



# AWS Partner: Cloud Practitioner Essentials



# AWS Partner: Cloud Practitioner Essentials

## Course Overview

# Agenda



- **Introduction:** Course Overview
- **Module 1:** Introduction to Amazon Web Services
- **Module 2:** Compute in the Cloud
- **Module 3:** Global Infrastructure and Reliability
- **Module 4:** Networking
- **Module 5:** Storage and Databases
- **Module 6:** Security
- **Module 7:** Monitoring and Analytics
- **Module 8:** Pricing and Support
- **Module 9:** Migration and Innovation
- **Module 10:** AWS Certified Cloud Practitioner Basics



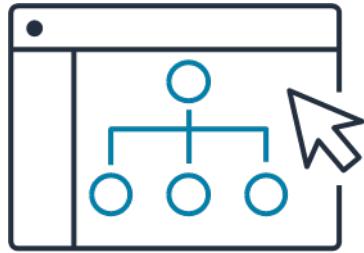
# AWS Partner: Cloud Practitioner Essentials

Module 1: Introduction to Amazon Web Services

# Cloud computing

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What is cloud computing?



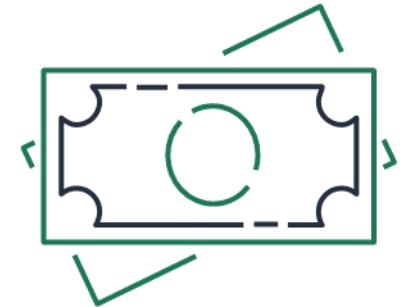
Access services on demand



Avoid large upfront investments



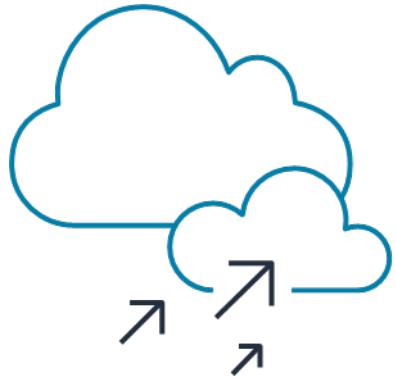
Provision computing resources as needed



Pay only for what you use

# Cloud computing deployment models

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**Cloud**



**On premises**

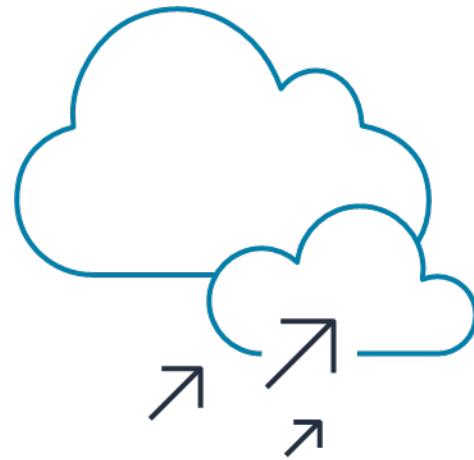


**Hybrid**

# Cloud-based deployment

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- Run all parts of the application in the cloud
- Migrate existing applications to the cloud
- Design and build new application in the cloud



**Cloud**

# On-premises deployment

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- Use virtualization and resource management tools to deploy resources
- Use application management and virtualization technologies to increase resource usage

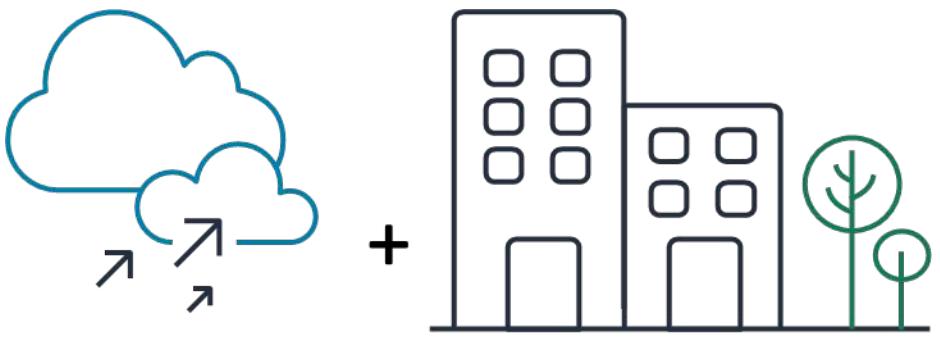


**On premises**

# Hybrid deployment

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- Connect cloud-based resources to on-premises infrastructure
- Integrate cloud-based resources with legacy IT applications



**Hybrid**

# Cloud computing benefits

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Cloud computing

- 01.** Trade capital expense for variable expense
- 02.** Benefit from massive economies of scale
- 03.** Stop guessing capacity
- 04.** Increase speed and agility
- 05.** Stop spending money running and maintaining data centers
- 06.** Go global in minutes

# Variable expenses

Upfront expenses



Invest in technology resources  
before using them

Variable expenses

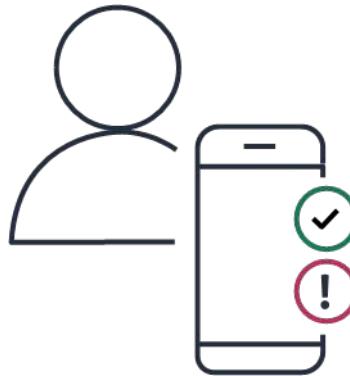


Pay only for what you use

# Cost optimization

More time building

Less time managing cost



Focus on applications and customers

Run data centers

# Capacity

Access only the capacity necessary

Scalability



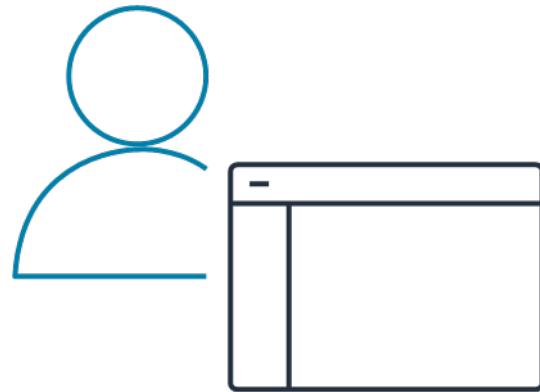
Stop guessing on your  
infrastructure capacity needs



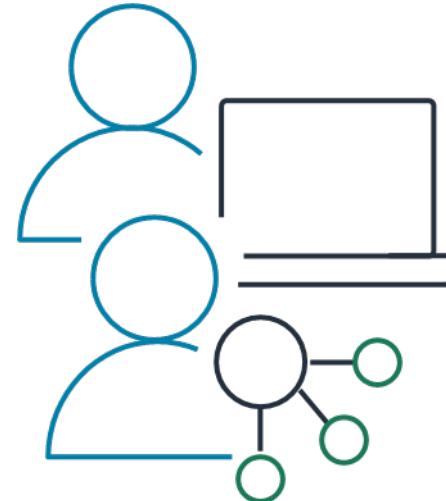
Scale in and scale out as needed

# Economies of scale

Smaller scale



Economies of scale

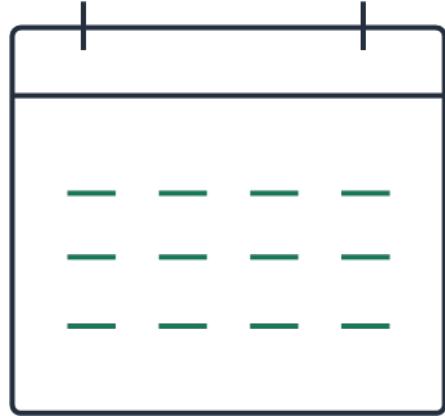


Pay higher prices based on only  
your own usage

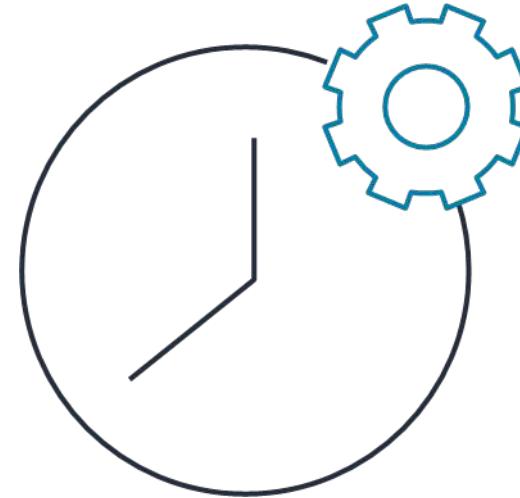
Benefit from customers'  
aggregated usage

# Speed and agility

Data centers



Cloud computing



**Weeks** between wanting  
resources and having resources

**Minutes** between wanting  
resources and having resources

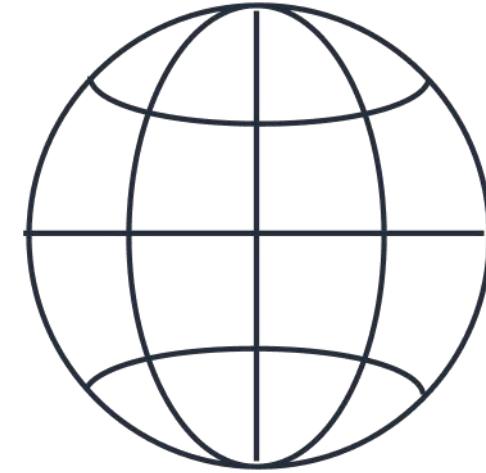
# Global in minutes

Low latency

Global infrastructure



Quickly deploy applications  
worldwide



Use the AWS global infrastructure

# AWS Cloud

The screenshot shows the AWS Console Home page. At the top, there is a navigation bar with the AWS logo, a "Services" dropdown, a search bar containing "Search" with a keyboard shortcut "[Alt+S]", and account information for "N. Virginia" and "Sampleuser". Below the navigation bar is a secondary navigation bar with links to CloudFront, IAM, Route 53, RDS, EC2, Console Home, CloudWatch, S3, and Lambda.

