AWS Cloud Offerings – A Summary of Services

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September 1, 2022

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AWS Summary of Services

Below is a summary of all the cloud offering from Amazon Web Services (One of the leading cloud provider)

References –

- *https://aws.amazon.com*
- https://docs.aws.amazon.com/general/latest/gr/glos-chap.html
- https://docs.aws.amazon.com/index.html

What is Cloud Computing?

- On Demand delivery of IT Resources over the internet with a pay as you go pricing
- Instead of buying, owning and maintaining physical data centers and servers, we can access technology services such as computing power, storage and databases on an as-needed basis.

Benefits of Cloud Computing

- **Agility**
  - Gives us easy access to a broad range of technologies
  - Can quickly spin up resources as we need them from infrastructure services such as compute, storage or databases to Internet of things, Machine learning, data lakes and analytics
- **Elasticity**
  - We don't need to over-provision resources up front to handle peak levels
  - We only provision the resources that we actually need, we can scale up these resources up or down to grow or shrink capacity as the need changes.
- **Cost Savings**
  - We get cost savings because of economy of scale.
  - We trade fixed expenses with variable expenses
- **Deploy globally in minutes**
    Expand to new geographies and regions in minutes

Types of Cloud Computing

- **Infrastructure as a Service (IaaS)**
  - Contains the basic building blocks for Cloud IT
  - Provides access to networking features, computers and data storage space
  - Provides the highest level of flexibility and management control over the IT Resources

- **Platform as a Service (PaaS)**
  - Removes the need for us to manage the underlying infrastructure (Usually hardware and operating systems)
  - Allows us to focus on the deployment and management of our applications
  - We don't need to worry about resource procurement, capacity planning, software maintenance, patching etc
- **Software as a Service (SaaS)**
  - Complete product run and managed by the service provider.
  - With SaaS we don't have to think how the service is maintained or how the underlying infrastructure is managed.

AWS Services Classifications

The AWS product services offerings are classified into the below categories

- Analytics
- Application Integration
- Block Chain
- Business Applications
- Cloud Financial Management
- Compute
- Contact Center
- Containers
- Database
- Developer Tools
- End User Computing
- Front end Web & Mobile
- Games
- Internet of Things
- Machine Learning
- Management & Governance
- Media Services
- Migration & Transfer
- Network and Content Delivery
- Quantum Technologies
- Robotics
- Satellite
- Security, Identity and Compliance
- Serverless
- Storage

AWS Analytics Services

Amazon Athena	– Interactive Query service that makes it easy to analyze data in Amazon S3 using standard SQL – Athena is serverless – Pay as you go pricing (Pay per query) – Fully serverless database with SQL Capabilities – Automatic Scaling
Amazon Cloud Search	– Set up, manage, and scale a search solution for your website or application. – Provides highlighting, autocomplete suggestions and geospatial search. – Supports full text, boolean and faceted search – Customizable relevance ranking
Amazon OpenSearch Service	– Realtime search, monitoring and analysis of business and operational data. – AWS managed Service. – Allows interactive log analytics – Website Search – Derived from Elastisearch – Successor of Amazon Elastisearch service
Amazon EMR	– Run and scale Apache Spark, Hive, Presto and other big data workloads – Supports peta byte scale data processing – Used for performing big data analytics, Build scalable data pipelines, process real-time data streams, Accelerates data science and ML adoption
Amazon Finspace	– Store, catalog, prepare, and analyze financial industry data in minutes -FinSpace removes the heavy lifting of building and maintaining a data management system for financial analytics.
Amazon Kinesis	– Easily **collect**, **process**, and **analyze video** and **data streams** in **real time**.
Amazon Managed Streaming for Apache Kafka (MSK)	-Securely stream data with a fully managed, highly available Apache Kafka service
Amazon Redshift	– Cloud Data Warehouse -Uses SQL to analyze structured and semi-structured data across warehouses, operational data warehouses and datalakes
Amazon QuickSight	– Business Analytics Service that can be used to build visualizations, Perform Analysis and get business insights. – Cloud native, Serverless BI Service – Questions through Natural Language – Interactive Dashboards

AWS Data Exchange	– Easily find, subscribe to and use third party data on cloud
AWS Data Pipeline	– Used for automating the movement and transformation of data – Web-service that helps reliably process and move data between different compute and storage services as well as on-prem data sources.
AWS Glue	– AWS Glue is a serverless data integration service that makes it easy to discover, prepare, and combine data for analytics, machine learning, and application development – A fully managed extract, transform and load (ETL) Service that you can use to catalog data and load it for analytics.
AWS Lake Formation	– used for building a secure datalake in days. – A data lake is a centralized, curated, and secured repository that stores all your data, both in its original form and prepared for analysis

AWS Analytics Services

AWS Application Integration

AWS Step Functions	– visual workflows for applications – used for automating extraction, transform and load process (ETL) – used for orchestrating microservices
Amazon AppFlow	– Automate data flows by securely integrating third party applications and AWS services, without code – Used to securely transfer data between Software-as-a-Service (SaaS) applications like Salesforce, SAP, Zendesk, Slack, and ServiceNow, and AWS services like Amazon S3 and Amazon Redshift
Amazon EventBridge	– EventBridge is a serverless event bus that makes it easier to build event-driven applications at scale using events generated from your applications, integrated Software-as-a-Service (SaaS) applications, and AWS services. – EventBridge delivers a stream of real-time data from event sources such as Zendesk or Shopify to targets like AWS Lambda and other SaaS applications.
Amazon Managed Workflows for Apache Airflow (MWAA)	– Managed orchestration service for Apache Airflow. – Setup and Operate end to end pipelines in cloud at scale – Apache Airflow is an open-source tool used to programmatically author, schedule, and monitor sequences of processes and tasks referred to as "workflows."
Amazon MQ	– A managed message broker service for **Apache ActiveMQ** – Fully managed service for **open source message brokers** – Setup and Operate Message Broker on AWS
Amazon Simple Notification Service (SNS)	– Fully managed pub/sub messaging, SMS, email, and mobile push notifications -Supports application-to-application (A2A) and application-to-person (A2P) communication.
Amazon SQS (Simple Queue Service)	– Fully Managed Message Queueing Service – Fully managed message queues for microservices, distributed systems, and serverless applications – Eliminates the complexity and overhead associated with managing and operating message-oriented middleware, – Using SQS, we can send, store, and receive messages between software components at any volume, SQS offers two types of message queues. – **Standard queues** offer maximum throughput, best-effort ordering, and at-least-once delivery. – **SQS FIFO** queues are designed to guarantee that messages are processed exactly once, in the exact order that they are sent.

