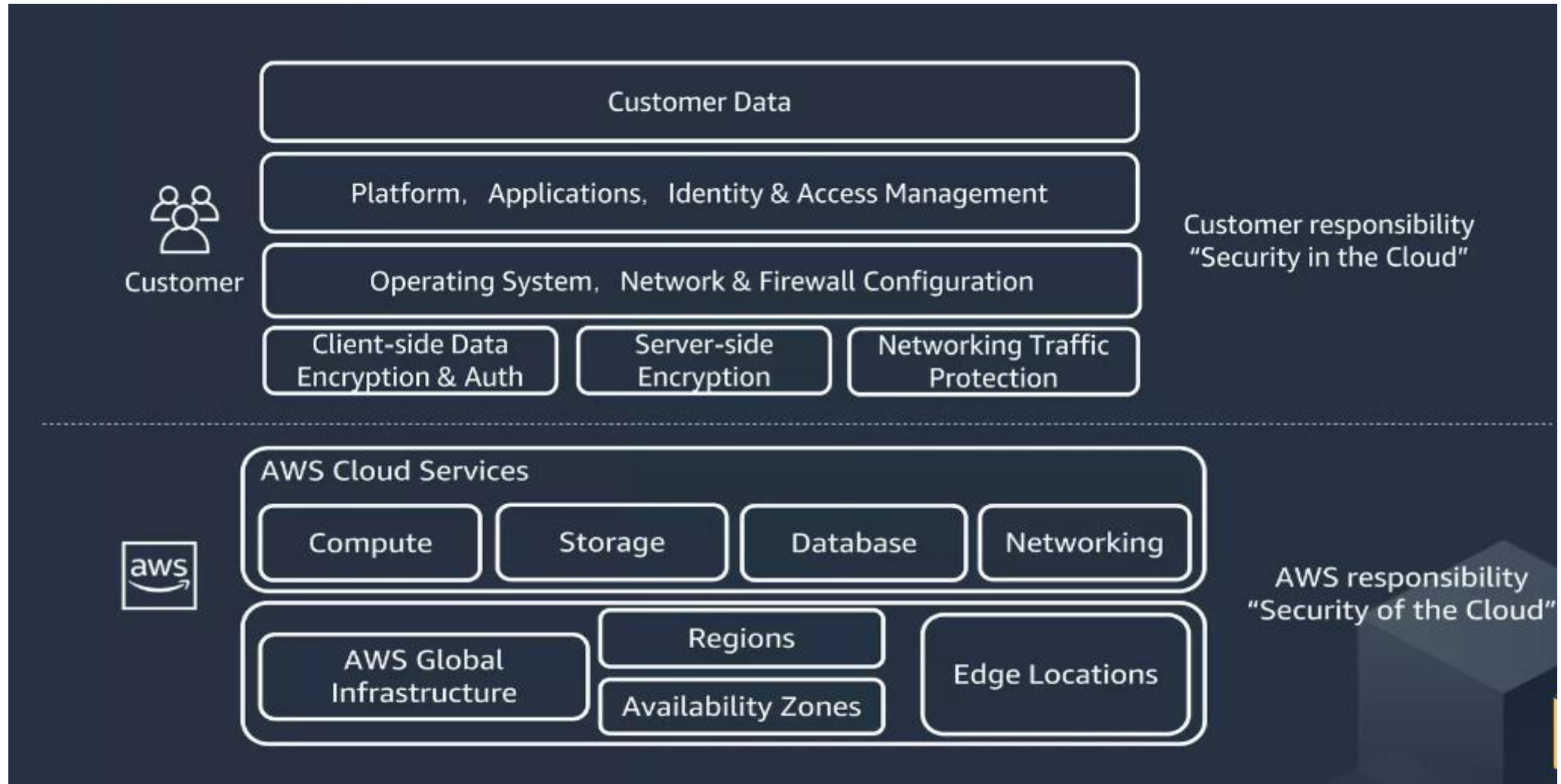


AWS : High-speed innovation based on customer needs

AWS has committed to provide more services and capabilities to meet with cloud services requirements in different industries and verticals. It has provided more than 150 services across computing, storage, networking, databases, data analytics, enterprise application services, automated operations and management, mobile applications etc. Since its inception in 2006, AWS has cumulatively released more than 6,000 new services and features.