The main content area is titled "Console Home" with an "Info" link. It features two buttons: "Reset to default layout" and "+ Add widgets".

A "Recently visited" section lists services with their icons and names:

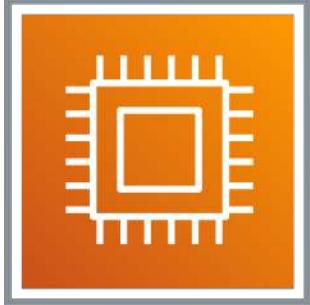
Service	Service
S3	CloudShell
EC2	CloudSearch
Route 53	AWS Well-Architected Tool
CloudFront	Trusted Advisor
RDS	Lambda
IAM	Amazon AppFlow
CloudWatch	AWS Cost Explorer

At the bottom of the page are links for "Privacy", "Terms", and "Cookie preferences".



# AWS core service categories

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Compute



Network & Content  
Delivery



Storage



Database



Security, Identity, &  
Compliance



Management &  
Governance

# Knowledge check

What is cloud computing?

The correct response is C.

- A Backing up files that are stored on desktop and mobile devices to prevent data loss
- B Deploying applications that are connected to an on-premises infrastructure
- C Using on-demand delivery of IT resources and applications through the internet**
- D Running code without needing to manage or provision servers



# Knowledge check

What is another name for on-premises deployment?

The correct response is C.

- A Cloud-based application
- B Hybrid deployment
- C **Private cloud deployment**
- D AWS Cloud

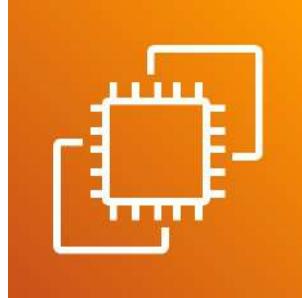


# AWS Partner: Cloud Practitioner Essentials

## Module 2: Compute in the Cloud

# Amazon EC2

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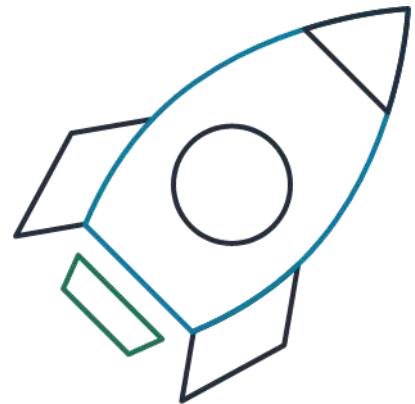


Amazon Elastic Compute  
Cloud (Amazon EC2)

- Use secure, sizable compute capacity
- Boot server instances in minutes
- Pay only for what you use

# How Amazon EC2 works

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Launch an instance → Connect to the instance → Use the instance

# Amazon EC2 instance types (1 of 2)

## General purpose

- Balances compute, memory, and networking resources
- Suitable for a broad range of workloads

## Compute optimized

- Offers high-performance processors
- Ideal for compute-intensive applications and batch processing workloads

## Memory optimized

- Delivers fast performance for memory-intensive workloads
- Well suited for high-performance databases

# Amazon EC2 instance types (2 of 2)

## Accelerated computing

- Uses hardware accelerators to expedite data processing
- Ideal for application streaming and graphics workloads

## Storage optimized

- Offers low latency and high input/output operations per second (IOPS)
- Suitable for workloads such as distributed file systems and data warehousing applications

# Match: Amazon EC2 instance types

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1. Ideal for high-performance databases

2. Suitable for data warehousing applications

3. Balances compute, memory, and networking resources

4. Offers high-performance processors

A. General purpose

B. Compute optimized

C. Memory optimized

D. Storage optimized

# Amazon EC2 instance pricing options (1 of 2)

## On-demand

- No upfront costs or minimum contracts
- Ideal for short-term, irregular workloads

## Reserved

- Provides a billing discount over On-Demand pricing
- Requires a 1-year or 3-year term commitment

## Spot

- Ideal for workloads with flexible start and end times
- Offers savings over On-Demand prices



# Amazon EC2 instance pricing options (2 of 2)

## Compute Savings Plan

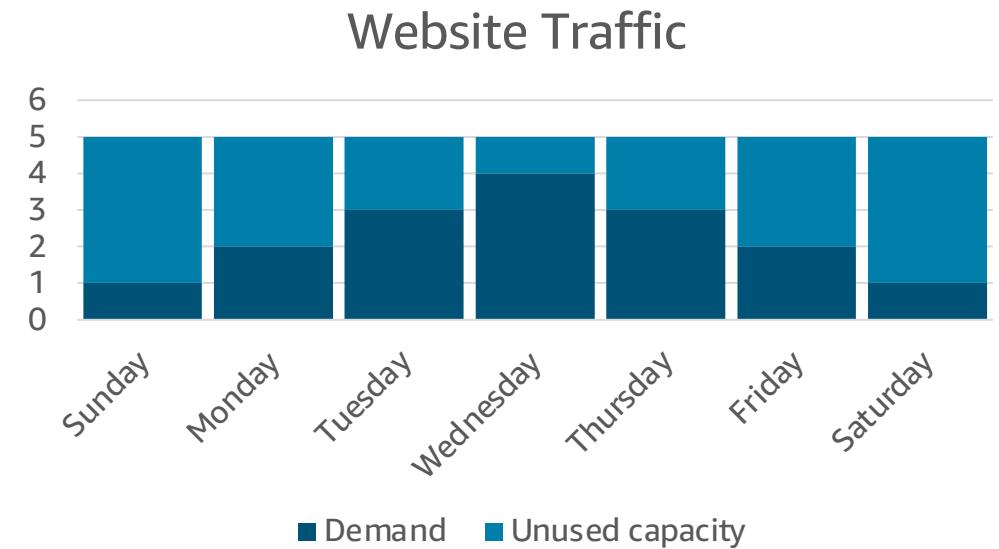
- Offer up to 66% savings over On-Demand costs for a consistent amount of compute usage
- Require a 1-year or 3-year term commitment

## Dedicated Host

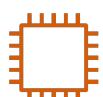
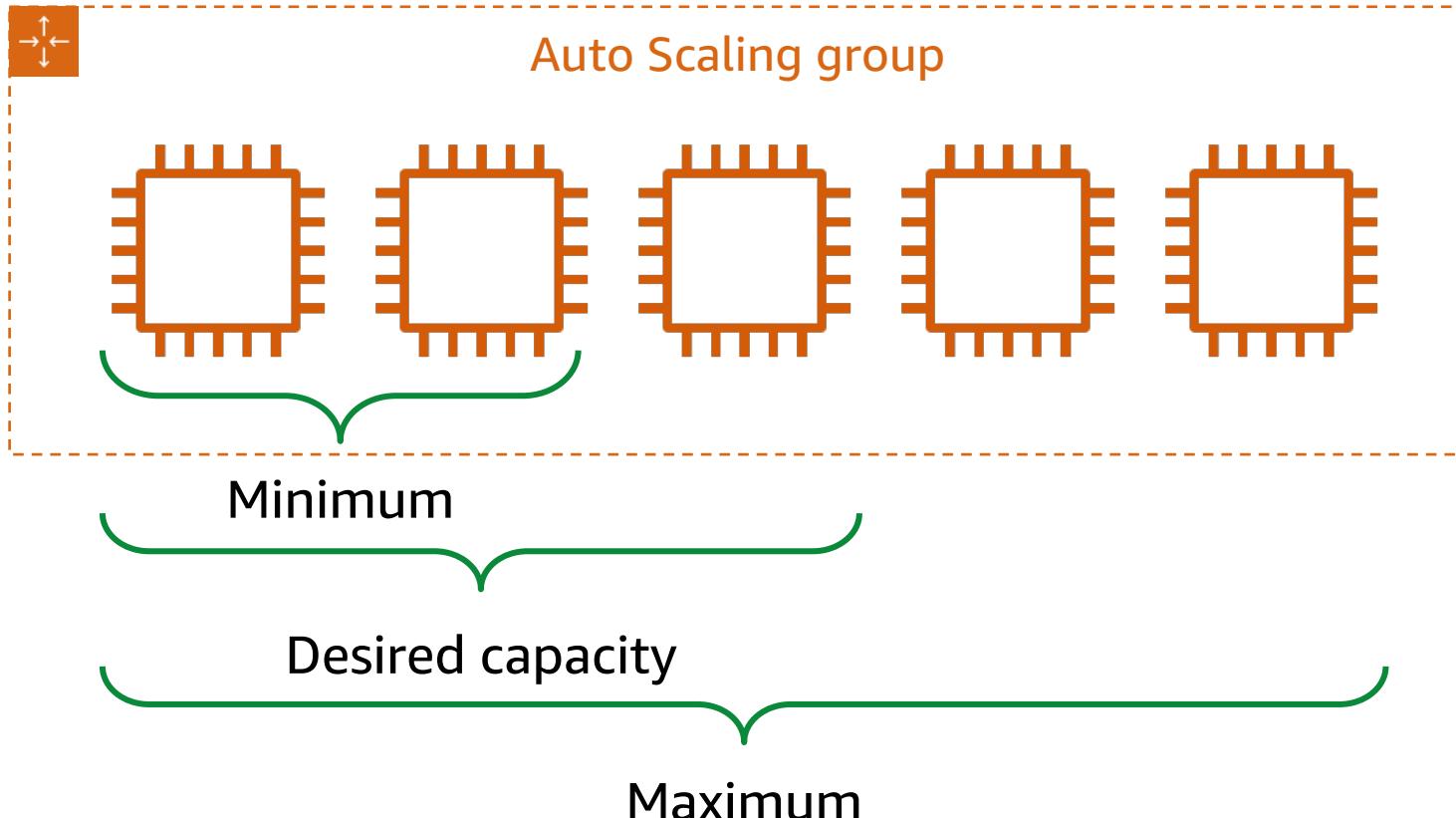
- A physical server with EC2 instance capacity for a single customer
- Most expensive Amazon EC2 option