| **AWS AppSync** | – Fully-managed, scalable GraphQL APIs
– Accelerate application development with serverless GraphQL and Pub/Sub APIs
– Used for developing Web and Mobile Applications |

AWS Application Integration

AWS Block Chain Services

| **Amazon Quantum Ledger Database** | – Fully managed ledger database that provides a centralized, immutable, and cryptographically verifiable transaction log
– Track and maintain a sequenced history of every application data change using an immutable and transparent journal.
– Built-in cryptographic verification enables third-party validation of data changes. |
| **Amazon Managed Blockchain** | – Fully managed service that makes it easy to join public networks or create and manage scalable private networks using the popular open-source frameworks such as *Hyperledger Fabric* and *Ethereum* |

AWS Block Chain Services

Business Applications

Amazon Connect	– With Amazon Connect, you can set up a contact center in minutes that can scale to support millions of customers. – Omnichannel Cloud Contact Center – Set up and make changes to your contact center
Amazon Pinpoint	– Multichannel marketing communications – Communication services such as Email, SMS, Push or Voice,
AWS Wickr	– Enables Secure communication with end to end encryption. – Secure collaboration across messaging, voice and video calling, file sharing and screen sharing.
Amazon Honeycode	– Event Planning, Project Tracking, Lead Tracking etc. – Build mobile and webapps without programming.
Amazon Chime	– Communication Service that lets us meet, chat and place business calls inside and outside your organization. – Online Meetings, Screen Sharing, Video Conferencing.
Amazon WorkDocs	– Amazon WorkDocs is a fully managed platform for creating, sharing, and enriching digital content.
Amazon WorkMail	– Amazon WorkMail is a secure, managed business email and calendar service with support for existing desktop and mobile email client applications
Alexa for Business	
Amazon Chime SDK	– Helps embed intelligent real-time communication capabilities into your applications – With the Amazon Chime SDK, builders can easily add real-time voice, video, and messaging powered by machine learning into their applications.
Amazon Simple Email Service (SES)	– Cost-effective, flexible, and scalable email service that enables developers to ***send mail from within any application***
Amazon Pinpoint APIs	– Amazon Pinpoint is an AWS service that you can use to engage with your customers across multiple messaging channels. You can use Amazon Pinpoint to send push notifications, emails, SMS text messages, or voice messages.
Amazon Chime Voice Connector	-Used to Embed intelligent real-time communication capabilities into your applications

Amazon WordDocs SDK	– The Amazon WorkDocs SDK removes the complexity of building file collaboration and management capabilities into your solutions and applications by providing full administrator and user level access to Amazon WorkDocs site resources.

AWS Business Application Services

Cloud Financial Management

AWS Cost Explorer	– Visualize, understand, and manage your AWS costs and usage over time – Create a costs and usage forecast for a future time range
AWS Billing Conductor	– Simplify billing and reporting with customizable pricing and cost visibility
AWS Budgets	– Improve planning and cost control with flexible budgeting and forecasting
AWS Cost and Usage Report	– Dive deeper into your AWS cost and usage data – Understand cost drivers at the resource level and identify cost optimization opportunities.
Reserved Instance Reporting	– Manage and monitor your instance reservations
Savings Plans	– Flexible pricing model for AWS Services

AWS Cloud Financial Management

AWS Compute

Amazon EC2	– A web service for launching and managing Linux/UNIX and Windows Server instances in Amazon data centers. – Secure resizable compute capacity in the cloud – Scalable infrastructure on demand – 99.99% Availability – Security is built into the foundation of Amazon EC2 with the AWS Nitro System. – Classified into *(On-Demand, Spot Instances, Saving Plans & Dedicated hosts)*
Amazon EC2 Auto Scaling	– Add or remove compute capacity to meet changes in demand. – Automatically add and removeEC2 Instances according to user defined policies, schedules and health checks
Amazon Lightsail	– **Virtual Private Servers** on AWS with compute, storage, and networking. – Can be used to launch a simple web application using pre-configured development stacks like LAMP, Ngnix, MEAN and node.js
AWS App Runner	– AWS App Runner is a fully managed service that makes it easy for you to deploy from source code or a container image directly to a scalable and secure web application.
AWS Batch	– AWS Batch enables you to run batch computing workloads on the AWS Cloud. – Batch computing is a common way for developers, scientists, and engineers to access large amounts of compute resources. – AWS Batch removes the undifferentiated heavy lifting of configuring and managing the required infrastructure.
AWS Elastic Beanstalk	– A web service for deploying and managing applications in the AWS Cloud without worrying about the infrastructure that runs those applications. – You simply upload your application, and AWS Elastic Beanstalk automatically handles the details of capacity provisioning, load balancing, scaling, and application health monitoring.
AWS Lambda	– Run code **without provisioning** or managing infrastructure. Simply write and upload code as a .zip file or container image. – AWS Lambda is a **serverless**, **event-driven compute service** that lets you run code for virtually any type of application or backend service without provisioning or managing servers.
AWS Outposts	– AWS Outposts brings native AWS services, infrastructure, and operating models to virtually any data center, co-location space, or on-premises facility. You can use the same services, tools, and partner solutions to develop for the cloud and on premises.

