

# AMAZON CLOUD

# AWS Fundamentals and Why?

- AWS provides on-demand delivery of IT resources via the Internet on a secure cloud services platform, offering compute power, storage, databases, content delivery, and other functionality to help businesses scale and grow



## **Six advantages**

Global in minutes

Variable vs.  
capital expense

Stop  
guessing capacity

Economies  
of scale

Focus on  
business  
differentiators

Increase  
speed and agility

# Deployment Models

- All-in cloud-based
  - Is fully deployed in the cloud, with all components of the application running in the cloud
- Hybrid Model
  - Is a common approach taken by many enterprises that connects infrastructure and applications between cloud-based resources and existing resources, typically on an existing data center.

# Global Infrastructure, Security and Compliance

- AWS serves over one million active customers in more than 190 countries, and it continues to expand its global infrastructure steadily to help organizations achieve lower latency and higher throughput for their business needs.
- AWS provides a highly available technology infrastructure platform with multiple locations worldwide
  - Regions and Availability Zones
- Service Organization Controls (SOC) 1/International Standard on Assurance Engagements (ISAE) 3402, SOC 2, and SOC 3
- Federal Information Security Management Act (FISMA), Department of Defense Information Assurance Certification and Accreditation Process (DIACAP), and Federal Risk and Authorization Management Program (FedRAMP)
- Payment Card Industry Data Security Standard (PCI DSS) Level 1
- International Organization for Standardization (ISO) 9001, ISO 27001, and ISO 27018

Enterprise Applications		Virtual Desktops			Sharing and Collaboration		
Platform Services	Databases	Analytics	App Services	Deployment and Management		Mobile Services	
	Relational	Hadoop	Queuing	Containers		Identity	
	NoSQL	Real-Time Data Warehouses	Orchestration	DevOps Tools		Syns	
	Caching	Data Workflows	App Streaming	Resources Templates		Mobile Analytics	
		Transcoding	Email	Usage Tracking		Notifications	
		Search	Search	Monitoring and Logs			
Foundation Services		Compute (VMs, Auto Scaling and load Balancing)	Storage (Object, Block and Archive)	Security and Access Control	Networking		
Infrastructure		Regions	Availability Zones	Content Delivery Networks and Points of Presence			