# Amazon EC2 Auto Scaling (1 of 2)

- Scale capacity as computing requirements change
- Use dynamic scaling and predictive scaling



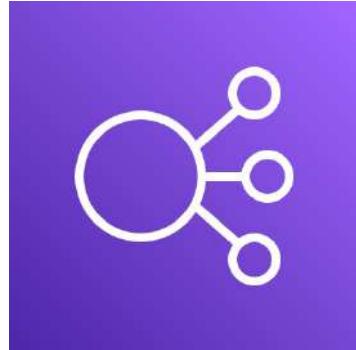
# Amazon EC2 Auto Scaling (1 of 2)



= Amazon EC2 instance

# Elastic Load Balancing

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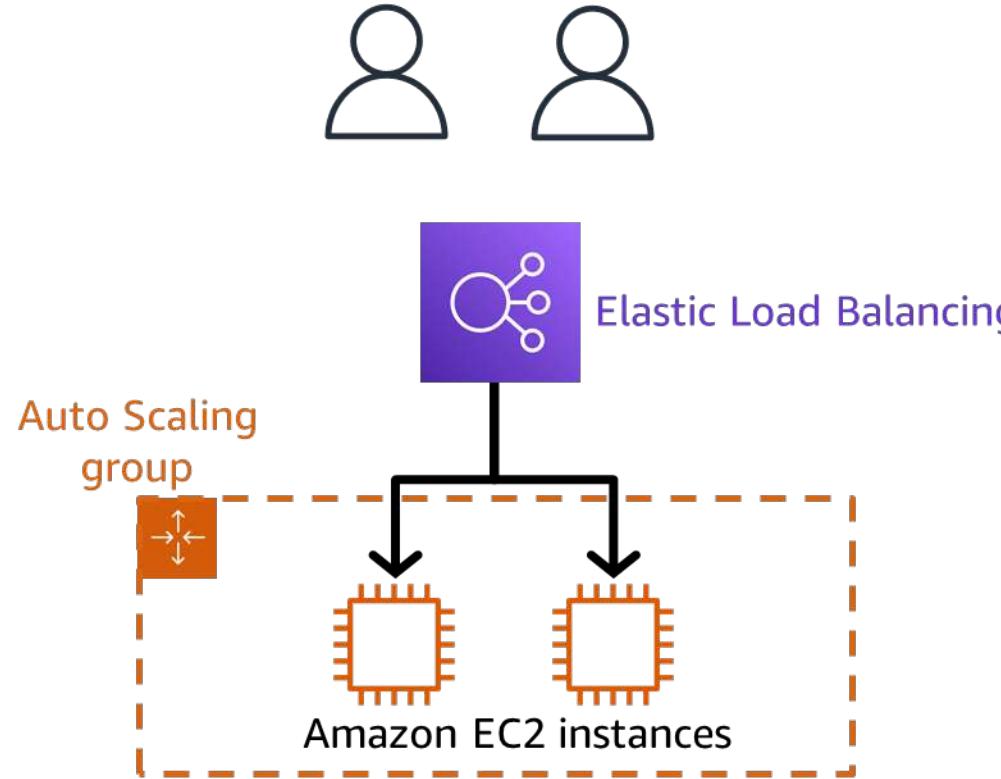


Elastic Load Balancing

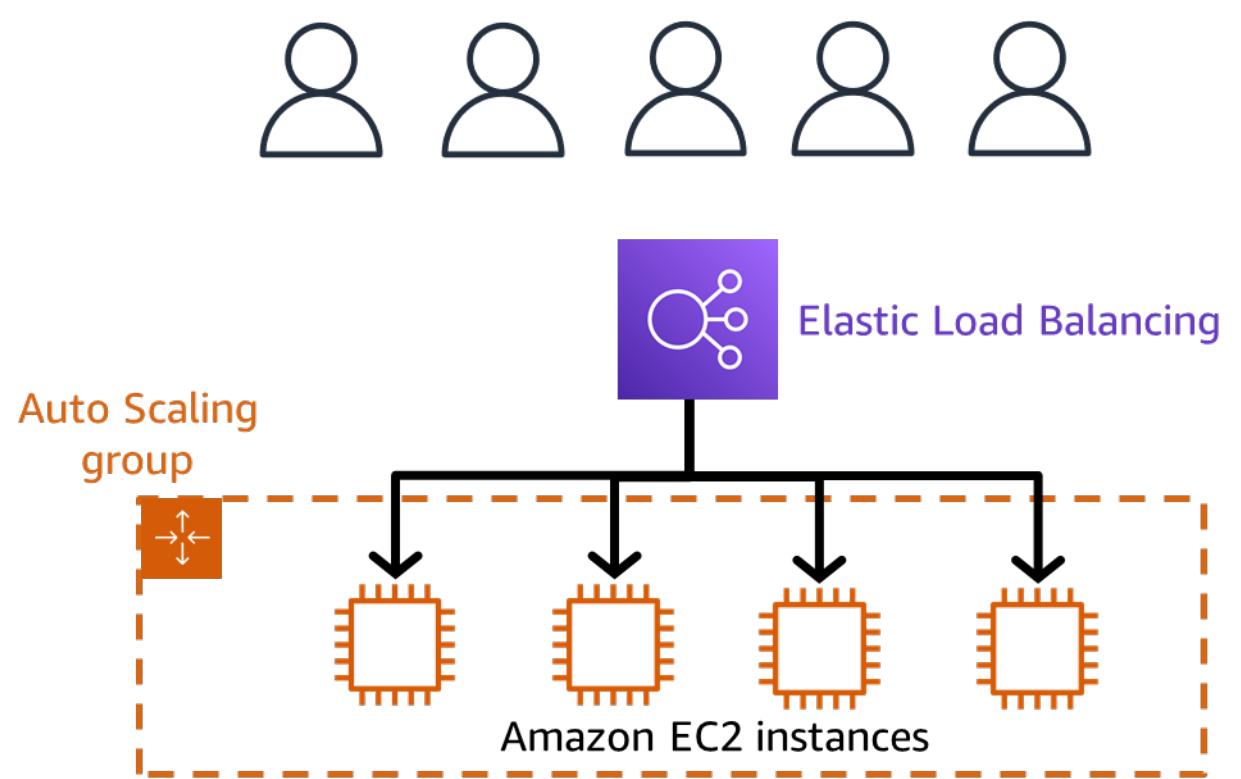
- Automatically distributes traffic across multiple resources
- Provides a single point of contact for your Auto Scaling group

# Scalability and load balancing

Low-demand period



High-demand period



# Auto Scaling and Elastic Load Balancing

Are these examples of **Auto Scaling** or **Elastic Load Balancing**?