Shared Responsibility Model



Family of AWS Security Services

|  |  |  |  |  |
|--|--|--|--|---|
| Authentication & Authorization | Monitor & Control | Infrastructure Security | Data Protection | Emergency Reaction |
| AWS Identity & Access Management (IAM) AWS Organizations Amazon Cognito AWS Directory Service AWS Single Sign-On | AWS CloudTrail AWS Config Amazon CloudWatch Amazon GuardDuty VPC Flow Logs | Amazon EC2 Systems Manager AWS Shield AWS Web Application Firewall (WAF) Amazon Inspector Amazon Virtual Private Cloud (VPC) | AWS Key Management Service (KMS) AWS CloudHSM Amazon Macie AWS Certificate Manager Server Side Encryption Secrets Manager | AWS Config Rules AWS Lambda |

AWS Compliance

| | | |
|--|------------------------|---|
| SOC 1 / ISAE 3402 | ISO 27001 | FedRAMP |
| SOC 2 | ISO 9001 | ISO 27017 |
| SOC 3 | ISO 27018 | PCI DSS Level 1 |
| HIPAA | GxP | FIPS 140-2 |
| CJIS | ITAR | G-Cloud  |
| DoD SRG Levels 2 & 4 | FERPA | IT-Grundschutz  |
| MLPS Level 3  | Section 508 / VPAT | MPAA |
| MTCS Tier 3  | NIST | Cloud Security Alliance |
| IRAP  | FISMA, RMF, and DIACAP | Cyber Essentials Plus  |

Overview of AWS

Important AWS Services



Applications of AWS services

Amazon Web services are widely used for various computing purposes like:

Web site hosting

Application hosting/SaaS hosting

Media Sharing (Image/ Video)

Mobile and Social Applications

Content delivery and Media Distribution

Storage, backup, and disaster recovery

Development and test environments

Academic Computing

Search Engines

Social Networking

Overview of AWS

Advantages of AWS

Following are the pros of using AWS services:

- AWS allows organizations to use the already familiar programming models, operating systems, databases, and architectures.
- It is a cost-effective service that allows you to pay only for what you use, without any up-front or long-term commitments.
- You will not require to spend money on running and maintaining data centers.
- Offers fast deployments
- You can easily add or remove capacity.
- You are allowed cloud access quickly with limitless capacity.
- Total Cost of Ownership is very low compared to any private/dedicated servers.
- Offers Centralized Billing and management
- Offers Hybrid Capabilities
- Allows you to deploy your application in multiple regions around the world with just a few clicks

