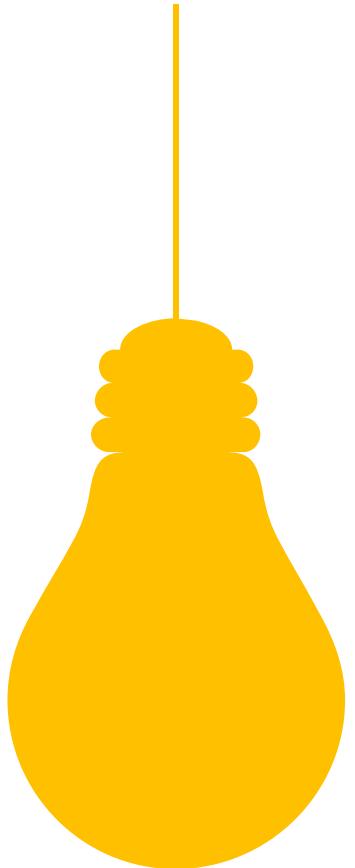


Course Introduction	Theory
AWS Regions and Availability Zones	Theory
Major Services CP	Theory
VPC	Theory/Lab
Trusted Advisor	Theory/Lab
AWS Cloud Trail	Theory/Lab
IAM	Theory/Lab
S3	Theory/Lab
AWS Cloud Front	Theory/Lab
AWS Cloud Watch	Theory/Lab
AWS EC2	Theory/Lab
Elastic Load Balancer & AutoScaling	Theory/Lab
AWS Route 53	Theory/Lab
AWS Simple Queue Service	Theory/Lab
AWS Simple Notification Service	Theory/Lab
AWS Lambda	Theory/Lab
AWS RDS	Theory/Lab
AWS CloudFormation	Theory/Lab
AWS CodeDeploy and AWS CI/CD pipelines	Theory/Lab
AWS Elastic Beanstalk	Theory/Lab
Amazon ECR Container Registry	Theory/Lab
Other Topics and Assignment	
Blue Green Deployment	Theory/ Assignment
Immutable Deployment	Theory/ Assignment
Serverless Computing	Theory/ Assignment

Amazon Web Services Exam

AWS Cloud Computing White Papers:

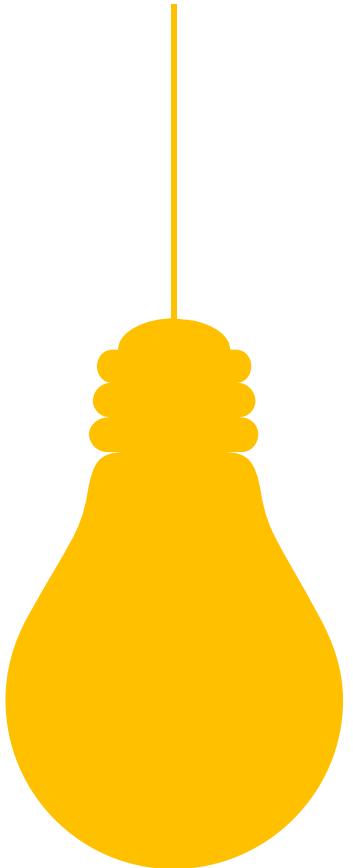
- Overview Of Amazon Web service
- Overview of Security Process
- AWS Risk and Compliance Whitepaper
- Storage Options in the Cloud
- Architecting for the AWS Cloud: Best Practices
- Well Architected Framework
- Final Exam





Amazon Web Services

AWS offers a broad set of global cloud-based products including compute, storage, database, analytics, networking, machine learning and AI, mobile, developer tools, IoT, security, enterprise applications, and much more



AWS User Accounts

There are two types of users:

Root User

- Account owner
- Created when the AWS account is created
- Allow full access to all resources in the account
- Only the root user can close your account

AWS Identity and Access Management (IAM) user

- Created by the root user or an IAM administrator for the account
- Securely control access to AWS services and resources