Auto Scaling

1. Removed unneeded Amazon EC2 instances when demand is low

Auto Scaling

2. Adds a second Amazon EC2 instance during an online store's popular sale

Elastic Load Balancing

3. Distributes a workload across several Amazon EC2 instances

Elastic Load Balancing

Auto Scaling

5. Automatically adjusts the number of EC2 instances to match demand

Elastic Load Balancing

4. Ensure that no single EC2 instance has to carry the full workload on its own

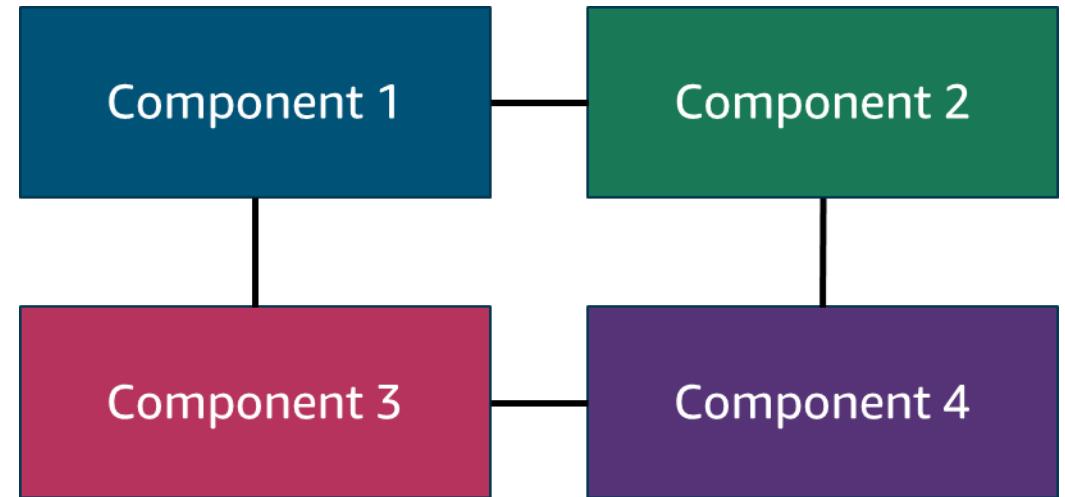
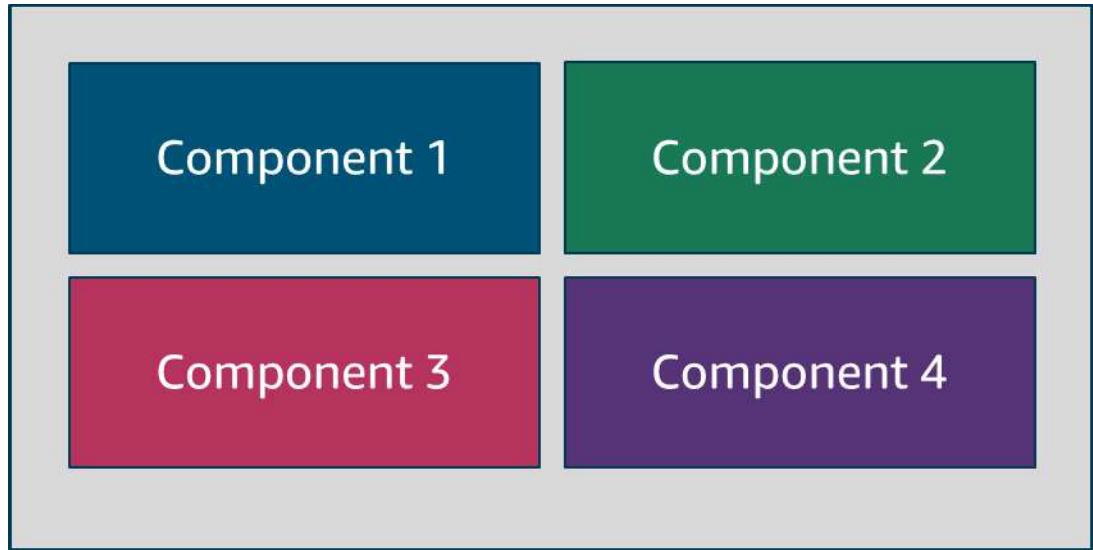
6. Provides a single point of contact for traffic into an Auto Scaling group



# Application architecture

Monolithic application

Microservices



# Amazon Simple Notification Service

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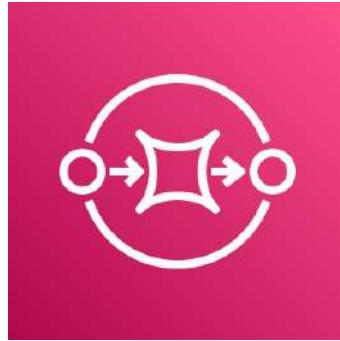


Amazon Simple Notification  
Service (Amazon SNS)

- Messages are published to topics.
- Subscribers immediately receive messages for their topics.

# Amazon Simple Queue Service

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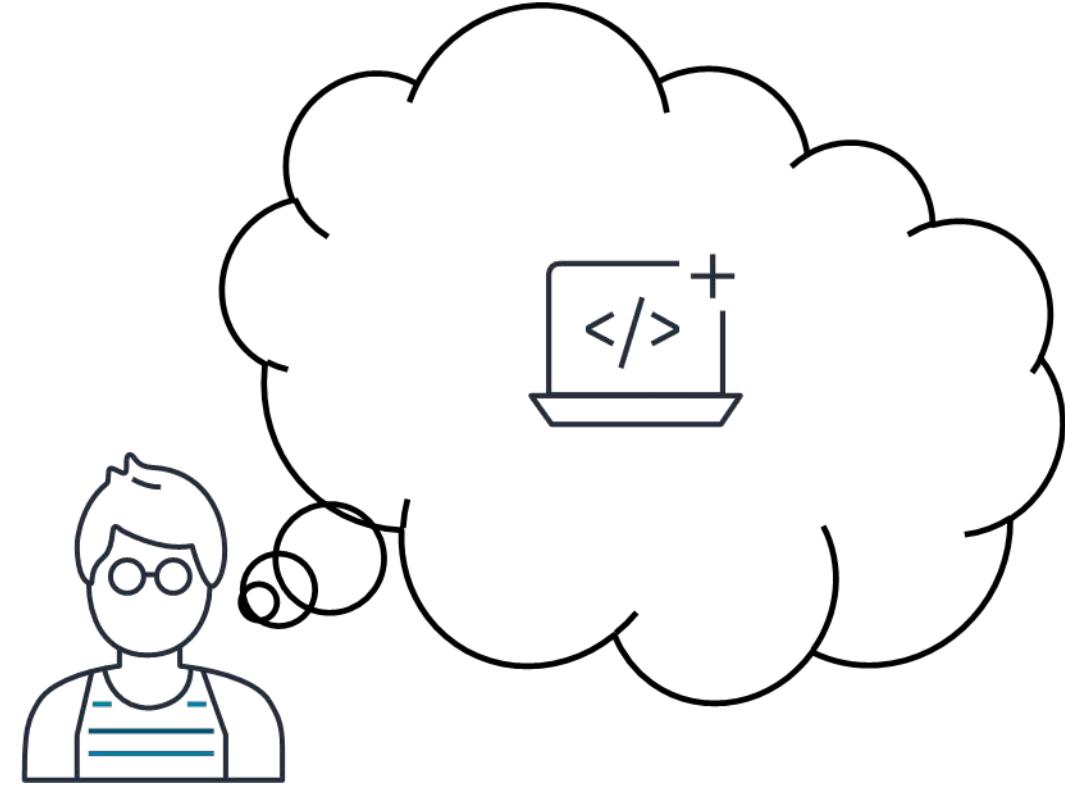
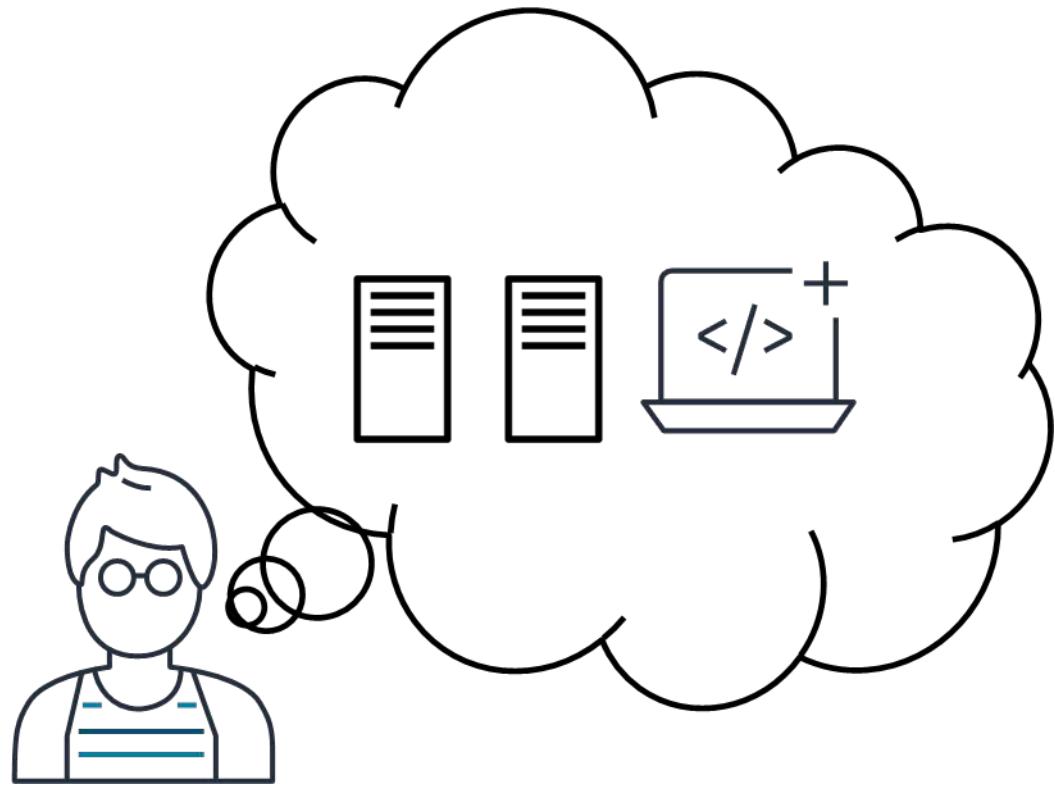
Amazon Simple Queue  
Service (Amazon SQS)