AWS Serverless Application Repository	– The AWS Serverless Application Repository is a managed repository for serverless applications. It enables teams, organizations, and individual developers to find, deploy, publish, share, store, and easily assemble serverless architectures.
AWS Snow Family	– Physical devices to migrate data into and out of AWS – The AWS Snow Family is a service that helps customers who need to run operations in austere, non-data center environments, and in locations where there's no consistent network connectivity. – You can use these devices to locally and cost-effectively access the storage and compute power of the AWS Cloud in places where an internet connection might not be an option.
AWS Wavelength	– AWS Wavelength allows developers to build applications that deliver ultra-low latencies to mobile devices and end users. – Wavelength deploys standard AWS compute and storage services to the edge of telecommunication carriers' 5G networks. – Developers can extend an Amazon Virtual Private Cloud (VPC) to one or more Wavelength Zones, and then use AWS resources like Amazon Elastic Compute Cloud (EC2) instances to run applications that require ultra-low latency and a connection to AWS services in the Region.
VMWare Cloud on AWS	

AWS Compute

Contact Center

Amazon Connect	– With Amazon Connect, we can set up a contact center in minutes that can scale to support millions of customers. – Omnichannel Cloud Contact Center – Set up and make changes to your contact center

AWS Contact Center

Containers

Amazon Elastic Container Registry (ECR)	– A fully managed *Docker container registry* that you can use to store, manage, and deploy Docker container images. – Amazon ECR is integrated with Amazon Elastic Container Service (Amazon ECS) and AWS Identity and Access Management (IAM).
Amazon Elastic Container Service (ECS)	– A highly scalable, fast, **container management service** that you can use to **run, stop, and manage Docker containers** on a cluster of **EC2** instances.
Amazon ECS Anywhere	
Amazon Elastic Kubernetes Service (EKS)	– A managed service that you can use to **run Kubernetes** on AWS without needing to stand up or maintain your own Kubernetes control plane.
Amazon EKS Anywhere	
Amazon EKS Distro	
AWS App2Container	– AWS App2Container (A2C) is a command-line tool for modernizing .NET and Java applications into containerized applications. – Using A2C simplifies your migration tasks by performing inventory and analysis of your existing applications, creating Docker containers that include your application dependencies, and generating deployment templates based on AWS best practices with known values filled in for you.
AWS App Runner	AWS App Runner is a fully managed service that makes it easy for you to deploy from source code or a container image directly to a scalable and secure web application.
AWS Copilot	
AWS Fargate	– Serverless Compute for containers – Removes the operational overhead of scaling, patching , securing and managing servers – Pay as you go computing engine – Compatible with both ECS (Elastic Container Service) and EKS (Elastic Kubernetes Service)
Red Hat Openshift Service on AWS	

Database

Amazon Aurora	– Proprietary technology from AWS – Supports Postgres and MySQL as AuroraDB – Cloud Optimized – Claims 5X performance improvement over MySQL on RDS – 3X performance improvement over Postgres on RDS – Storage grows automatically in increments of 10GB upto 64TB – More efficient than RDS
Amazon Aurora Serverless V2	
Amazon DocumentDB (with MongoDB Compatibility)	– A managed database service that you can use to set up, operate, and scale MongoDB-compatible databases in the cloud. -Storage growth is automatic 10GB increment till 64TB
Amazon DynamoDB	– Fully managed highly available with replication across 3 Availability zones – Is a NoSQL Database (Key-Value Database) – Scales to massive workloads – Distributed server-less database – Millions of records per second, trillion of rows and 100s of Terabyte of storage. – Fast and consistent in performance – Single-digit millisecond latency – Integrated with IAM (Identify Access Management) for security, authorization and administration – DAX – DynamoDB AcceleratorFully managed in-memory cache for DynamoDB leading to 10X performance improvement
Amazon Elasticache	– Data is stored and retrieved from ***In-Memory Cache*** – The way RDS is to get managed Relational Databases, ElastiCache is to get managed Redis or Memcached – Helps reduce load off databases for read intensive workloads – High Performance, Low latency – AWS takes care of OS Maintenance, patching, optimization, Setup, configuration, failure recovery, backup etc
Amazon Keyspaces (for Apache Cassandra)	– Amazon Keyspaces (for Apache Cassandra) is a scalable, highly available, and managed Apache Cassandra–compatible database service.
Amazon MemoryDB for Redis	– Amazon MemoryDB for Redis is a fully managed, Redis-compatible, in-memory database that delivers ultra-fast performance and Multi-AZ durability for modern applications built using microservices architectures.

Amazon Neptune	– Fully managed graph database – Highly available across 3 Availability Zones – Up to 15 Read Replicas – Billions of relations – Good for knowledge graphs – Supports the popular graph query languages Apache TinkerPop Gremlin and W3C's SPARQL
Amazon Quantum Ledger Database (QLDB)	– 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. – You can use Amazon QLDB to track all application data changes, and maintain a complete and verifiable history of changes over time.
Amazon RDS	– A web service to set up, operate, and scale a relational database in the cloud. – It provides cost-efficient, resizable capacity for an industry-standard relational database and manages common database administration tasks.
Amazon RDS on Outposts	
Amazon Redshift	– Based on Postgres – Not used for OLTP (use RDS instead) – Used for OLAP (Online Analytical Processing)Analytics and Data warehousing – Loads data every hour not every second – Scales to PB of data – Columnar storage of data – Massively parallel query execution (MPP) – SQL Interface – Integration with BI Tools such as AWS Quicksight or Tableau
Amazon Timestream	– With Amazon Timestream, you can easily store and analyze sensor data for IoT applications, metrics for DevOps use cases, and telemetry for application monitoring scenarios such as clickstream data analysis.