AWS Connectivity

Three Ways to Interact with AWS



AWS Management Console

Easy-to-use graphical interface



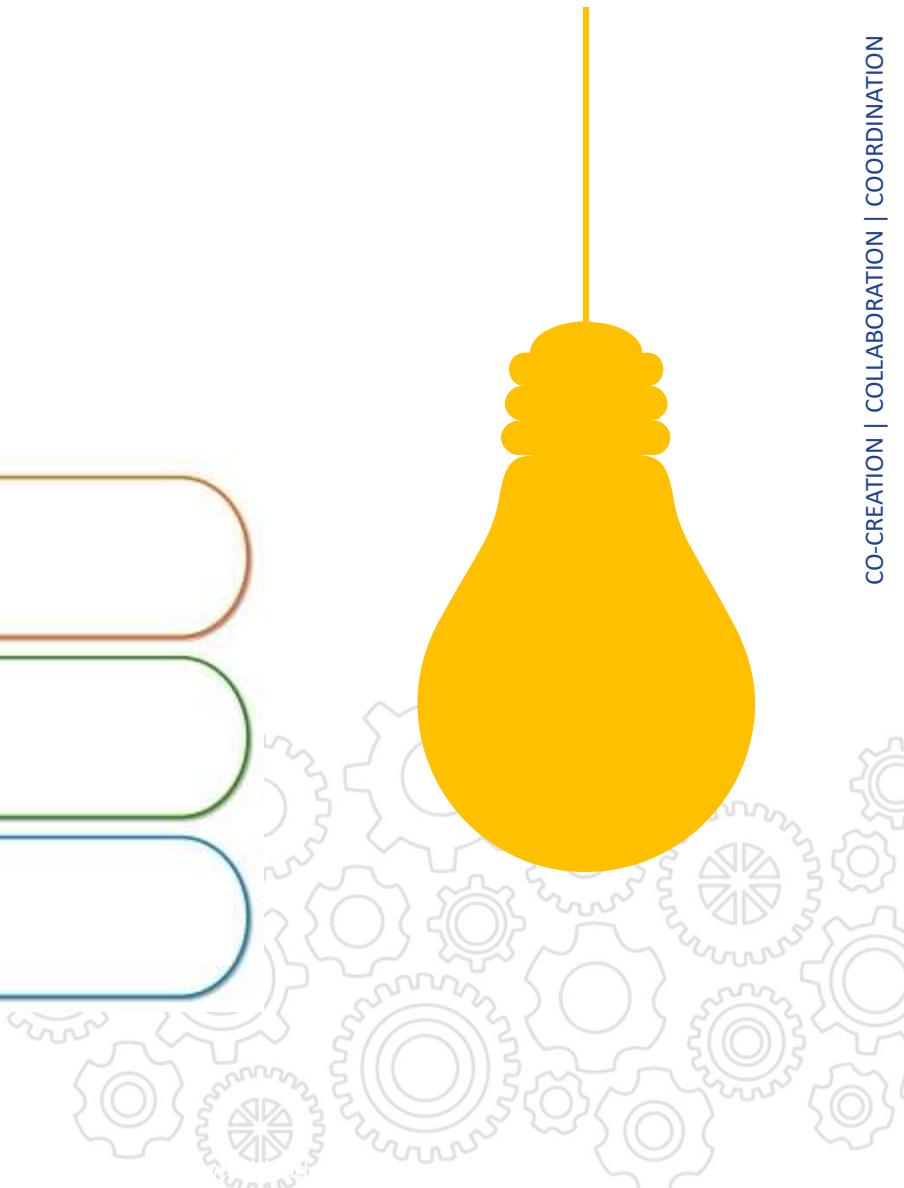
Command Line Interface (AWS CLI)

Access to services via discrete command



Software Development Kits (SDKs)

Access services in your code



Regions and Zones

Amazon EC2 is hosted in multiple locations world-wide. These locations are composed of Regions, Availability Zones, Local Zones, AWS Outposts, and Wavelength Zones. Each Region is a separate geographic area.