# OVERVIEW ON AWS CLOUD SERVICES

# Accessing the Platform

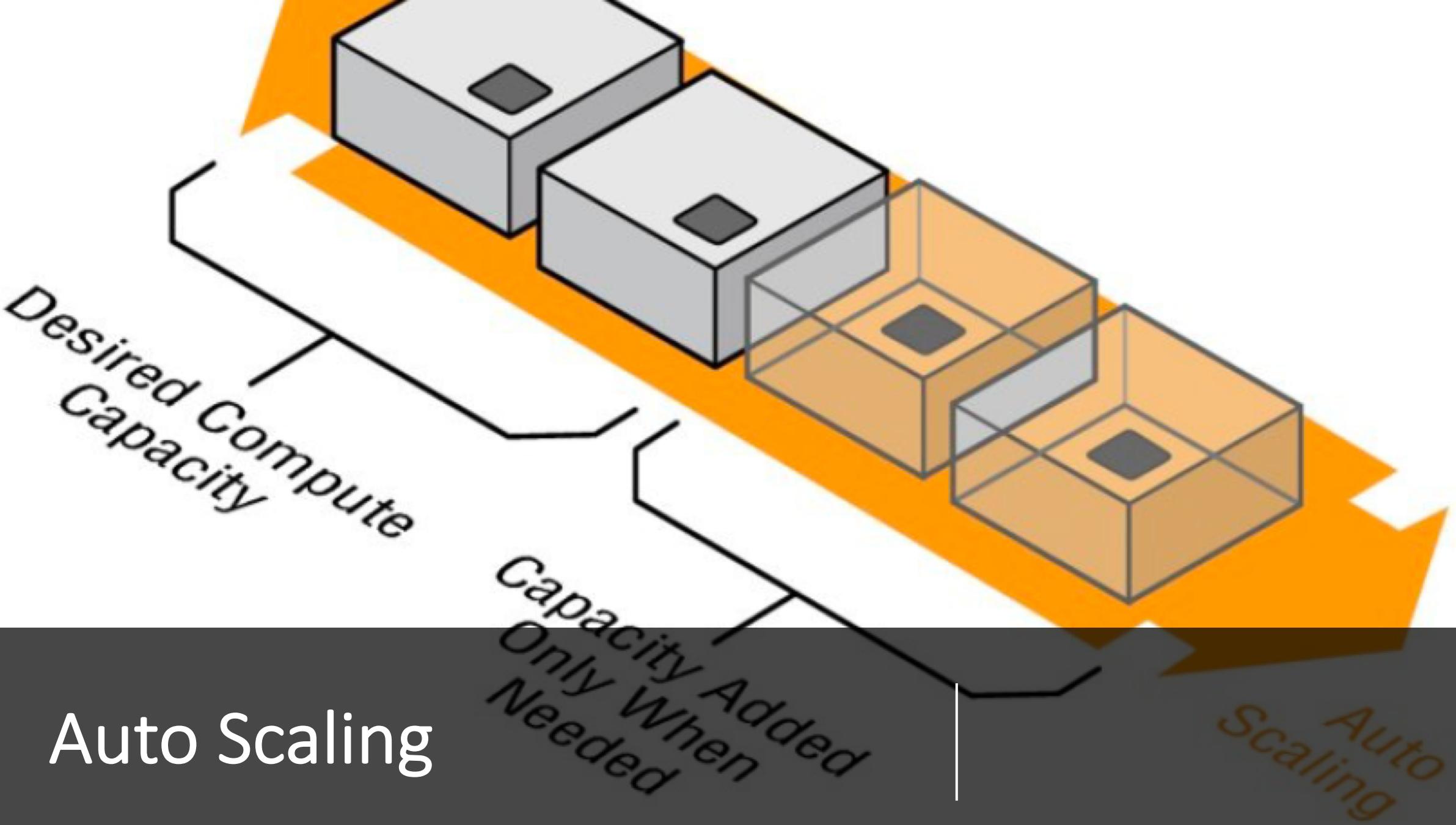
- The AWS Management Console
  - A web application for managing AWS Cloud services.
- The AWS Command Line Interface (CLI)
  - A unified tool used to manage AWS Cloud services
- The AWS Software Development Kits (SDKs)
  - Provide an application programming interface (API) that interacts with the web services that fundamentally make up the AWS platform.

# Computing and Networking Services

- AWS provides a variety of compute and networking services to deliver core functionality for businesses to develop and run their workloads.
- The compute and networking services can be leveraged with the storage, database, and application services to provide a complete solution for computing, query processing, and storage across a wide range of applications.

# Amazon Elastic Compute Cloud (EC2) & Lambda

- Amazon EC2 presents a true virtual computing environment, allowing organizations to launch compute resources with a variety of operating systems, load them with custom applications, and manage network access permissions while maintaining complete control.
- AWS Lambda runs your back-end code on its own AWS compute fleet of Amazon EC2 instances across multiple Availability Zones in a region, which provides the high availability, security, performance, and scalability of the AWS infrastructure



# Elastic Load Balancing and Beanstalk

- Elastic Load Balancing automatically distributes incoming application traffic across multiple Amazon EC2 instances in the cloud. It enables organizations to achieve greater levels of fault tolerance in their applications, seamlessly providing the required amount of load balancing capacity needed to distribute application traffic.
- AWS Elastic Beanstalk is the fastest and simplest way to get a web application up and running on AWS.
- Developers can simply upload their application code, and the service automatically handles all the details, such as resource provisioning, load balancing, Auto Scaling, and monitoring.
- It provides support for a variety of platforms, including PHP, Java, Python, Ruby, Node.js, .NET, and Go.

# AWS VPC and Direct Connect

- Amazon Virtual Private Cloud (Amazon VPC) lets organizations provision a logically isolated section of the AWS Cloud where they can launch AWS resources in a virtual network that they define.
- Organizations have complete control over the virtual environment, including selection of the IP address range, creation of subnets, and configuration of route tables and network gateways.
- AWS Direct Connect allows organizations to establish a dedicated network connection from their data center to AWS, which in many cases can reduce network costs, increase bandwidth throughput, and provide a more consistent network experience than Internet-based VPN connections.

# **OVERVIEW ON STORAGE AND CONTENT DELIVERY**

# AWS Simple Storage Service (S3)

- Amazon Simple Storage Service (Amazon S3) provides developers and IT teams with highly durable and scalable object storage that handles virtually unlimited amounts of data and large numbers of concurrent users.
- Organizations can store any number of objects of any type, such as HTML pages, source code files, image files, and encrypted data, and access them using HTTP-based protocols.