AWS Database Migration Services	– AWS Database Migration Service (AWS DMS) is a web service you can use to migrate data from your database that is on-premises, on an Amazon Relational Database Service (Amazon RDS) DB instance, or in a database on an Amazon Elastic Compute Cloud (Amazon EC2) instance to a database on an AWS service. – These services can include a database on Amazon RDS or a database on an Amazon EC2 instance. You can also migrate a database from an AWS service to an on-premises database. – You can migrate between source and target endpoints that use the same database engine, such as from an Oracle database to an Oracle database. You can also migrate between source and target endpoints that use different database engines, such as from an Oracle database to a PostgreSQL database.

AWS Database Offerings

Developer Tools

Amazon CodeGuru	– Automate Code reviews – Identify expensive lines of code – CodeGuru Reviewer uses machine learning and automated reasoning to identify critical issues, security vulnerabilities, and hard-to-find bugs during application development and provides recommendations to improve code quality
Amazon Corretto	– A no-cost, multi platform, production-ready distribution of the **Open Java Development Kit** (**OpenJDK**). – Corretto is certified as compatible with the Java SE standard
AWS Cloud Control API	– AWS Cloud Control API (Cloud Control API) is a set of common application programming interfaces (APIs) that make it easy for developers and partners to manage the lifecycle of AWS and third-party services. – Cloud Control API provides five operations for developers to create, read, update, delete, and list (CRUDL) their cloud infrastructure.
AWS Cloud Development Kit	
AWS Cloud9	– AWS Cloud9 is a cloud-based integrated development environment (IDE) that you use to write, run, and debug code.
AWS CloudShell	– AWS CloudShell is a browser-based shell that you can use to manage AWS services using the AWS Command Line Interface (AWS CLI) and a range of pre-installed development tools.
AWS CodeArtifact	– AWS CodeArtifact is a secure, scalable, and cost-effective artifact management service for software development.
AWS CodeBuild	– AWS CodeBuild is a fully managed build service that compiles your source code, runs unit tests, and produces artifacts that are ready to deploy.
AWS CodeDeploy	– 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	– AWS CodePipeline is a continuous delivery service that enables you to model, visualize, and automate the steps required to release your software.
AWS CodeStar	– AWS CodeStar lets you quickly develop, build, and deploy applications on AWS.
AWS Command Line Interface	– The AWS Command Line Interface (AWS CLI) is a unified tool that provides a consistent interface for interacting with all parts of Amazon Web Services.

AWS Device Farm	– Test Android, iOS, and web apps on real devices in the AWS cloud – Application testing Service that allows tests on multiple desktop browsers and real mobile devices without having to provision and manage any testing infrastructure
AWS Fault Injection Simulator	– AWS Fault Injection Simulator (AWS FIS) is a managed service that enables you to perform fault injection experiments on your AWS workloads.
AWS Tools and SDKs	– Tools for developing and managing applications on AWS
AWS X-Ray	– AWS X-Ray makes it easy for developers to analyze the behavior of their distributed applications by providing request tracing, exception collection, and profiling capabilities.

AWS Developer Tools

End User Computing

Amazon WorkSpaces	– Virtual desktops in the cloud – Amazon WorkSpaces offers an easy way to provide a cloud-based desktop experience to your end users. Select from a choice of bundles that offer a range of different amounts of CPU, memory, storage, and a choice of applications. Users can connect from a PC, Mac desktop computer, iPad, Kindle, or Android tablet.
Amazon AppStream 2.0	– Stream desktop applications securely to a browser – Amazon AppStream 2.0 is a fully managed, secure application streaming service that lets you stream desktop applications to users without rewriting applications.

End User Computing

Front end Web & Mobile

AWS Amplify	– Build, deploy, and host scalable web and mobile apps – Comprehensive set of SDKs, Library, tools and documentation for client app development
Amazon API Gateway	– Build, deploy, and manage APIs
Amazon Location Service	– Securely and easily add location data to applications – Easily and securely add maps, points of interest, geocoding, geofences, tracking, and routing to your applications.
Amazon Pinpoint	– Personalized user engagement across channels – Pinpoint helps you engage your customers by sending them email, SMS and voice messages, and push notifications. – Send targeted messages as well as transactional messages
AWS AppSync	– Fully-managed, scalable GraphQL APIs – Accelerate application development with serverless GraphQL and Pub/Sub APIs – Used for developing Web and Mobile Applications
AWS Device Farm	– Test Android, iOS, and web apps on real devices in the AWS cloud – Application testing Service that allows tests on multiple desktop browsers and real mobile devices without having to provision and manage any testing infrastructure

Front End Web and Mobile

Games

Amazon GameLift	– Simple, fast, cost-effective dedicated game server hosting – Session based multiplayer games.
Amazon GameSparks	– Build game backends – Multi-service backend for game developers
Amazon Lumberyard	– A free cross-platform 3D game engine, with Full Source, integrated with AWS and Twitch – Connect games to the compute and storage of the AWS Cloud and engage fans on Twitch
AWS GameKit	– Deploy and customize game backend features directly from Unreal Engine – Cloud based game features with backend on AWS