24 Launched Regions

Each with multiple Availability Zones (AZ's)

77 Availability Zones

5 Local Zones

12 Wavelength Zones

For ultralow latency applications

6 Announced Regions

12 Announced Local Zones

2x More Regions

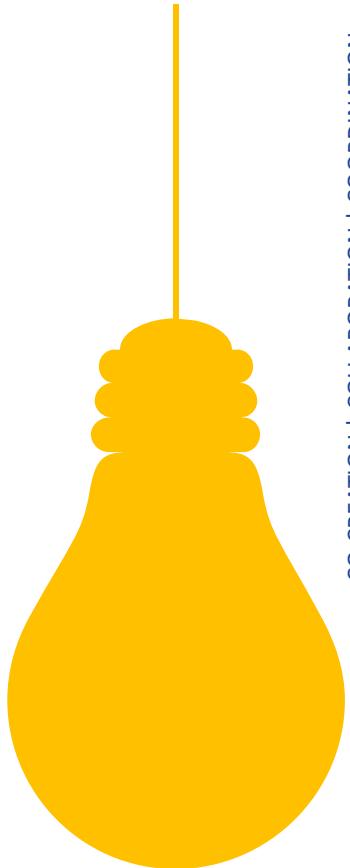
With multiple AZ's than the next largest cloud provider

245 Countries and Territories Served

97 Direct Connect Locations

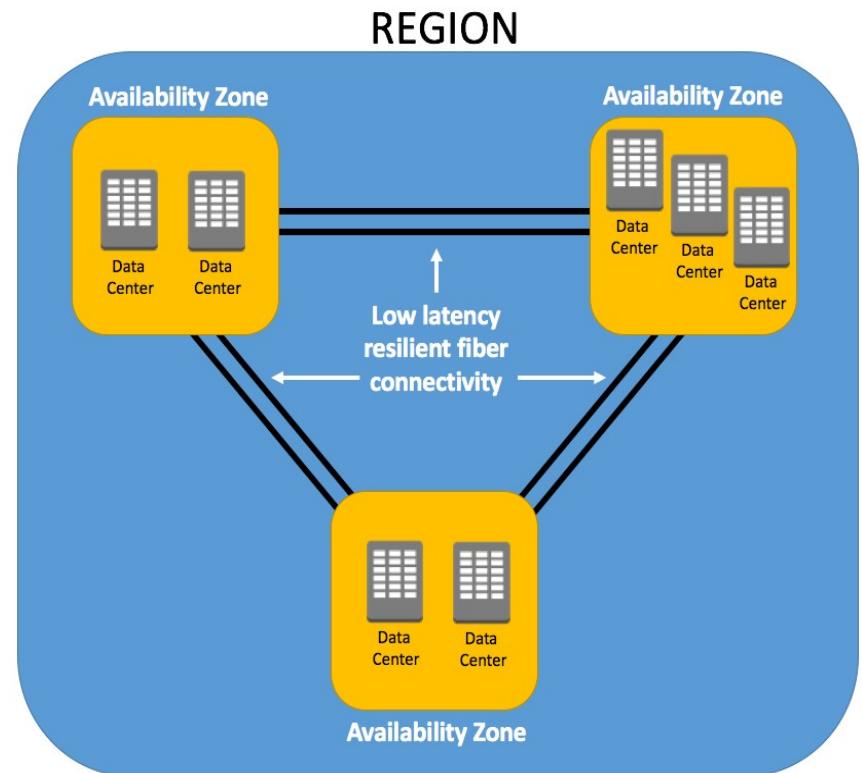
220+ Points of Presence

210+ Edge Locations and 12 Regional Edge Caches



Availability Zones:

- Every region consists of two or more clusters of datacenters called “Availability Zones”
- Every Availability Zone has a corresponding code which consists of region code followed by alphabets
 - US West (Oregon) four availability zones:
 - Region code: us-west-2
 - Availability zone 1: us-west-2a
 - Availability zone 1: us-west-2b
 - Availability zone 1: us-west-2c
 - Availability zone 1: us-west-2d



<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/using-regions-availability-zones.html>

Amazon ECS supports workloads that take advantage of Local Zones, Wavelength Zones and AWS Outposts when low latency or local data processing requirements are needed.

