# Top 50 AWS Services

## For Certification Prep (CCP + SAA)


**Clear Definitions • Real-World Examples •**
**• Exam-Focused Learning**

Technical Guide (2025 Edition)

# 📊 Top 50 AWS Services for Certification Prep (CCP & SAA)

## I. Compute Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **1. Amazon EC2** | Elastic Compute Cloud. Provides resizable compute capacity in the cloud as virtual servers (instances). It's the building block of most AWS architecture. | Hosting a company web server or running a batch processing application on a Linux or Windows machine. |
| **2. AWS Lambda** | Serverless Compute. Lets you run code without provisioning or managing servers. You only pay for the compute time you consume. | Running a function to resize an image immediately after it is uploaded to an S3 bucket (event-driven processing). |
| **3. Amazon ECS** | Elastic Container Service. A highly scalable, high-performance container orchestration service that supports Docker containers. | Deploying and managing a microservices-based application that is packaged into Docker containers. |
| **4. Amazon EKS** | Elastic Kubernetes Service. A managed service that makes it easy to run Kubernetes on AWS without needing to install, operate, and maintain your own Kubernetes control plane. | Running a standardized, industry-compliant Kubernetes cluster for large-scale enterprise deployments. |
| **5. AWS Elastic Beanstalk** | An easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker. | A developer needs to deploy a new Python web application quickly without managing the underlying EC2, load balancing, or scaling components. |
| **6. AWS Fargate** | Serverless Compute for Containers. A serverless compute engine for containers that works with both Amazon ECS and EKS. | Running containerized applications without having to provision, configure, or scale clusters of virtual machines. |

## II. Storage Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **7. Amazon S3** | Simple Storage Service. Object storage built to store and retrieve any amount of data from anywhere on the web (highly durable and available). | Storing website images, videos, and backup files; also used as a "data lake" for big data analytics. |
| **8. Amazon EBS** | Elastic Block Store. Provides persistent block storage volumes for use with Amazon EC2 instances. | Attaching a dedicated hard drive (volume) to an EC2 instance to store the operating system and application data. |
| **9. Amazon EFS** | Elastic File System. A simple, scalable, elastic file storage system for use with AWS Cloud services and on-premises resources. (Network File System - NFS). | Multiple EC2 instances need concurrent, shared access to the same file system for a content management system. |
| **10. Amazon S3 Glacier** | A secure, durable, and extremely low-cost storage class for data archiving and long-term backup. | Archiving regulatory compliance records or old log files that must be kept for 7 years but are rarely accessed. |
| **11. AWS Storage Gateway** | A hybrid storage service that enables on-premises software applications to seamlessly use AWS cloud storage. | A company's data center needs to use a local cache while backing up large amounts of data to S3. |
| **12. AWS Backup** | A centralized, managed backup service that makes it easy to centrally configure backup policies and monitor backup activity across your AWS resources. | Automating and centralizing backup and retention policies for EC2, RDS, DynamoDB, EBS, and EFS. |

## III. Networking & Content Delivery Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **13. Amazon VPC** | Virtual Private Cloud. A logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network that you define. | Creating a private, secure network environment in the cloud with specific IP address ranges and subnets. |
| **14. Amazon Route 53** | A scalable cloud Domain Name System web service. It translates human-readable domain names into IP addresses. | Registering a new domain name (e.g., mycompany.com) and routing user traffic to the correct EC2 instance or Load Balancer. |
| **15. Amazon CloudFront** | A fast Content Delivery Network service that securely delivers data, videos, applications, and APIs to customers globally with low latency. | Caching frequently accessed website assets (like images and CSS files) at edge locations closer to global users. |
| **16. Elastic Load Balancing (ELB)** | Automatically distributes incoming application traffic across multiple targets. | Distributing user requests across three EC2 instances to prevent any single server from becoming overwhelmed. |
| **17. AWS Direct Connect** | Establishes a dedicated, private network connection from your data center to AWS. | A large corporation needs a reliable, high-speed connection to move massive amounts of data from their on-premises network to a VPC. |
| **18. AWS Global Accelerator** | A networking service that improves the availability and performance of your applications with local or global users. | Providing static IP addresses that route traffic to the optimal regional endpoint over the AWS global network. |
| **19. AWS Transit Gateway** | A network transit hub that connects your Amazon VPCs and your on-premises networks to a single gateway. | Connecting dozens of VPCs in a complex network to simplify the routing and management of network traffic. |