Games

Internet of Things

AWS IoT 1-Click	– One click creation of an AWS Lambda trigger – service that makes it easy for simple devices to trigger AWS Lambda functions that execute a specific action.
AWS IoT Analytics	– Analytics for IoT devices – Managed service that provides advanced data analysis for IoT devices. AWS IoT Analytics lets you collect, process, and store IoT data in a time-series data store.
AWS IoT Button	– Cloud programmable dash button
AWS IoT Core	– Connect devices to the cloud – Bi-directional communication for Internet-connected devices (such as sensors, actuators, embedded devices, wireless devices, and smart appliances) to connect to the AWS Cloud over MQTT, HTTPS, and LoRaWAN.
AWS IoT Device Defender	– Security management for IoT devices. – Allows you to audit the configuration of your devices, monitor your connected devices to detect abnormal behavior, and to mitigate security risks. – It gives you the ability to enforce consistent security policies across your AWS IoT device fleet
AWS IoT Device Management	– Onboard, organize, and remotely manage IoT devices
AWS IoT EduKit	– Learn how to build simple IoT applications
AWS IoT Events	– IoT event detection and response – Managed service that lets you monitor your equipment or device fleets for failures or changes in operation, and trigger actions when such events occur.
AWS IoT ExpressLink (Preview)	– Quickly and easily develop secure IoT devices – ExpressLink hardware modules are pre-programmed to connect to AWS IoT services and are pre-loaded with security credentials. – They allow original equipment manufacturers (OEMs) to connect many different products to the cloud, send data and commands using simple commands, and use AWS services to address their data storage, analytics, and machine learning (ML) needs.
AWS IoT FleetWise (Preview)	– Easily collect, transform, and transfer vehicle data to the cloud in near-real time

AWS IoT Greengrass	– Local compute, messaging, and sync for devices – AWS IoT Greengrass seamlessly extends AWS onto physical devices so they can act locally on the data they generate, while still using the cloud for management, analytics, and durable storage.
AWS IoT RoboRunner	– Build applications that help robot fleets work together seamlessly – Service that provides infrastructure to allow robotics optimization from a single system view to build applications that help robots work seamlessly together.
AWS IoT SiteWise	– IoT data collector and interpreter – Easily collect, organize, and analyze data from industrial equipment at scale.
AWS IoT Things Graph	– Easily connect devices and web services
AWS IoT TwinMaker	– Optimize operations by easily creating digital twins of real-world systems – With AWS IoT TwinMaker, you can build operational digital twins of physical systems.
AWS Partner Device Catalog	– Curated catalog of AWS-compatible IoT hardware
FreeRTOS	– Real-time operating system for microcontrollers

Internet of Things

Machine Learning

Amazon SageMaker	– Provides tools to build, train and deploy machine learning models with fully managed infrastructure, tools and workflows
Amazon Augmented AI	– Implement human review of machine learning predictions
Amazon CodeGuru	– Automate Code reviews – Identify expensive lines of code – CodeGuru Reviewer uses machine learning and automated reasoning to identify critical issues, security vulnerabilities, and hard-to-find bugs during application development and provides recommendations to improve code quality
Amazon CodeWhisperer	– ML Powered Coding Companion – Automatic code recommendations based on the code and comments in your IDE.
Amazon Comprehend	– NLP Service that uses Machine Learning to derive insights and connections in the texts in documents – Derive and understand valuable insights from text within documents customer support tickets, product reviews, emails, social media feeds, and more.
Amazon Comprehend Medical	– Extract information from unstructured medical text accurately and quickly – Extracts information from doctors' notes, clinical trial reports, or radiology reports
Amazon DevOps Guru	– ML Powered Cloud Operation Services – Detect abnormal application behavior using ML
Amazon Elastic Inference	– Amazon Elastic Inference allows you to attach low-cost GPU-powered acceleration to Amazon EC2 and Sagemaker instances or Amazon ECS tasks, to reduce the cost of running deep learning inference by up to 75%. Amazon Elastic Inference supports TensorFlow, Apache MXNet, PyTorch and ONNX models.
Amazon Forecast	– Forecast business outcomes easily and accurately using machine learning – Amazon Forecast is a time-series forecasting service based on machine learning (ML) and built for business metrics analysis.
Amazon Fraud Detector	– Detect online fraud faster with machine learning – Build, deploy, and manage fraud detection models
Amazon HealthLake	– Extract meaning from unstructured data with natural language processing (NLP) for easy search and querying. – HIPAA-eligible service offering healthcare and life sciences companies a complete view of individual or patient population health data for query and analytics at scale.

Amazon Kendra	– Highly accurate intelligent search service powered by machine learning – Support Enterprise Search across multiple location and content repository within your organization
Amazon Lex	– Helps build Chatbots with conversational AI – Fully managed AI service with advanced natural language models to design, build, test and deploy conversational interfaces in applications – Used for creating Virtual Agents & Voice Assistants – Automate informational responses
Amazon Lookout for Equipment	– Detect abnormal equipment behavior by analyzing sensor data – Can analyze sensor data from a broad range of industrial machinery.
Amazon Lookout for Metrics	– Automatically detect anomalies in metrics and identify their root cause – *Amazon Lookout for Metrics uses machine learning (ML) to automatically detect and diagnose anomalies (i.e. outliers from the norm) in business and operational data, such as a sudden dip in sales revenue or customer acquisition rates etc*
Amazon Lookout for Vision	– Spot product defects using computer vision to automate quality inspection – Is an ML service that uses computer vision to spot defects in manufactured products at scale.
Amazon Monitron	– Reduce unplanned equipment downtime with predictive maintenance and machine learning – Amazon Monitron is an end-to-end system that uses machine learning to detect abnormal conditions in industrial equipment and enable predictive maintenance Monitron Sensor -> Monitron Gateway -> Monitron Service -> Monitron App
Amazon Personalize	– Provides real-time personalized recommendations – Product & Content Recommendations
Amazon Polly	– Text-to-speech (TTS) service that turns text into natural-sounding human speech. – Turn text into lifelike speech using deep learning
Amazon Rekognition	– Automate your image and video analysis with machine learning – A machine learning service that identifies objects, people, text, scenes, and activities, including inappropriate content, in either image or video files.