- Local Zones are an extension of an AWS Region that provide you the ability to place resources in multiple locations closer to your end users.
- Wavelength Zones allow developers to build applications that deliver ultra-low latencies to 5G devices and end users. Wavelength deploys standard AWS compute and storage services to the edge of telecommunication carriers' 5G networks.
- AWS Outposts brings native AWS services, infrastructure, and operating models to virtually any data center, co-location space, or on-premises facility.

<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/using-regions-availability-zones.html>

Selecting AWS Region



Proximity to Customers

Select the region where most of your end users are located. It ensures the best user experience. For example, if most of your end users are located in South America, in this case, selecting the Sao Paulo region will be better than the Singapore region.



Compliance

You may have data compliance requirements where your data needs to reside in a certain country or replicated to a specific country for disaster recovery.



Service availability

While most of the popular AWS services are available in all regions, not all AWS services are available in all regions. In deciding on a region, consider your current and future business needs.



Cost

Price across regions varies due to different regulations in each country, capital, and operational expenses such as the cost of electricity



AWS Services



Amazon Web Services

Compute

-  **EC2**
Virtual Servers in the Cloud
-  **Lambda PREVIEW**
Run Code in Response to Events

Storage & Content Delivery

-  **S3**
Scalable Storage in the Cloud
-  **Storage Gateway**
Integrates On-Premises IT Environments with Cloud Storage
-  **Glacier**
Archive Storage in the Cloud
-  **CloudFront**
Global Content Delivery Network

Database

-  **RDS**
MySQL, Postgres, Oracle, SQL Server, and Amazon Aurora
-  **DynamoDB**
Predictable and Scalable NoSQL Data Store
-  **ElastiCache**
In-Memory Cache
-  **Redshift**
Managed Petabyte-Scale Data Warehouse Service

Networking

-  **VPC**
Isolated Cloud Resources
-  **Direct Connect**
Dedicated Network Connection to AWS
-  **Route 53**
Scalable DNS and Domain Name Registration

Administration & Security

-  **Directory Service**
Managed Directories in the Cloud
-  **Identity & Access Management**
Access Control and Key Management
-  **Trusted Advisor**
AWS Cloud Optimization Expert
-  **CloudTrail**
User Activity and Change Tracking
-  **Config PREVIEW**
Resource Configurations and Inventory
-  **CloudWatch**
Resource and Application Monitoring

Deployment & Management

-  **Elastic Beanstalk**
AWS Application Container
-  **OpsWorks**
DevOps Application Management Service
-  **CloudFormation**
Templated AWS Resource Creation
-  **CodeDeploy**
Automated Deployments

Analytics

-  **EMR**
Managed Hadoop Framework
-  **Kinesis**
Real-time Processing of Streaming Big Data
-  **Data Pipeline**
Orchestration for Data-Driven Workflows

Application Services

-  **SQS**
Message Queue Service
-  **SWF**
Workflow Service for Coordinating Application Components
-  **AppStream**
Low Latency Application Streaming
-  **Elastic Transcoder**
Easy-to-use Scalable Media Transcoding
-  **SES**
Email Sending Service
-  **CloudSearch**
Managed Search Service

Mobile Services

-  **Cognito**
User Identity and App Data Synchronization
-  **Mobile Analytics**
Understand App Usage Data at Scale
-  **SNS**
Push Notification Service

Enterprise Applications

-  **WorkSpaces**
Desktops in the Cloud
-  **Zocalo**
Secure Enterprise Storage and Sharing Service



Introduction to Amazon EC2

Amazon EC2:

"Amazon EC2 stand for (Elastic Computing Cloud). AWS EC2 is a backbone of AWS. AWS EC2 offers scalable computing capacity that allows business subscribers to run application and programs in the Cloud environment."