## IV. Database Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **20. Amazon RDS** | Relational Database Service. A managed service that makes it easy to set up, operate, and scale a relational database (MySQL, PostgreSQL, Oracle, etc.) in the cloud. | Running a traditional e-commerce product catalog database that requires structured query language (SQL). |
| **21. Amazon DynamoDB** | A fast and flexible NoSQL database service for single-digit millisecond performance at any scale. | A gaming application that requires millions of concurrent read/write requests for user profile and session data. |
| **22. Amazon Aurora** | A MySQL and PostgreSQL-compatible relational database built for the cloud, offering up to 5x the performance of standard MySQL. | Migrating a high-volume financial trading database to the cloud while maintaining compatibility with MySQL. |
| **23. Amazon Redshift** | A fast, fully managed, petabyte-scale data warehouse service that makes it simple and cost-effective to analyze all your data. | Running complex analytical queries on massive datasets (e.g., billions of customer sales records) for business intelligence. |
| **24. Amazon ElastiCache** | Provides an in-memory data store/cache to significantly improve application performance (compatible with Redis and Memcached). | Speeding up a popular website's performance by caching frequent database query results to reduce RDS load. |

## V. Security, Identity, and Compliance Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **25. AWS IAM** | Identity and Access Management. Enables you to securely manage access to AWS services and resources. | Creating a new user for a developer and granting them permissions to only access specific S3 buckets and EC2 instances. |
| **26. AWS KMS** | Key Management Service. Makes it easy for you to create and manage cryptographic keys and control their use across a wide range of AWS services and in your applications. | Encrypting the EBS volumes attached to an EC2 instance with a key you control and audit. |
| **27. AWS WAF** | Web Application Firewall. Helps protect your web applications or APIs against common web exploits that may affect availability, compromise security, or consume excessive resources. | Blocking common SQL injection or cross-site scripting (XSS) attacks directed at your web application hosted on CloudFront. |
| **28. AWS Shield** | A managed Distributed Denial of Service (DDoS) protection service that safeguards applications running on AWS. | Protecting a high-profile public-facing website from large-scale network-layer DDoS attacks. |
| **29. Amazon Inspector** | An automated security assessment service that helps improve the security and compliance of applications deployed on AWS. | Running an automated security audit on EC2 instances to check for vulnerabilities and configuration drift. |
| **30. AWS Artifact** | A central resource for compliance-related information. Provides on-demand access to AWS security and compliance reports. | Downloading the SOC 2 report to provide proof of compliance to an external auditor. |

## VI. Management, Monitoring, and Governance Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **31. Amazon CloudWatch** | A monitoring and observability service that provides data and actionable insights to monitor applications, respond to system-wide performance changes, and optimize resource utilization. | Setting an alarm to notify an administrator if the CPU utilization of an EC2 instance exceeds 80% for 5 minutes. |
| **32. AWS CloudFormation** | An Infrastructure as Code (IaC) service that allows you to model, provision, and manage AWS and third-party resources using templates. | Defining an entire three-tier web application architecture (VPC, EC2, RDS, Load Balancer) in a reusable YAML template. |
| **33. AWS CloudTrail** | Enables governance, compliance, and risk auditing of your AWS account by logging all API calls (actions) made by a user, role, or AWS service. | Auditing who terminated an EC2 instance at a specific time and which IAM user performed the action. |
| **34. AWS Systems Manager** | Gives you visibility and control of your infrastructure on AWS. It simplifies resource and application management, shortens the time to detect and resolve operational problems. | Automatically patching the operating systems of a fleet of EC2 instances across different regions. |
| **35. AWS Organizations** | Helps you centrally manage and govern your environment as you grow and scale your AWS resources. | Setting up a multi-account structure for a large company, with separate accounts for Development, Testing, and Production. |
| **36. AWS Config** | Provides a detailed view of the configuration of AWS resources in your AWS account. It also records continuous configuration changes. | Tracking all changes made to a Security Group's firewall rules over the last six months for compliance reasons. |