# Amazon Glacier

- Amazon Glacier is a secure, durable, and extremely low-cost storage service for data archiving and long-term backup.
- Organizations can reliably store large or small amounts of data for a very low cost per gigabyte per month.
- To keep costs low for customers, Amazon Glacier is optimized for infrequently accessed data where a retrieval time of several hours is suitable.
- Amazon S3 integrates closely with Amazon Glacier to allow organizations to choose the right storage tier for their workloads.

# Amazon Elastic Block Store (EBS)

- Amazon Elastic Block Store (Amazon EBS) provides persistent block-level storage volumes for use with Amazon EC2 instances.
- Each Amazon EBS volume is automatically replicated within its Availability Zone to protect organizations from component failure, offering high availability and durability. By delivering consistent and low-latency performance, Amazon EBS provides the disk storage needed to run a wide variety of workloads.

# AWS Storage Gateway

- AWS Storage Gateway is a service connecting an on-premises software appliance with cloudbased storage to provide seamless and secure integration between an organization's on-premises IT environment and the AWS storage infrastructure.
- The service supports industry standard storage protocols that work with existing applications. It provides low-latency performance by maintaining a cache of frequently accessed data on-premises while securely storing all of your data encrypted in Amazon S3 or Amazon Glacier.

# Amazon Cloud Front

- Amazon CloudFront is a content delivery web service. It integrates with other AWS Cloud services to give developers and businesses an easy way to distribute content to users across the world with low latency, high data transfer speeds, and no minimum usage commitments.
- Amazon CloudFront can be used to deliver your entire website, including dynamic, static, streaming, and interactive content, using a global network of edge locations.
- Requests for content are automatically routed to the nearest edge location, so content is delivered with the best possible performance to end users around the globe.

# OVERVIEW ON DATABASE SERVICES

# Amazon Relational Database Service (RDS)

- Amazon Relational Database Service (Amazon RDS) provides a fully managed relational database with support for many popular open source and commercial database engines.
- It's a cost-efficient service that allows organizations to launch secure, highly available, fault-tolerant, production-ready databases in minutes.

# Amazon DynamoDB

- Amazon DynamoDB is a fast and flexible NoSQL database service for all applications that need consistent, single-digit millisecond latency at any scale.
- It is a fully managed database and supports both document and key/value data models.
- Its flexible data model and reliable performance make it a great fit for mobile, web, gaming, ad-tech, Internet of Things, and many other applications.

# Amazon Redshift

- Amazon Redshift is a fast, fully managed, petabyte-scale data warehouse service that makes it simple and cost effective to analyze structured data.
- Amazon Redshift provides a standard SQL interface that lets organizations use existing business intelligence tools.
- By leveraging columnar storage technology that improves I/O efficiency and parallelizing queries across multiple nodes, Amazon Redshift is able to deliver fast query performance.
- The Amazon Redshift architecture allows organizations to automate most of the common administrative tasks associated with provisioning, configuring, and monitoring a cloud data warehouse.

# Amazon ElastiCache

- Amazon ElastiCache is a web service that simplifies deployment, operation, and scaling of an in-memory cache in the cloud.
- The service improves the performance of web applications by allowing organizations to retrieve information from fast, managed, in-memory caches, instead of relying entirely on slower, disk-based databases.
- As of this writing, Amazon ElastiCache supports Memcached and Redis cache engines.