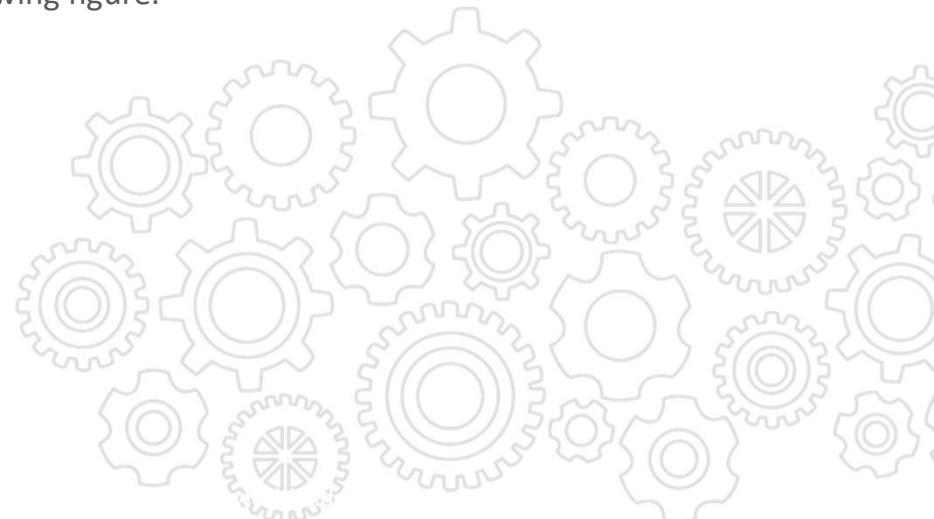
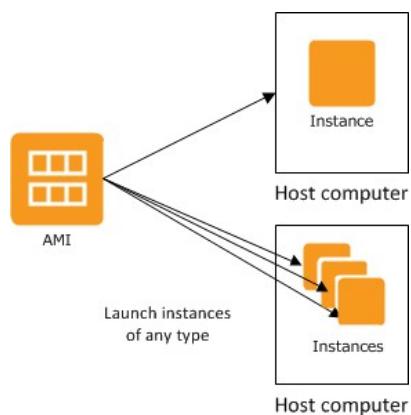
- Elastic Web-Scale Computing
- Completely Control
- Flexible Cloud Hosting Services
- Integrated
- Reliable
- Secure



Amazon Machine Image (AMI)

AMIs:

- An *Amazon Machine Image (AMI)* is a template that contains a software configuration (for example, an operating system, an application server, and applications)
- AMI is used to launch an instance, which is a copy of the AMI running as a virtual server in the cloud.
- Multiple instances of an AMI can be launched, as shown in the following figure.





Introduction to Amazon ElastiCache

ElastiCache:

Amazon ElastiCache makes it easy to deploy and manage a highly available and scalable in-memory data store in the cloud. Among the open source in-memory engines available to you for use with ElastiCache is Redis, which added powerful geospatial capabilities.



Amazon RDS

- A web service that makes it easier to set up, operate, and scale a relational database in the AWS Cloud
- Provides cost-efficient, resizable capacity for an industry-standard relational database and manages common database administration tasks.
- RDS manages backups, software patching, automatic failure detection, and recovery.
- To deliver a managed service experience, Amazon RDS doesn't provide shell access to DB instances.
- It also restricts access to certain system procedures and tables that require advanced privileges.
- You can have automated backups performed when you need them, or manually create your own backup snapshot.





Amazon S3

- Amazon S3 (Simple Storage Service) is object storage built to store and retrieve any amount of data from anywhere on the Internet.
- S3 is a scalable, high-speed, web-based cloud storage service.
- An object consists of data, key (assigned name), and metadata.
- A bucket is used to store objects. When data is added to a bucket, Amazon S3 creates a unique version ID and allocates it to the object.



Object: folder/Penguins.jpg → Key(name)
Bucket: simplilearn → Version ID
Link Address: <https://s3.amazonaws.com/simplilearn/folder/Penguins.jpg>



Network & Content Delivery



Networking & Content Delivery

VPC

CloudFront

Route 53

API Gateway

Direct Connect

AWS App Mesh

AWS Cloud Map

Global Accelerator





Virtual Private Cloud (VPC)

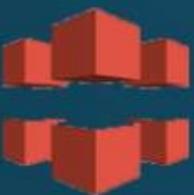


- Amazon Virtual Private Cloud (Amazon VPC) lets you provision a logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network that you define.
- VPC [testimonial](#).
- Details are mentioned [here](#)





Cloudfront

The CloudFront logo icon consists of six red 3D cubes arranged in two columns of three. The top row is slightly offset to the right relative to the bottom row.