- Send, store, and receive messages between software components
- Queue messages without requiring other services to be available

# Serverless computing

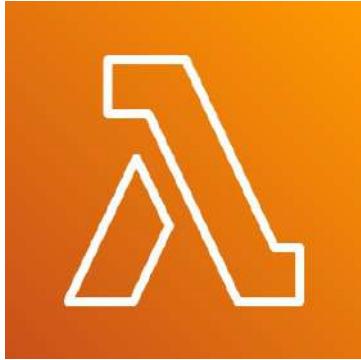
Computing with virtual servers

Serverless computing



# AWS Lambda

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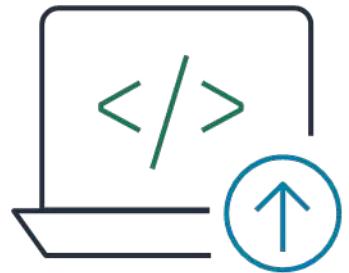


AWS Lambda

- Run code without provisioning or managing servers
- Pay only for compute time while code is running
- Use other AWS services to automatically trigger code

# How AWS Lambda works

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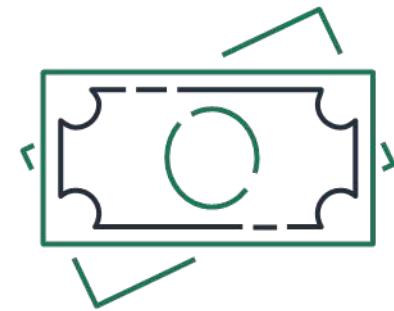
Upload code  
to Lambda



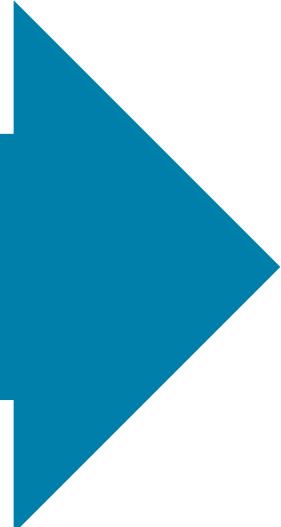
Set code to  
trigger from an  
event source



Code runs only  
when triggered



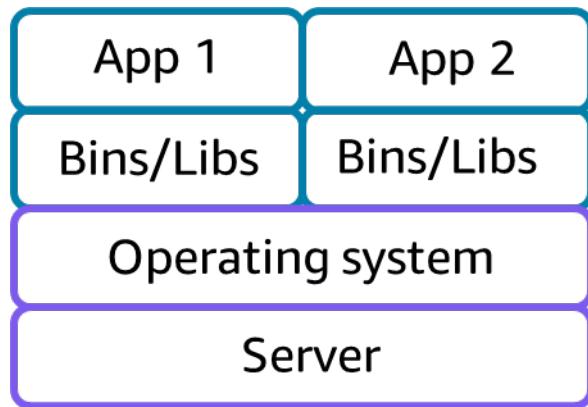
Pay only for the  
compute time  
you use



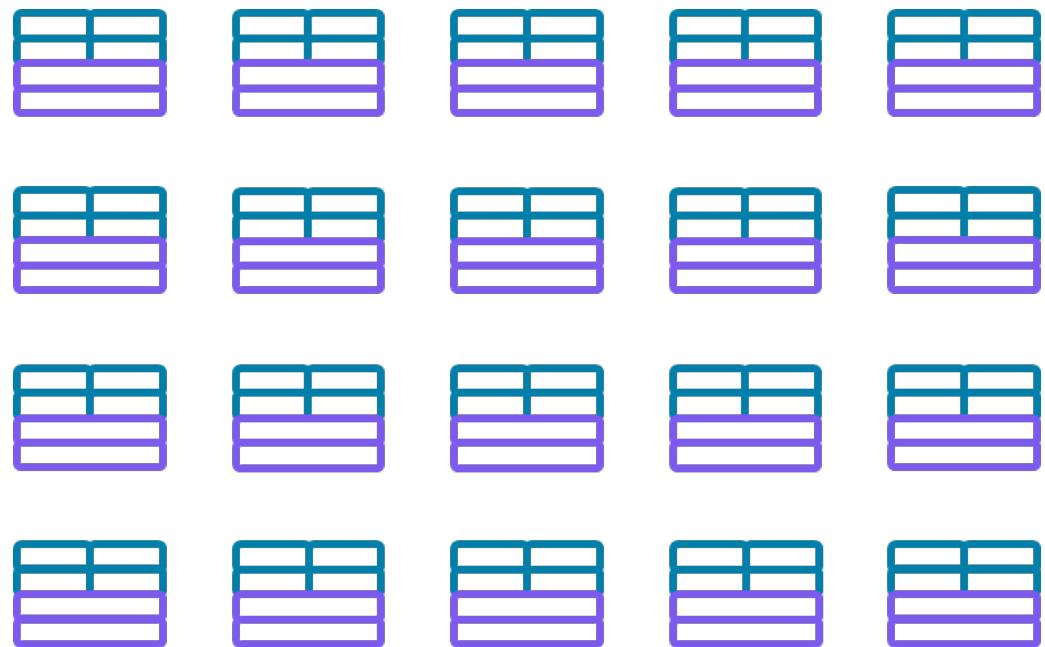
# Containers

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One host with multiple containers



Tens of hosts with hundreds of containers



# AWS Container Orchestration Services



Amazon Elastic  
Container Service  
(Amazon ECS)

- Run and scale containerized applications
- Use simple API calls to control Docker-enabled applications



Amazon Elastic  
Kubernetes Service  
(Amazon EKS)

- Run and scale Kubernetes applications
- Readily update applications with new features

# AWS Fargate

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AWS Fargate

- Run serverless containers with Amazon ECS or Amazon EKS
- Pay only for the resources you use

# Knowledge check

A customer has a workload that will run for a total of 6 months and can withstand interruptions. What would be the most cost-efficient Amazon EC2 instance purchasing option?

The correct response is D.

- A Reserved Instance
- B On-Demand Instance
- C Dedicated Instance
- D Spot Instance



# Knowledge check

A customer wants to give users messages for the specific topics to which they have subscribed. Which service should they use?

The correct response is A.

- A **Amazon Simple Notification Service (Amazon SNS)**
- B AWS Lambda
- C Amazon Simple Queue Service (Amazon SQS)
- D Amazon Elastic Kubernetes Service (Amazon EKS)





# AWS Partner: Cloud Practitioner Essentials

## Module 3: Global Infrastructure and Reliability

# Select a Region

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Determine the right Region for your services, data, and applications based on:



Compliance with  
data governance  
and legal  
requirements



Proximity to your  
customers

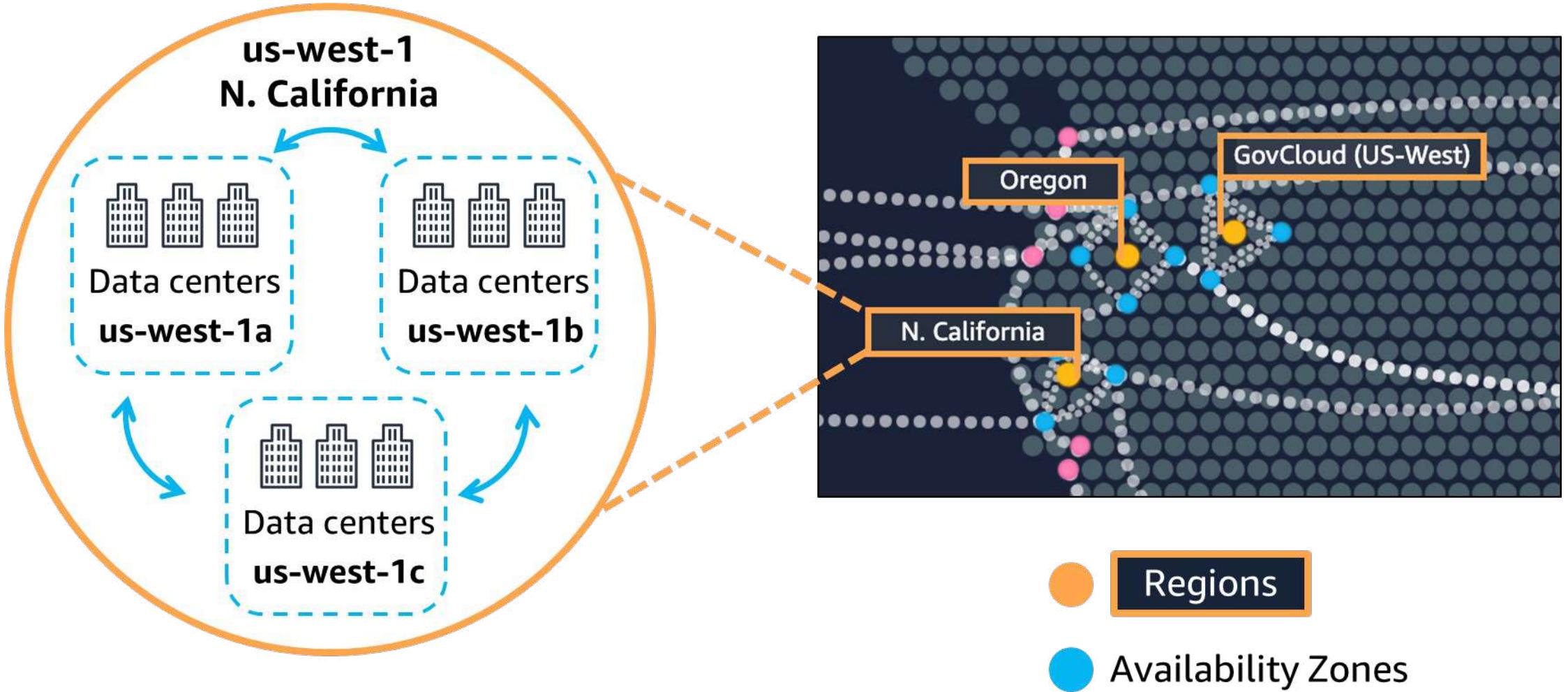


Pricing

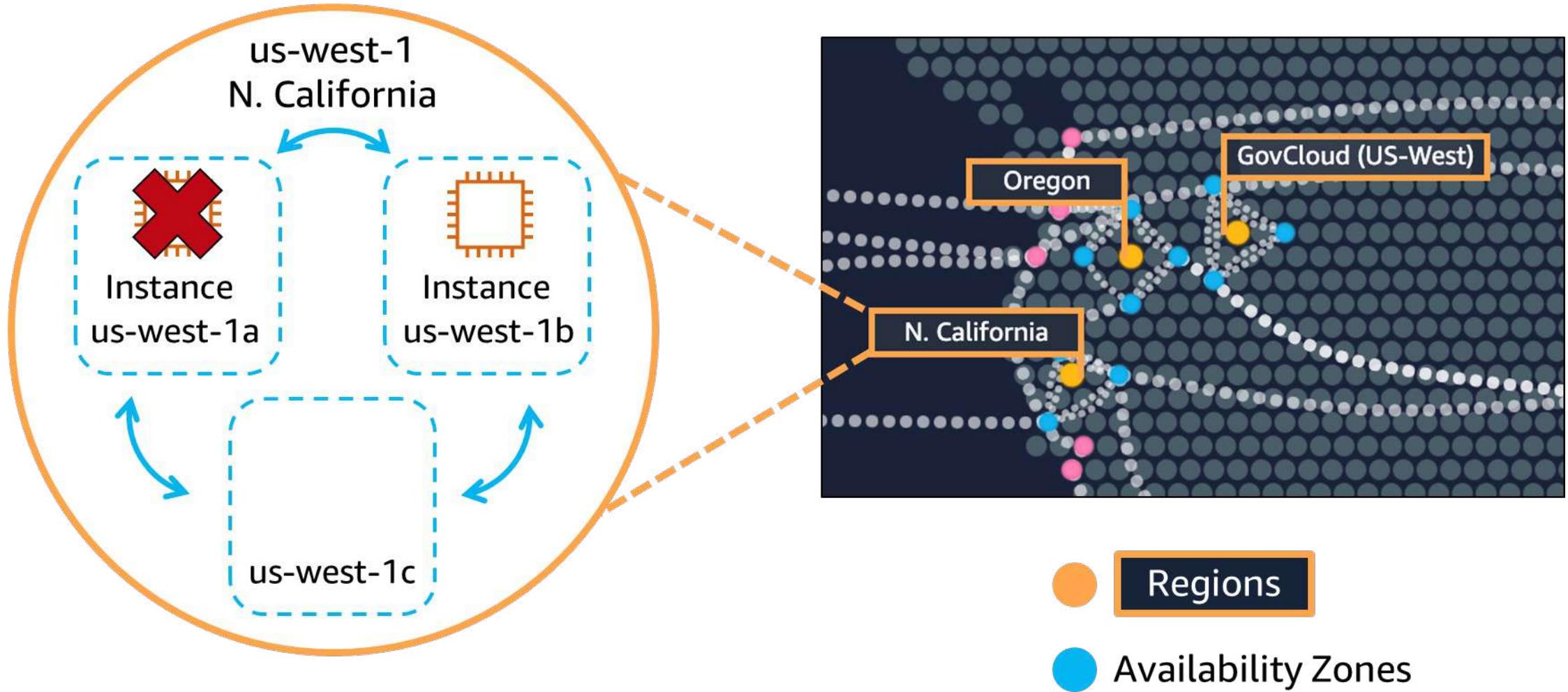


Available services  
within a Region

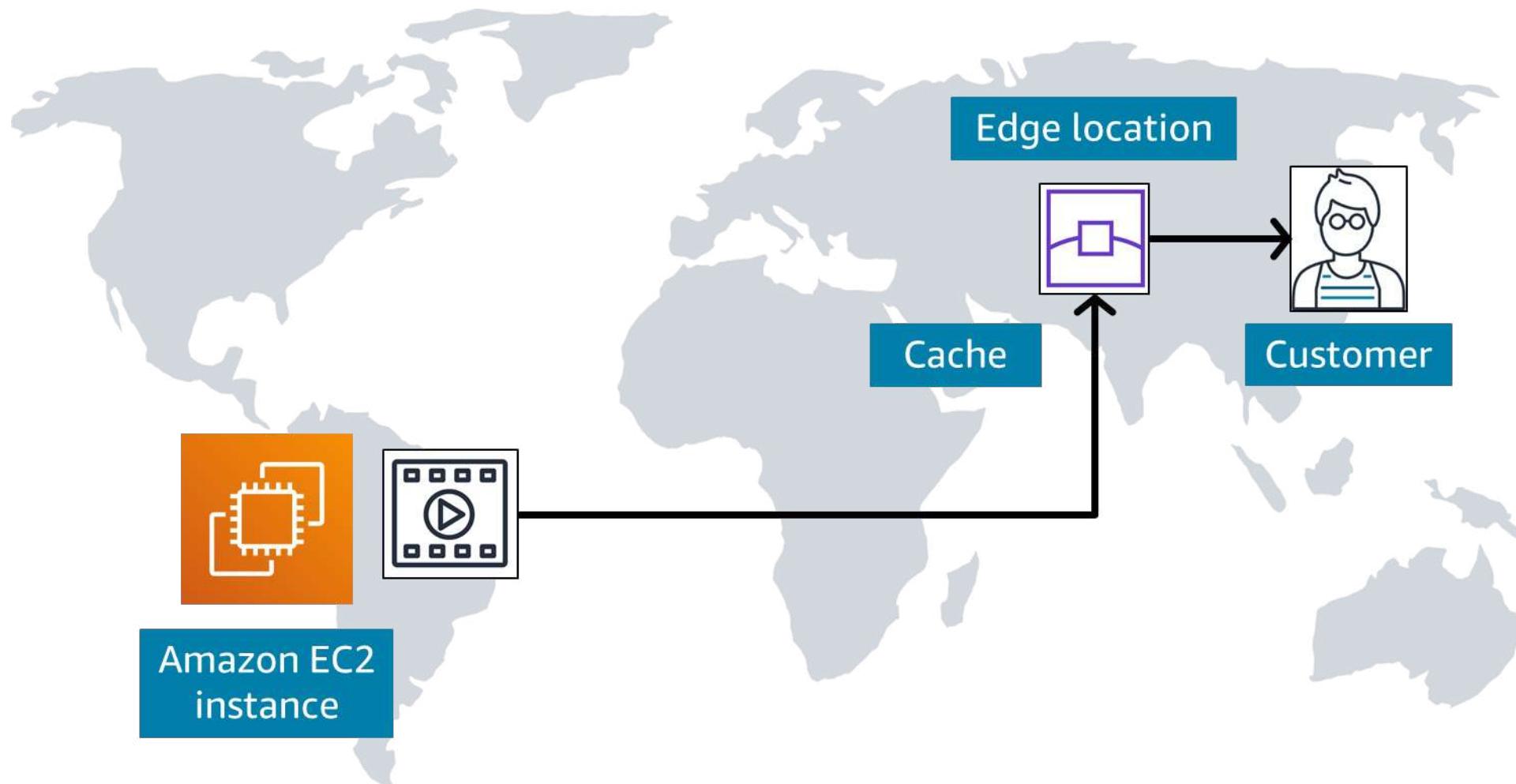
# Regions & Availability Zones



# Amazon EC2 instances in multiple AZs



# Amazon CloudFront delivers content



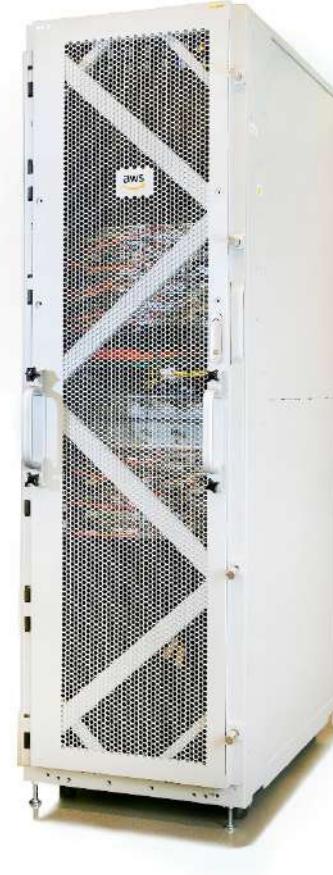
# AWS Outposts

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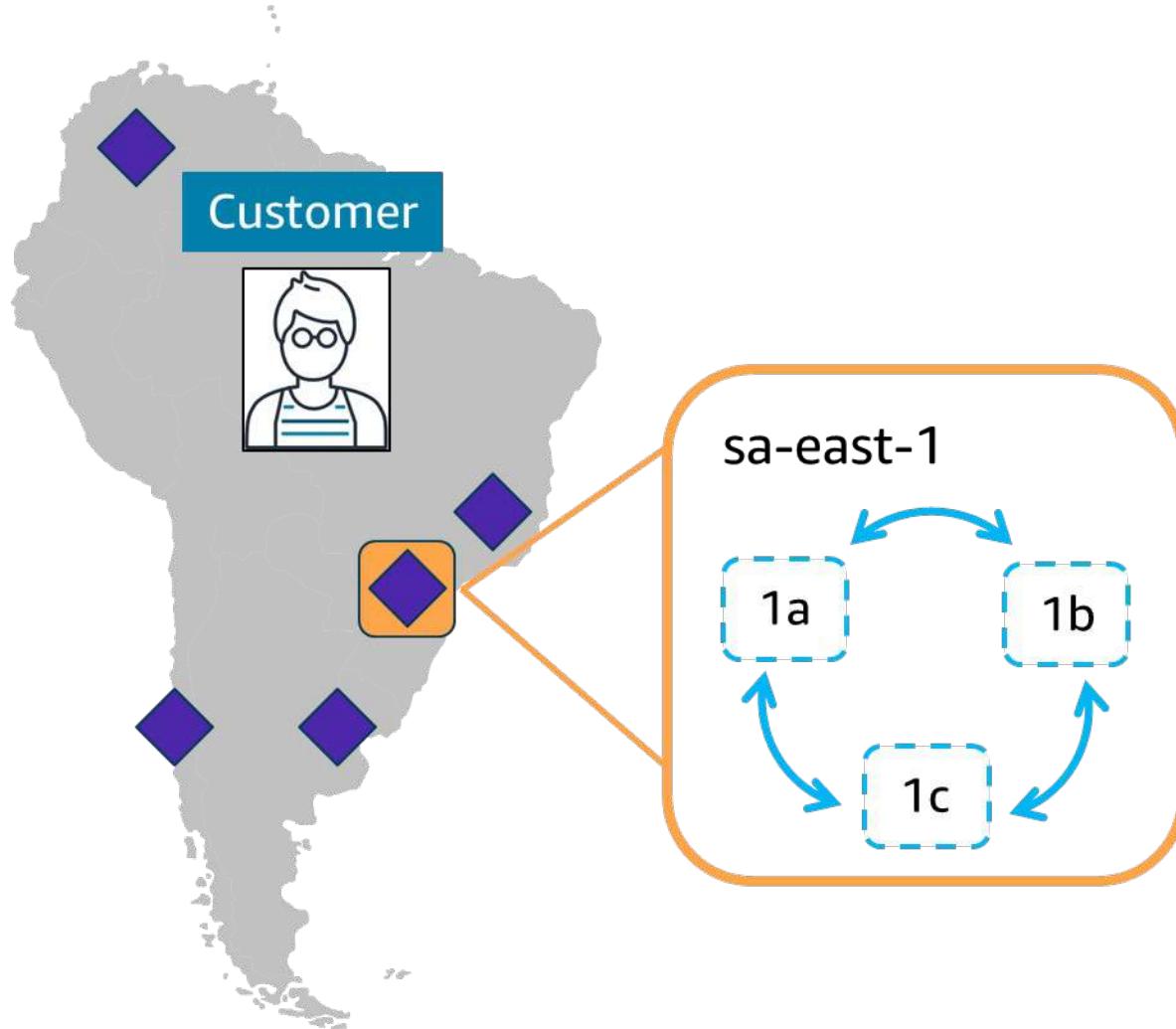


AWS Outposts family

Extend AWS infrastructure  
and services to different  
locations, including your  
on-premises data center.



# Review: AWS Global Infrastructure



Region:

- São Paulo



Availability Zones:

- sa-east-1a
- sa-east-1b
- sa-east-1c



Edge locations

# Knowledge check

Which of the following is TRUE for the AWS Global Infrastructure?

The correct response is D.

- A An Availability Zone consists of a single Region.
- B An Availability Zone consists of two or more Regions.
- C A Region consists of a single Availability Zone.
- D A Region consists of three or more Availability Zones.

# Knowledge check

Which factors should be considered when selecting a Region? (Select TWO.)

The correct responses are A and B.

- A **Compliance with data governance and legal requirements**
- B **Proximity to your customers**
- C Access to 24/7 technical support
- D Ability to assign custom permissions to different users
- E Access to the AWS Command Line Interface (AWS CLI)



# Knowledge check

Which statement best describes Amazon CloudFront?

The correct response is D.

- A A service that can be used to run infrastructure in a hybrid cloud approach
- B A serverless compute engine for containers
- C A service that can be used to send and receive messages between software components through a queue
- D A global content delivery service



# Knowledge check

Which site does Amazon CloudFront use to cache copies of content for faster delivery to users at any location?

The correct response is A.

- A Edge location
- B Region
- C Availability Zone
- D Origin

# Knowledge check

Which actions can a cloud practitioner perform with AWS Outposts?

The correct response is C.

- A Automate actions for AWS services and applications through scripts.
- B Access wizards and automated workflows to perform tasks in AWS services.
- C Extend AWS infrastructure and services to different locations including an on-premises data center.**
- D Develop AWS applications in supported programming languages.