Amazon Textract	– Automatically extract printed text, handwriting, and data from any document -machine learning (ML) service that automatically extracts text, handwriting, and data from scanned documents. – Amazon Textract goes beyond simple optical character recognition (**OCR**) to also identify the contents of fields in forms and information stored in tables.
Amazon Translate	– Neural machine translation service that delivers fast, high-quality, affordable, and customizable language translation. Neural machine translation is a form of language translation automation that uses deep learning models to deliver more accurate and more natural sounding translation than traditional statistical and rule-based translation algorithms.
Amazon Transcribe	– Uses automatic speech recognition (ASR) to quickly and accurately convert speech to text.
AWS Deep Learning AMIs	– Pre-configured environments to quickly build deep learning applications
AWS Deep Learning Containers	-Quickly set up deep learning environments with optimized, pre-packaged container images -Docker images pre-installed with deep learning frameworks to make it easy to deploy custom machine learning (ML) environments
AWS Deep Composer	– Designed to educate developers about machine learning
AWS DeepLens	– Deep Learning enabled video cameras
AWS DeepRacer	– Interesting and fun way to get started with reinforcement learning (RL). RL is an advanced machine learning (ML) technique that takes a very different approach to training models than other machine learning methods. Its super power is that it learns very complex behaviors without requiring any labeled training data, and can make short term decisions while optimizing for a longer term goal.
AWS Inferentia	– High performance machine learning inference chip, custom designed by AWS
AWS Panorama	– AWS Panorama is a collection of machine learning (ML) devices and a software development kit (SDK) that brings Computer Vision to on-premises internet protocol (IP) cameras.
Apache MXNet on AWS	– Apache MXNet is a fast and scalable training and inference framework with an easy-to-use, concise API for machine learning.

PyTorch on AWS	– PyTorch on AWS is an open-source deep learning (DL) framework that accelerates the process from ML research to model deployment.
TensorFlow on AWS	– TensorFlow is one of many deep learning frameworks available to researchers and developers to enhance their applications with machine learning. AWS provides broad support for TensorFlow, enabling customers to develop and serve their own models across computer vision, natural language processing, speech translation, and more.

AWS Machine Learning Services

Management & Governance

Amazon CloudWatch	– Monitor resources and applications – A web service that you can use to monitor and manage various metrics, and configure alarm actions based on data from those metrics.
Amazon Managed Grafana	– Powerful interactive data visualizations -Scalable, secure, and highly available data visualization for your operational metrics, logs, and traces. – Instantly query, correlate, and visualize operational metrics, logs, and traces from multiple data sources.
Amazon Managed Service for Prometheus	– Highly available, secure monitoring for containers
AWS Auto Scaling	– Scale multiple resources to meet demand – AWS provides multiple services that you can use to scale your application. – Auto scaling is enabled by Amazon CloudWatch and is available at no additional charge beyond the service fees for CloudWatch and the other AWS resources that you use.
AWS Chatbot	– ChatOps for AWS – Enables DevOps and software development teams to use Slack or Amazon Chime chat rooms to monitor and respond to operational events in their AWS Cloud.
AWS CloudFormation	– Create and manage resources with templates – Enables you to create and provision AWS infrastructure deployments predictably and repeatedly. – AWS CloudFormation enables you to use a template file to create and delete a collection of resources together as a single unit
AWS CloudTrail	– Track user activity and API usage – A web service that records AWS API calls for your account and delivers log files to you. – The recorded information includes the identity of the API caller, the time of the API call, the source IP address of the API caller, the request parameters, and the response elements returned by the AWS service.
AWS Command Line Interface	– Unified tool to manage AWS services – AWS Command Line Interface (AWS CLI) is a unified tool that provides a consistent interface for interacting with all parts of Amazon Web Services
AWS Compute Optimizer	– Identify optimal AWS Compute resources – AWS Compute Optimizer recommends optimal AWS compute resources for your workloads.

AWS Config	– Track resources inventory and changes
AWS Control Tower	– Set up and govern a secure, compliant multi-account environment
AWS Console Mobile Application	– Access resources on the go
AWS Distro for OpenTelemetry	– Collect correlated metrics and traces
AWS Health Dashboard	– View important events and changes affecting your AWS environment
AWS Launch Wizard	– Easily size, configure, and deploy third party applications on AWS
AWS License Manager	– Track, manage, and control licenses – streamlines the process of bringing software vendor licenses to the AWS Cloud.
AWS Management Console	– Web-based user interface
AWS Managed Services	– Infrastructure operations management for AWS
AWS OpsWorks	– Automate operations with Chef and Puppet
AWS Organizations	– Central governance and management across AWS accounts – With AWS Organizations, you can consolidate multiple AWS accounts into an organization that you create and centrally manage.
AWS Proton	– Automated management for container and serverless deployment – creates and manages standardized infrastructure and deployment tooling for developers and their serverless and container-based applications.
AWS Resilience Hub	– Protect applications from disruption – AWS Resilience Hub provides resiliency assessment and validation to help you identify and resolve issues before releasing applications into production.
AWS Service Catalog	– Create and use standardized products
AWS Systems Manager	– Gain operational insights and take action

AWS Trusted Advisor	– Optimize performance and security
AWS Well-Architected Tool	– Review and improve your workloads