- Amazon CloudFront is a global content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to your viewers with low latency and high transfer speeds
- AWS CloudFront testimonials [link](#)
- Details are mentioned [here](#)





Route 53

- Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service.
- Amazon Route 53 effectively connects user requests to infrastructure running in AWS – such as Amazon EC2 instances, Elastic Load Balancing load balancers, or Amazon S3 buckets
- AWS Route 53 testimonials [link](#)
- Details are mentioned [here](#)





AWS API Gateway



- Amazon API Gateway is a fully managed service that makes it easy for developers to create, publish, maintain, monitor, and secure APIs at any scale.
- AWS API Gateway testimonials [link](#)
- Details are mentioned [here](#)





AWS Direct Connect



- AWS Direct Connect makes it easy to establish a dedicated network connection from your premises to AWS.
- Using AWS Direct Connect, you can establish private connectivity between AWS and your datacenter, office, or colocation environment, which in many cases can reduce your network costs
- Details are mentioned [here](#)





Developer Tools



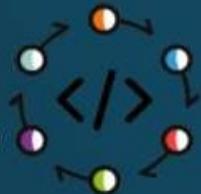
Developer Tools

- CodeStar
- CodeCommit
- CodeArtifact
- CodeBuild
- CodeDeploy
- CodePipeline
- Cloud9
- CloudShell
- X-Ray





AWS CodeStar



- AWS CodeStar enables you to quickly develop, build, and deploy applications on AWS.
- CodeStar provides a unified user interface, enabling you to easily manage your software development activities in one place.
- AWS CodeStar testimonials [link](#)
- Details are mentioned [here](#)





AWS CodeCommit



- AWS CodeCommit is a fully-managed source control service that makes it easy for companies to host secure and highly scalable private Git repositories
- AWS CodeCommit testimonials [link](#)
- Details are mentioned [here](#)





AWS CodeDeploy



- AWS CodeDeploy is a service that automates software deployments to a variety of compute services including Amazon EC2, AWS Lambda, and instances running on-premises.
- It makes it easier for you to rapidly release new features, helps you avoid downtime during application deployment, and handles the complexity of updating your applications
- AWS CodeDeploy testimonials [link](#)
- Details are mentioned [here](#)





AWS CodePipeline



- AWS CodePipeline is a continuous integration and continuous delivery service for fast and reliable application and infrastructure updates.
- It's similar to Jenkins & Bamboo
- AWS CodePipeline testimonials [link](#)
- Details are mentioned [here](#)





AWS CloudShell

- AWS CloudShell is a browser-based shell that makes it easy to securely manage, explore, and interact with your AWS resources.
- With CloudShell, you can quickly run scripts with the AWS Command Line Interface (AWS CLI), experiment with AWS service APIs using the AWS SDKs, or use a range of other tools to be productive.
- AWS CloudShell testimonials [link](#)
- Details are mentioned [here](#)





Management & Governance

- **Management & Governance**
- AWS Organizations
- CloudWatch
- AWS Auto Scaling
- CloudFormation
- CloudTrail
- Config
- OpsWorks
- Service Catalog
- Systems Manager
- AWS AppConfig
- Trusted Advisor
- Control Tower
- AWS License Manager
- AWS Well-Architected Tool
- Personal Health Dashboard
- AWS Chatbot
- Launch Wizard
- AWS Compute Optimizer
- Resource Groups & Tag Editor
- Amazon Grafana
- Amazon Prometheus
- AWS Proton





AWS CloudWatch



- Amazon CloudWatch is a monitoring service for AWS cloud resources and the applications you run on AWS.
- Amazon CloudWatch can monitor AWS resources such as Amazon EC2 instances, Amazon DynamoDB tables, and Amazon RDS DB instances, as well as custom metrics generated by your applications and services
- AWS CloudWatch testimonials [link](#)
- Details are mentioned [here](#)