Overview of AWS

Disadvantages of AWS

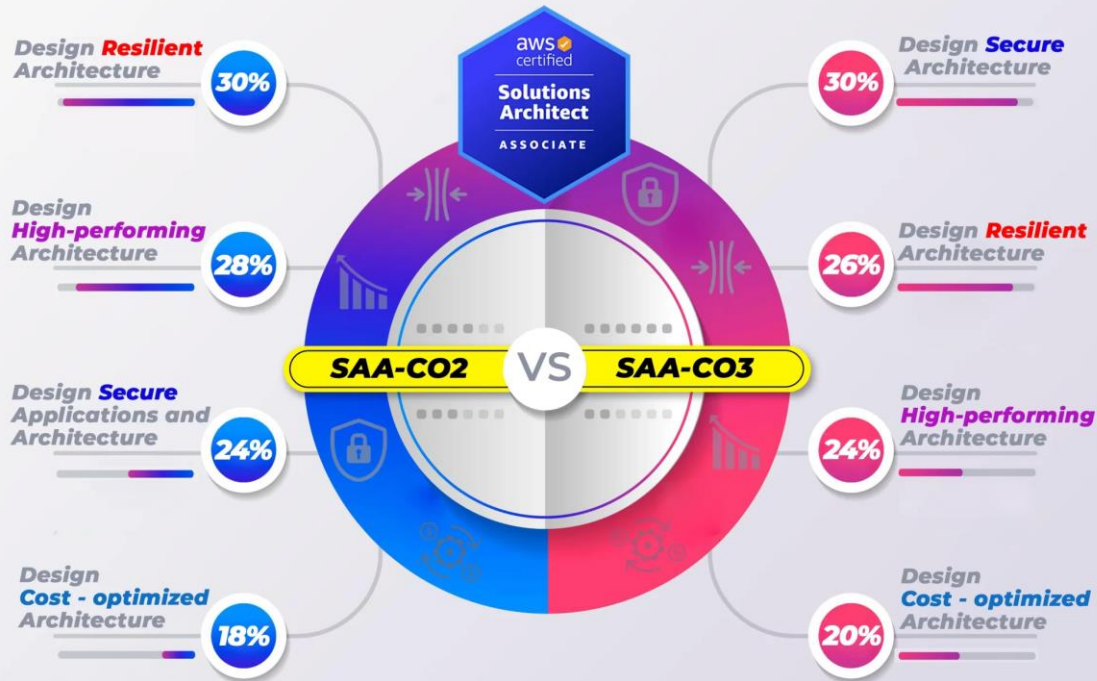
- If you need more immediate or intensive assistance, you'll have to opt for paid support packages.
- Amazon Web Services may have some common cloud computing issues when you move to a cloud. For example, downtime, limited control, and backup protection.
- AWS sets default limits on resources which differ from region to region. These resources consist of images, volumes, and snapshots.
- Hardware-level changes happen to your application which may not offer the best performance and usage of your applications.

Companies using AWS

Instagram
Netflix
Twitch
LinkedIn
Facebook
Turner Broadcasting: \$10 million
Zoopla
Smugmug
Pinterest
Dropbox

AWS Solution Architect Associate Exam

Objectives of aws CSAA



AWS SAA-C03 Exam Overview

Format: Multiple choice & multiple response questions

Type: Associate

Delivery method: Pearson VUE & PSI; testing centre or online proctored exam

Number of questions: 65

Time: 130 minutes

Cost: 150 USD

Language: English, French, German, Italian, Japanese, Korean, Portuguese, and Simplified Chinese

Passing Marks: 720 & above

Domain wise weight-age of New AWS SAA-C03

The AWS Certified Solutions Architect - Associate exam test on the following aspects, giving each area the following weight.

DOMAINS

SAA-C03

- Design Secure Architectures
- Design Resilient Architectures
- Design High Performing Architectures
- Design Cost-Optimized Architectures

30%
26%
24%
20%

AWS Solution Architect Associate Exam of AWS

https://d1.awsstatic.com/training-and-certification/docs-sa-assoc/AWS-Certified-Solutions-Architect-Associate_Exam-Guide.pdf

https://d1.awsstatic.com/training-and-certification/docs-sa-assoc/AWS-Certified-Solutions-Architect-Associate_Sample-Questions.pdf

List of new topics/services

- **AWS Data Exchange**- Easily find, subscribe to, and use third-party data in the cloud. AWS Data Exchange is on a mission to increase speed to value for third-party data sets in the cloud.
- **AWS Data Pipeline**- AWS Data Pipeline is a web service that helps you reliably process and move data between different AWS compute and storage services, as well as on-premises data sources, at specified intervals.
- **AWS Lake Formation-Lake Formation** - helps you break down data silos and combine different types of structured and unstructured data into a centralized repository.
- **Amazon Managed Streaming for Apache Kafka**-Amazon Managed Streaming for Apache Kafka (Amazon MSK) is a fully managed service that enables you to build and run applications that use Apache Kafka to process streaming data. Amazon MSK provides the control-plane operations, such as those for creating, updating, and deleting clusters.