Management & Governance

Media Services

Amazon Elastic Transcoder	– Easy-to-use scalable media transcoding – Elastic Transcoder is a highly scalable tool for converting (or *transcoding*) media files from their source format into versions that play on devices such as smartphones, tablets, and PCs.
Amazon Interactive Video Service	– Managed live video solution
Amazon Kinesis Video Streams	– Process and analyze video streams`
Amazon Nimble Studio	– Build a digital content creation studio – virtual studio that empowers visual effects, animation, and interactive content teams to create content securely within a scalable, private cloud service.
AWS Elemental MediaConnect	– Reliable and secure live video transport – A service that broadcasters and other premium video providers can reliably use to ingest live video into the AWS Cloud and distribute it to multiple destinations inside or outside the AWS Cloud.
AWS Elemental MediaConvert	– Convert file-based video content – A file-based video conversion service that transforms media into formats required for traditional broadcast and for internet streaming to multi-screen devices.
AWS Elemental MediaLive	– Convert live video content – A video service that you can use to create live outputs for broadcast and streaming delivery.
AWS Elemental MediaPackage	– Video origination and packaging – A just-in-time packaging and origination service that you can use to format highly secure and reliable live outputs for a variety of devices.
AWS Elemental MediaStore	– Media storage and simple http origin – A storage service optimized for media that provides the performance, consistency, and low latency required to deliver live and on-demand video content at scale.
AWS Elemental MediaTailor	– Video personalization and monetization – A video service that you can use to serve targeted ads to viewers while maintaining broadcast quality in over-the-top (OTT) video applications.
AWS Elemental Appliances & Software	– On-premises media solutions

Migration & Transfer

AWS Migration Hub	– Track migrations from a single place – single location to track migration tasks across multiple AWS tools and partner solutions
AWS Application Discovery Service	– Discover on-premises applications to streamline migration – Helps systems integrators quickly and reliably plan application migration projects by automatically identifying applications running in on-premises data centers, their associated dependencies, and their performance profile.
AWS Application Migration Service (CloudEndure Migration)	– Automated lift-and-shift migration
AWS Database Migration Service	– Migrate databases with minimal downtime
AWS DataSync	– Simple, fast, online data transfer
AWS Mainframe Modernization (Preview)	– Migrate, modernize, operate, and run mainframe workloads
AWS Server Migration Service	– Migrate on-premises servers to AWS
AWS Snow Family	-The AWS Snow Family is a service that helps customers who need to run operations in austere, non-data center environments, and in locations where there's no consistent network connectivity. You can use these devices to locally and cost-effectively access the storage and compute power of the AWS Cloud in places where an internet connection might not be an option.
AWS Transfer Family	– Fully managed SFTP, FTPS, and FTP service
Migration Evaluator (Formerly TSO Logic)	– Create a business case for cloud migration

Migration & Transfer

Network and Content Delivery

Amazon VPC	– Isolated cloud resources
Amazon API Gateway	– Build, deploy, and manage APIs
Amazon CloudFront	– Content delivery network (CDN) service – Global content delivery network – Securely deliver content with low latency and high transfer speeds
Amazon Route 53	– Scalable domain name system (DNS) – Used to create a new DNS service or to migrate your existing DNS service to the cloud.
AWS App Mesh	– Monitor and control microservices
AWS Cloud Map	– Service discovery for cloud resources
AWS Cloud WAN	– Easily build, manage, and monitor global wide area networks
AWS Direct Connect	– Dedicated network connection to AWS
AWS Global Accelerator	– Improve application availability and performance
AWS Private 5G (Preview)	– Easily deploy, manage, and scale a private cellular network – AWS Private 5G is a managed service that makes it easy to deploy, operate, and scale your own private mobile network at your on-premises location.
AWS PrivateLink	– Securely access services hosted on AWS
AWS Transit Gateway	– Easily scale VPC and account connections
AWS VPN	– Securely access your network resources
Elastic Load Balancing (ELB)	– Distribute incoming traffic across multiple targets

Network & Content Delivery

Quantum Technologies

Amazon Braket	– Explore and experiment with quantum computing
Amazon Quantum Solutions Lab	– Collaborate with quantum computing experts

Quantum Technologies

Robotics

AWS IoT RoboRunner	– Build applications that help robot fleets work together seamlessly
AWS RoboMaker	– Develop, test, and deploy robotics applications

Robotics

Satellite

AWS Ground Station	– Fully managed ground station as a service – fully managed service that enables you to control satellite communications, process satellite data, and scale your satellite operations

Satellite

Security, Identity and Compliance

AWS Identity and Access Management (IAM)	– Securely manage access to services and resources
Amazon Cognito	– Identity management for your apps – Simple and Secure User Sign-Up, Sign-In, and Access Control – Supports sign in with social identity providers such as Apple, Facebook, Google, Amazon and enterprise identity providers via SAML 2.0 and OpenID Connect. – Can be used to store mobile user data such app preferences or games state
Amazon Detective	– Investigate potential security issues – A service that collects **log data** from your AWS resources to analyze and identify the **root cause of security findings** or **suspicious activities**.
Amazon GuardDuty	– Managed threat detection service – Identify unexpected and potentially unauthorized or malicious activity in your AWS environment.
Amazon Inspector	– Automate vulnerability management – An automated security assessment service that helps improve the security and compliance of applications deployed on AWS. – Inspects deviation from best practices and produces detailed report
Amazon Macie	– Discover and protect your sensitive data at scale – A security service that uses machine learning to automatically discover, classify, and protect sensitive data in AWS.
AWS Artifact	– On-demand access to AWS' compliance reports
AWS Audit Manager	– Continuously audit your AWS usage
AWS Certificate Manager	– Provision, manage, and deploy SSL/TLS certificates
AWS CloudHSM	– Hardware-based key storage for regulatory compliance
AWS Directory Service	– Host and manage active directory
AWS Firewall Manager	– Central management of firewall rules

AWS Key Management Service	– Managed creation and control of encryption keys
AWS Network Firewall	– Network security to protect your VPCs
AWS Resource Access Manager	– Simple, secure service to share AWS resources
AWS Secrets Manager	– Rotate, manage, and retrieve secrets
AWS Security Hub	– Unified security and compliance center – A service that provides a comprehensive view of the security state of your AWS resources. – Security Hub collects security data from AWS accounts and services and helps you analyze your security trends to identify and prioritize the security issues across your AWS environment.
AWS Shield	– DDoS protection – AWS provides two levels of protection against DDoS attacks: AWS **Shield Standard** and AWS **Shield Advanced.**
AWS IAM Identity Center	– Manage single sign-on access to AWS accounts and apps
AWS WAF	– Filter malicious web traffic – web application firewall that lets you monitor web requests that are forwarded to Amazon CloudFront distributions or an Application Load Balancer.