AWS AutoScaling

- AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost.
- Using AWS Auto Scaling, it's easy to setup application scaling for multiple resources across multiple services in minutes.
- AWS AutoScaling testimonials [link](#)
- Details are mentioned [here](#)





AWS Cloud Formation



- AWS CloudFormation provides a common language for you to describe and provision all the infrastructure resources in your cloud environment.
- AWS CloudFormation is available at no additional charge, and you pay only for the AWS resources needed to run your applications.
- AWS CloudFormation testimonials [link](#)
- Details are mentioned [here](#)





AWS Cloud Trail



- AWS CloudTrail is a service that enables governance, compliance, operational auditing, and risk auditing of your AWS account.
- With CloudTrail, you can log, continuously monitor, and retain account activity related to actions across your AWS infrastructure.
- AWS Cloud Trail testimonials [link](#)
- Details are mentioned [here](#)





AWS System Manager



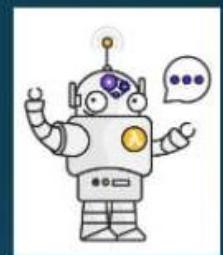
- AWS Systems Manager gives you visibility and control of AWS infrastructure
- With Systems Manager, you can group resources, like Amazon EC2 instances, Amazon S3 buckets, or Amazon RDS instances, by application, view operational data for monitoring and troubleshooting, and take action on your groups of resources.
- AWS System Manager testimonials [link](#)
- Details are mentioned [here](#)





AWS Compute Optimizer

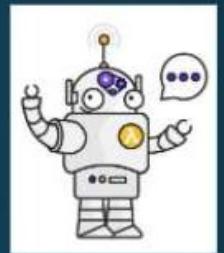
- AWS Compute Optimizer recommends optimal AWS Compute resources for your workloads to reduce costs and improve performance by using machine learning to analyze historical utilization metrics.
- AWS Compute Optimizer [testimonial](#)
- Details are mentioned [here](#)





Resource Group & Tag Editor

- AWS Resource Groups makes it easier to manage and automate tasks on large numbers of AWS resources at one time. AWS Resource Groups Tag Editor allows you to add tags to – or edit or delete tags of – multiple AWS resources at once.
- AWS Resource Group & Tag Editor [testimonial](#)
- Details are mentioned [here](#)





Security, Identity & Compliance

-  **Security, Identity, & Compliance**
 - IAM
 - Resource Access Manager
 - Cognito
 - Secrets Manager
 - GuardDuty
 - Inspector
 - Amazon Macie
 - AWS Single Sign-On
 - Certificate Manager
 - Key Management Service
 - CloudHSM
 - Directory Service
 - WAF & Shield
 - AWS Firewall Manager
 - Artifact
 - Security Hub
 - Detective
 - AWS Audit Manager
 - AWS Signer



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AWS IAM



- AWS Identity and Access Management (IAM) enables you to securely control access to AWS services and resources for your users.
- Using IAM, you can create and manage AWS users and groups, and use permissions to allow and deny their access to AWS resources.
- AWS IAM testimonials [link](#)
- Details are mentioned [here](#)



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AWS Cost Management



AWS Cost Management

AWS Cost Explorer

AWS Budgets

AWS Marketplace Subscriptions



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AWS Cost Explorer

- Cost Explorer is a tool that enables you to view and analyze your costs and usage.
- You can explore your usage and costs using the main graph, the Cost Explorer cost and usage reports, or the Cost Explorer RI reports.
- You can view data for up to the last 13 months, forecast how much you're likely to spend for the next three months, and get recommendations for what Reserved Instances to purchase.
- AWS Cost Explorer testimonial [link](#)
- Details are mentioned [here](#)



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AWS Budgets

- AWS Budgets enable you to plan your service usage, service costs, and instance reservations. Budgets provide you with a way to see the following information:
- How close your plan is to your budgeted amount or to the free tier limits
- Your usage to date, including how much you have used of your Reserved Instances (RIs)
- AWS Budgets testimonial [link](#).
- Details are mentioned [here](#).