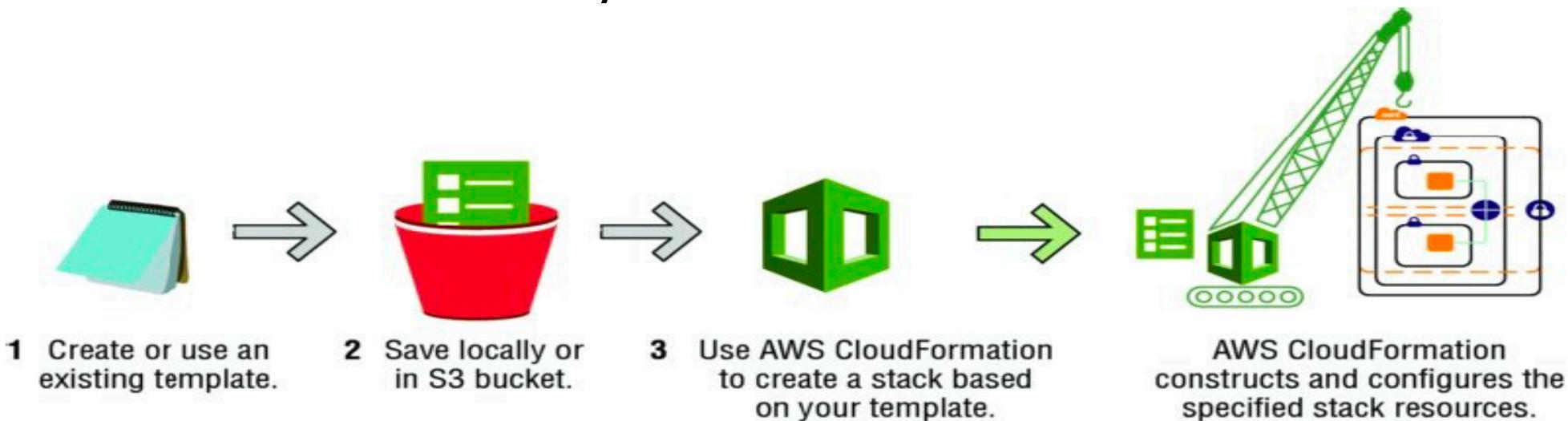
# OVERVIEW ON MANAGEMENT TOOLS

# Amazon CloudWatch

- Amazon CloudWatch is a monitoring service for AWS Cloud resources and the applications running on AWS.
- It allows organizations to collect and track metrics, collect and monitor log files, and set alarms. By leveraging Amazon CloudWatch, organizations can gain system-wide visibility into resource utilization, application performance, and operational health.

# AWS CloudFormation

- AWS CloudFormation gives developers and systems administrators an effective way to create and manage a collection of related AWS resources, provisioning and updating them in an orderly and predictable fashion. AWS CloudFormation defines a JSON-based templating language that can be used to describe all the AWS resources that are necessary for a workload.



# AWS CloudTrail and Config

- AWS CloudTrail is a web service that records AWS API calls for an account and delivers log files for audit and review. 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 service.
- AWS Config is a fully managed service that provides organizations with an AWS resource inventory, configuration history, and configuration change notifications to enable security and governance.

# **OVERVIEW ON SECURITY AND IDENTITY**

# AWS IDENTITY AND ACCESS MANAGEMENT (IAM)

- AWS Identity and Access Management (IAM) enables organizations to securely control access to AWS Cloud services and resources for their users. Using IAM, organizations can create and manage AWS users and groups and use permissions to allow and deny their access to AWS resources.

# AWS Key Management Services (KMS)

- AWS Key Management Service (KMS) is a managed service that makes it easy for organizations to create and control the encryption keys used to encrypt their data and uses Hardware Security Modules (HSMs) to protect the security of your keys. AWS KMS is integrated with several other AWS Cloud services to help protect data stored with these services.

# AWS Directory Service

- AWS Directory Service allows organizations to set up and run Microsoft Active Directory on the AWS Cloud or connect their AWS resources with an existing on-premises Microsoft Active Directory.
- Organizations can use it to manage users and groups, provide single sign-on to applications and services, create and apply Group Policies, domain join Amazon EC2 instances, and simplify the deployment and management of cloud-based Linux and Microsoft Windows workloads.

# AWS Certificate Manager

- AWS Certificate Manager is a service that lets organizations easily provision, manage, and deploy Secure Sockets Layer/Transport Layer Security (SSL/TLS) certificates for use with AWS Cloud services.
- It removes the time-consuming manual process of purchasing, uploading, and renewing SSL/TLS certificates. With AWS Certificate Manager, organizations can quickly request a certificate, deploy it on AWS resources such as Elastic Load Balancing or Amazon CloudFront distributions, and let AWS Certificate Manager handle certificate renewals.

# AWS Web Application Firewall (WAF)

- AWS Web Application Firewall (WAF) helps protect web applications from common attacks and exploits that could affect application availability, compromise security, or consume excessive resources. AWS WAF gives organizations control over which traffic to allow or block to their web applications by defining customizable web security rules.

# OVERVIEW ON APPLICATION SERVICES

# Application Services

- Amazon API Gateway
- Amazon Elastic Transcoder
- Amazon Simple Notification Service (Amazon SNS)
- Amazon Simple Email Service (Amazon SES)
- Amazon Simple Workflow Service (Amazon SWF)
- Amazon Simple Queue Service (Amazon SQS)