Security, Identity and Compliance

Serverless

AWS Lambda	– Run code without provisioning or managing infrastructure. Simply write and upload code as a .zip file or container image. – AWS Lambda is a serverless, event-driven compute service that lets you run code for virtually any type of application or backend service without provisioning or managing servers.
Amazon API Gateway	
Amazon DynamoDB	– A fully managed NoSQL database service that provides fast and predictable performance with seamless scalability. – Fully managed highly available with replication across 3 Availability zones – Is a NoSQL Database (Key-Value Database) – Scales to massive workloads – Distributed server-less database – Millions of records per second, trillion of rows and 100s of Terabyte of storage. – Fast and consistent in performance – Single-digit millisecond latency – Integrated with IAM (Identify Access Management) for security, authorization and administration – DAX – DynamoDB AcceleratorFully managed in-memory cache for DynamoDB leading to 10X performance improvement
Amazon EventBridge	– EventBridge is a serverless event bus that makes it easier to build event-driven applications at scale using events generated from your applications, integrated Software-as-a-Service (SaaS) applications, and AWS services. – EventBridge delivers a stream of real-time data from event sources such as Zendesk or Shopify to targets like AWS Lambda and other SaaS applications.
Amazon Simple Notification Service (SNS)	– A web service that applications, users, and devices can use to instantly send and receive notifications from the cloud.

Amazon Simple Queue Service (SQS)	– Fully Managed Message Queueing Service – Fully managed message queues for microservices, distributed systems, and serverless applications – Eliminates the complexity and overhead associated with managing and operating message-oriented middleware, – Using SQS, we can send, store, and receive messages between software components at any volume, SQS offers two types of message queues. – **Standard queues** offer maximum throughput, best-effort ordering, and at-least-once delivery. – **SQS FIFO** queues are designed to guarantee that messages are processed exactly once, in the exact order that they are sent.
Amazon Simple Storage Service (S3)	Object Storage service offering Supports 11 9s data durability Allows fine tuned access control on objects Can be used to build a data lake Supports backup and restore data meeting Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) For archiving requirement one can move to low cost AWS S3 Glacier storage classes
AWS AppSync	– Fully-managed, scalable GraphQL APIs – Accelerate application development with serverless GraphQL and Pub/Sub APIs – Used for developing Web and Mobile Applications
AWS Fargate	– Serverless Compute for containers – Removes the operational overhead of scaling, patching , securing and managing servers – Pay as you go computing engine – Compatible with both ECS (Elastic Container Service) and EKS (Elastic Kubernetes Service)
AWS Step Functions	– visual workflows for applications – used for automating extraction, transform and load process (ETL) – used for orchestrating microservices

AWS Serverless Offerings Summary

AWS Storage

Amazon Simple Storage Service (S3)	– Object Storage service offering – Supports 11 9s data durability – Allows fine tuned access control on objects – Can be used to build a data lake – Supports backup and restore data meeting **Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO)** – For archiving requirement one can move to low cost AWS S3 Glacier storage classes
Amazon S3 Glacier Storage Classes	– Long-term, secure, durable storage classes for data archiving at the lowest cost and milliseconds access There are 3 glacier storage classes – Amazon **S3 Glacier Instant Retrieval** storage class – Amazon **S3 Glacier Flexible Retrieval** storage class (1 to 2 times per year) – 10% less cost than instant – Amazon **S3 Glacier Deep Archive** storage class (Less than 1 per year) 75% less cost that Flexible. Data Retrieval is asynchronous.
Amazon Elastic Block Store (EBS)	– A service that provides block level storage volumes for use with EC2 Instances – Designed for EC2
Amazon Elastic File System (EFS)	– A file storage service for EC2 instances. – Amazon EFS provides an interface that you can use to create and configure file systems. – Amazon EFS storage capacity grows and shrinks automatically as you add and remove files.
Amazon FSx	– Amazon FSx makes it easy and cost effective to launch, run, and scale feature-rich, high-performance file systems in the cloud. – It supports a wide range of workloads with its reliability, security, scalability, and broad set of capabilities. – With Amazon FSx, you can choose between four widely-used file systems: Lustre, NetApp ONTAP, OpenZFS, and Windows File Server.
Amazon FSx for NetApp ONTAP	
Amazon FSx for OpenZFS	
Amazon FSx for Windows File Server	
AWS Backup	– Centrally manage and automate backups across AWS services – Provides data protection at scale.

AWS Elastic Disaster Recovery (CloudEndure Disaster Recovery)	
AWS Snow Family	– Move petabytes of data to and from AWS, or process data at the edge – AWS Snow Family Service models – *AWS Snowcone* – Compact Portable Device (8 TB HDD, 14TB SSD) – *AWS Snowball* – ~ 23KG device ~ 80TB HDD Storage – *AWS Snowmobile* – Exabyte scale data transfer (100 PB in 45 ft ruggedized shipping container)
AWS Storage Gateway	– Provide on-premises application with unlimited cloud storage.

AWS Storage Solutions