## VII. Application Integration & Serverless Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **37. Amazon SQS** | Simple Queue Service. A fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications. | Decoupling a web application's order processing by placing customer orders into a queue for a backend worker service to process later. |
| **38. Amazon SNS** | Simple Notification Service. A fully managed messaging service for both application-to-application (A2A) and application-to-person (A2P) communication. | Sending a text message (SMS) or email notification to a customer when their order is shipped, or triggering multiple Lambda functions from one event. |
| **39. Amazon API Gateway** | A fully managed service that makes it easy for developers to create, publish, maintain, monitor, and secure APIs at any scale. | Creating a single entry point (REST or WebSocket API) for a mobile application to interact with multiple Lambda functions and other backend services. |
| **40. AWS Step Functions** | A serverless orchestrator that makes it easy to sequence AWS Lambda functions and multiple AWS services into business-critical workflows. | Coordinating a complex, multi-step process like a loan application, involving data validation, credit check (Lambda functions), and a final database update (DynamoDB). |

## VIII. Analytics & Migration Services

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **41. AWS DMS** | Database Migration Service. Helps you migrate databases to AWS quickly and securely with minimal downtime. | Performing a live migration of an on-premises Oracle database to Amazon Aurora in the AWS Cloud. |
| **42. AWS Snowball** | A petabyte-scale data transport solution that uses secure appliances to transfer large amounts of data into and out of the AWS Cloud. | A company with no fast internet connection needs to upload 500 terabytes of video footage to S3 for processing. |
| **43. Amazon Athena** | An interactive query service that makes it easy to analyze data directly in Amazon S3 using standard SQL. | Quickly running an ad-hoc SQL query against compressed CSV files stored in an S3 data lake without setting up a database server. |
| **44. Amazon Kinesis** | A platform for collecting, processing, and analyzing real-time streaming data. | Processing thousands of real-time sensor data points from IoT devices as they are generated. |
| **45. Amazon QuickSight** | A scalable, serverless, embeddable, machine learning-powered business intelligence (BI) service built for the cloud. | Creating a dashboard for sales managers to visualize key performance indicators (KPIs) from data in Redshift. |

## IX. Other Essential Services (CCP/SAA)

| Service Name | Definition | Real-Time Example |
|---|---|---|
| **46. Amazon VPC Peering** | A networking connection between two VPCs that enables you to route traffic between them privately using IPv4 or IPv6 addresses. | Connecting a Development VPC to a Shared Services VPC (e.g., one containing a centralized logging server) in the same region. |
| **47. AWS Auto Scaling** | A service that monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. | Automatically launching new EC2 instances when website traffic surges during a holiday sale and terminating them when the traffic drops. |
| **48. AWS Shared Responsibility Model** | Defines what you are responsible for (security in the cloud: data, OS, network configuration) and what AWS is responsible for (security of the cloud: infrastructure, global network, hardware). | AWS is responsible for the physical security of the data center, while the customer is responsible for patching the guest OS on an EC2 instance. |
| **49. AWS Pricing Models** | Includes On-Demand, Reserved Instances (RIs), Savings Plans, and Spot Instances. A core concept for cost optimization. | A customer uses Spot Instances for a non-critical batch job to save up to 90% on compute costs. |
| **50. AWS Well-Architected Framework** | A set of five pillars (Operational Excellence, Security, Reliability, Performance Efficiency, and Cost Optimization) that provide best practices for designing and operating systems in the cloud. | Using the Reliability pillar to guide the design of a system with multi-AZ deployment and automated failover. |