- **Amazon AppFlow**- Amazon AppFlow is a fully-managed integration service that enables you to securely exchange data between software as a service (SaaS) applications, such as Salesforce, and AWS services, such as Amazon Simple Storage Service (Amazon S3) and Amazon Redshift.
- **AWS Outposts**- AWS Outposts is a fully managed service that extends AWS infrastructure, services, APIs, and tools to customer premises.
- **VMware Cloud on AWS**-VMware Cloud on AWS is the preferred service for AWS for all vSphere-based workloads. VMware Cloud on AWS brings VMware's enterprise-class SDDC software to the AWS Cloud with optimized access to native AWS services.
- **AWS Wavelength**-AWS Wavelength combines the high bandwidth and ultralow latency of 5G networks with AWS compute and storage services so that developers can innovate and build a new class of applications. Wavelength Zones are available in co-operation with Verizon in the United States, KDDI in Japan, SK Telecom in South Korea, Vodafone in UK and Germany, and Bell in Canada.
- **Amazon Neptune**-Amazon Neptune is a managed graph database product published by Amazon.com. It is used as a web service and is part of Amazon Web Services (AWS).
- **Amazon Quantum Ledger Database**-Amazon Quantum Ledger Database (Amazon QLDB) is a fully managed ledger database that provides a transparent, immutable, and cryptographically verifiable transaction log owned by a central trusted authority.

AWS Solution Architect Associate Exam of AWS

- **Amazon Timestream**- Amazon Timestream is a fast, scalable, fully managed, purpose-built time series database that makes it easy to store and analyze trillions of time series data points per day.
- **AWS Amplify**-AWS Amplify is a complete solution that lets frontend web and mobile developers easily build, ship, and host full-stack applications on AWS, with the flexibility to leverage the breadth of AWS services as use cases evolve. No cloud expertise needed.
- **Amazon Comprehend**-Amazon Comprehend is a natural-language processing (NLP) service that uses machine learning to uncover valuable insights and connections in text.
- **Amazon Forecast**- Amazon Forecast is a fully managed service that uses statistical and machine learning algorithms to deliver highly accurate time-series forecasts.
- **Amazon Fraud Detector**-Amazon Fraud Detector is a fully managed fraud detection service that automates the detection of potentially fraudulent activities online. These activities include unauthorized transactions and the creation of fake accounts.
- **Amazon Kendra**-Amazon Kendra is a highly accurate and intelligent search service that enables your users to search unstructured and structured data using natural language processing and advanced search algorithms.
- **AWS License Manager**-AWS License Manager is a service that makes it easier for you to manage your software licenses from software vendors (for example, Microsoft, SAP, Oracle, and IBM) centrally across AWS and your on-premises environments.
- **Amazon Managed Grafana**-Amazon Managed Grafana is a fully managed and secure data visualization service that you can use to instantly query, correlate, and visualize operational metrics, logs, and traces from multiple sources.
- **Amazon Managed Service for Prometheus**-Amazon Managed Service for Prometheus is a Prometheus-compatible service that monitors and provides alerts on containerized applications and infrastructure at scale. The service is integrated with Amazon Elastic Kubernetes Service (EKS), Amazon Elastic Container Service (ECS), and AWS Distro for OpenTelemetry.

- **AWS Proton**-The AWS Proton service is a two-pronged automation framework. As an administrator, you create versioned service templates that define standardized infrastructure and deployment tooling for serverless and container-based applications.
- **Amazon Elastic Transcoder**-Amazon Elastic Transcoder is media transcoding in the cloud. It is designed to be a highly scalable, easy to use and a cost effective way for developers and businesses to convert (or “transcode”) media files from their source format into versions that will playback on devices like smartphones, tablets and PCs.
- **Amazon Kinesis Video Streams**- Amazon Kinesis Video Streams makes it easy to securely stream video from connected devices to AWS for analytics, machine learning (ML), playback, and other processing. Kinesis Video Streams automatically provisions and elastically scales all the infrastructure needed to ingest streaming video data from millions of devices. AWS Application Discovery Service
- **AWS WAF Serverless**-AWS Web Application Firewall (WAF) and CloudFront to mitigate common attacks like SQL Injection, Cross-Site Scripting, and Distributed Denial of Service (DDoS). WAF and is managed services provided by AWS with no infrastructure for you to manage.
- **AWS AppSync**-AWS AppSync is a managed service that uses GraphQL to make it easy for applications to get exactly the data they need by letting you create a flexible API to securely access, manipulate, and combine data from one or more data sources.