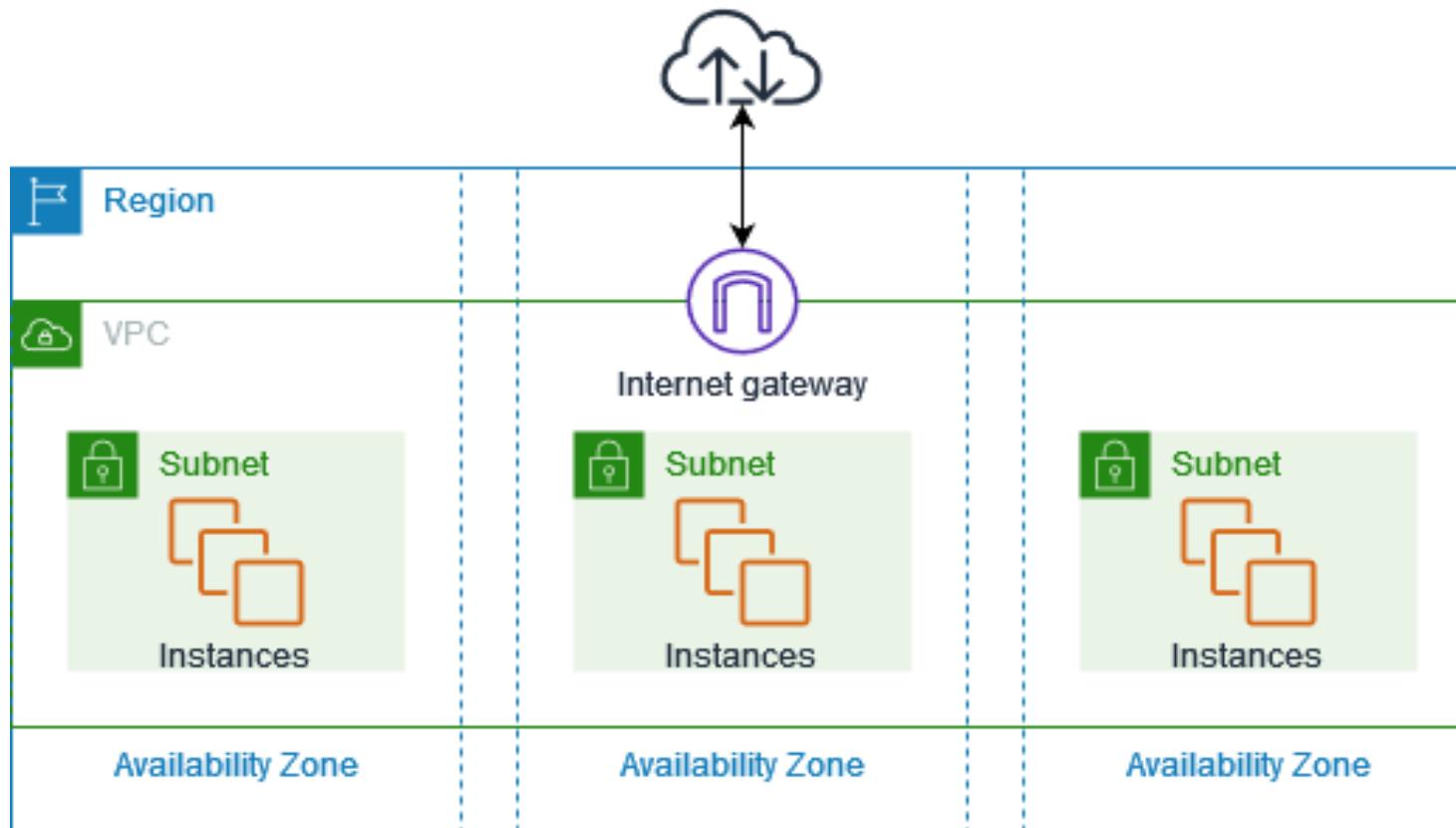


# AWS Partner: Cloud Practitioner Essentials

## Module 4: Networking

# Amazon VPC

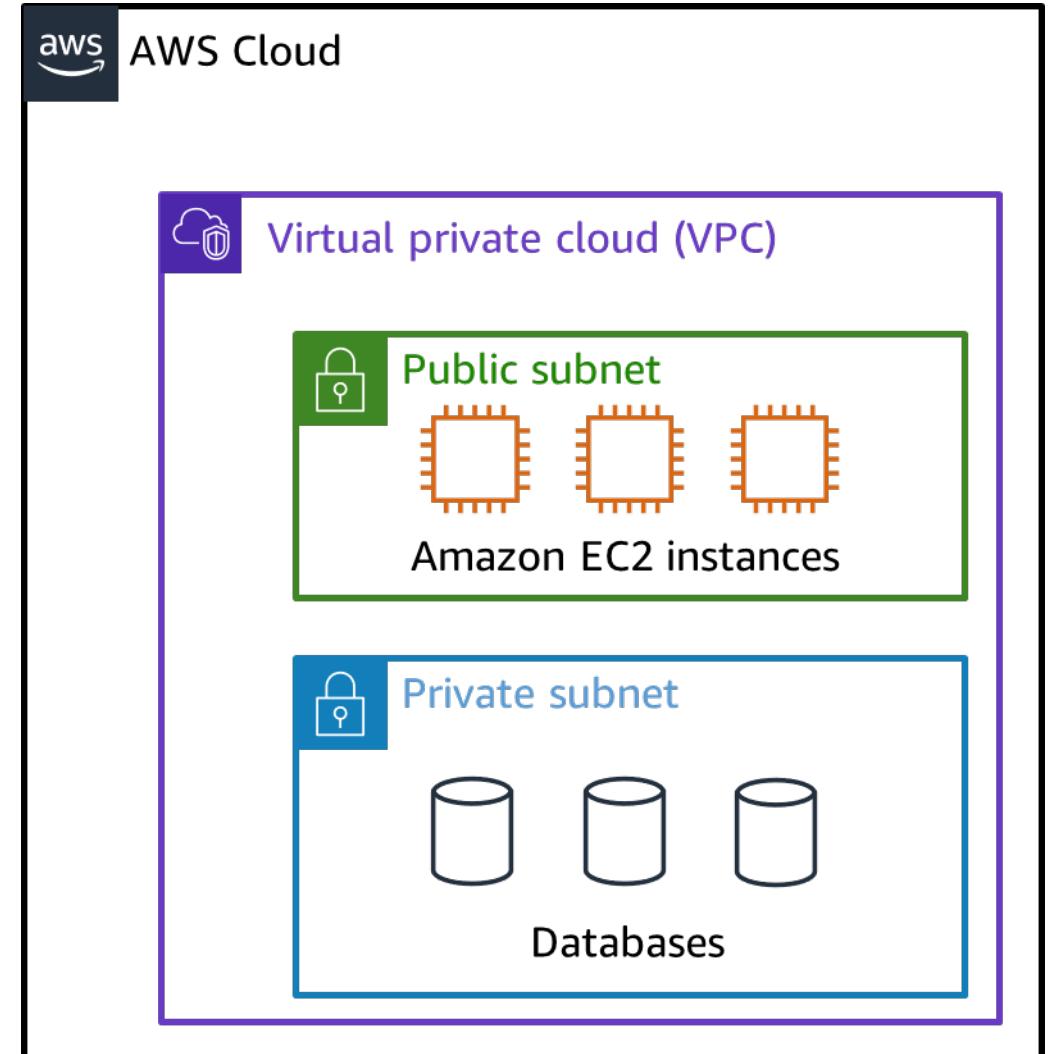
VPC enables you to launch resources in a virtual network that you define.



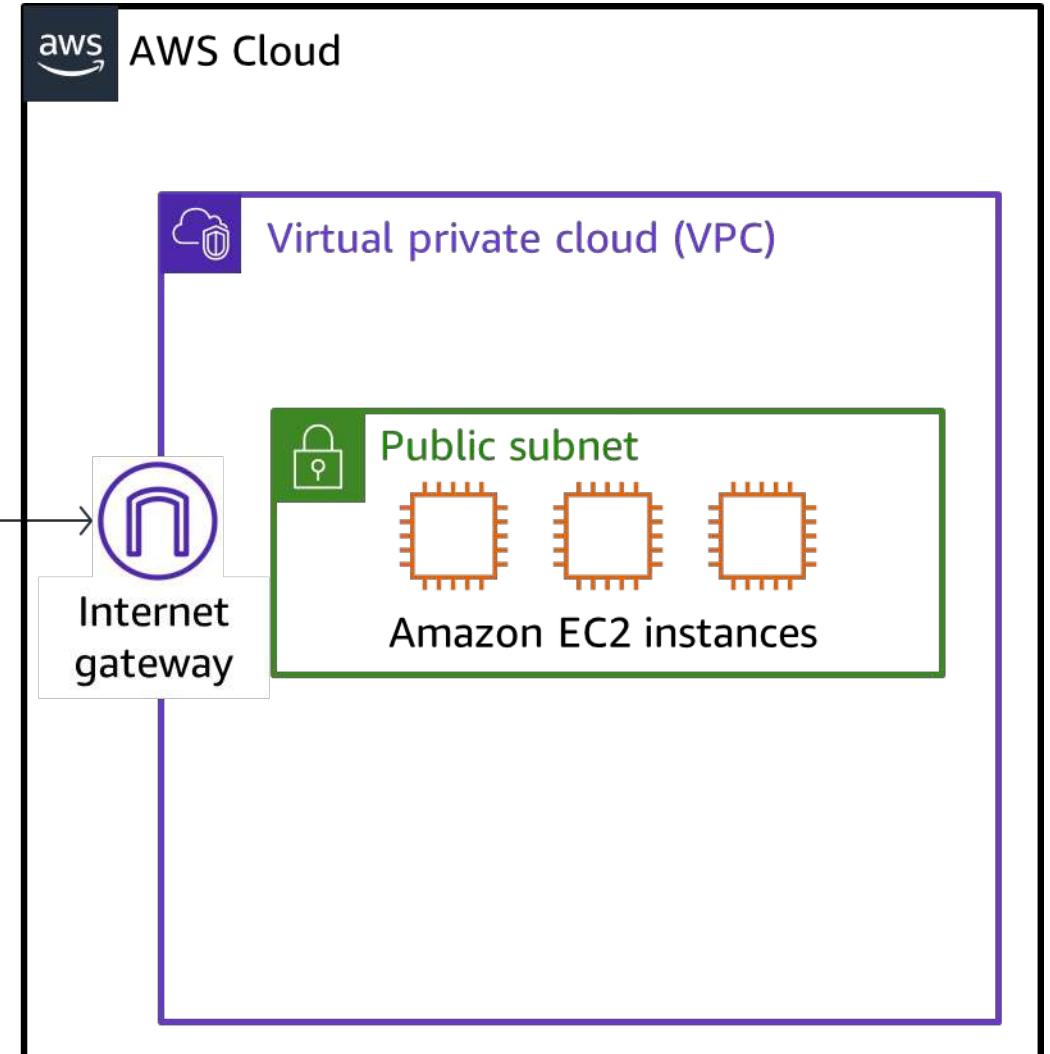
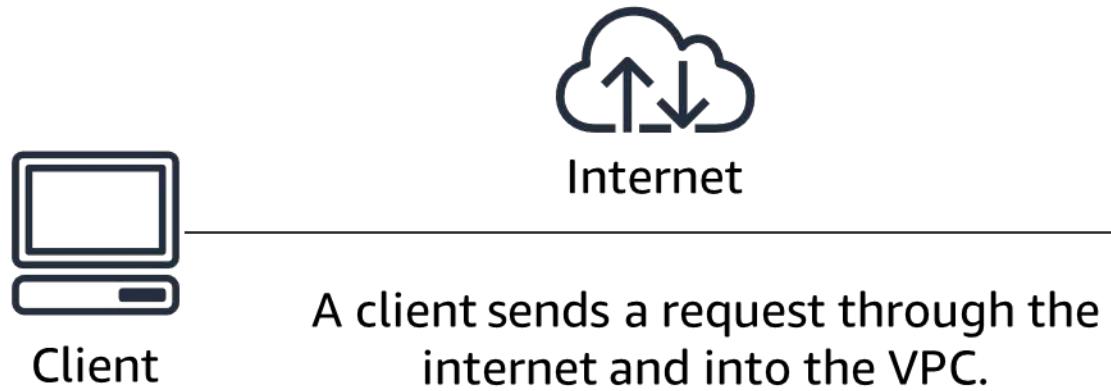
# Subnets

A subnet is a section in a VPC in which you can place groups of isolated resources.

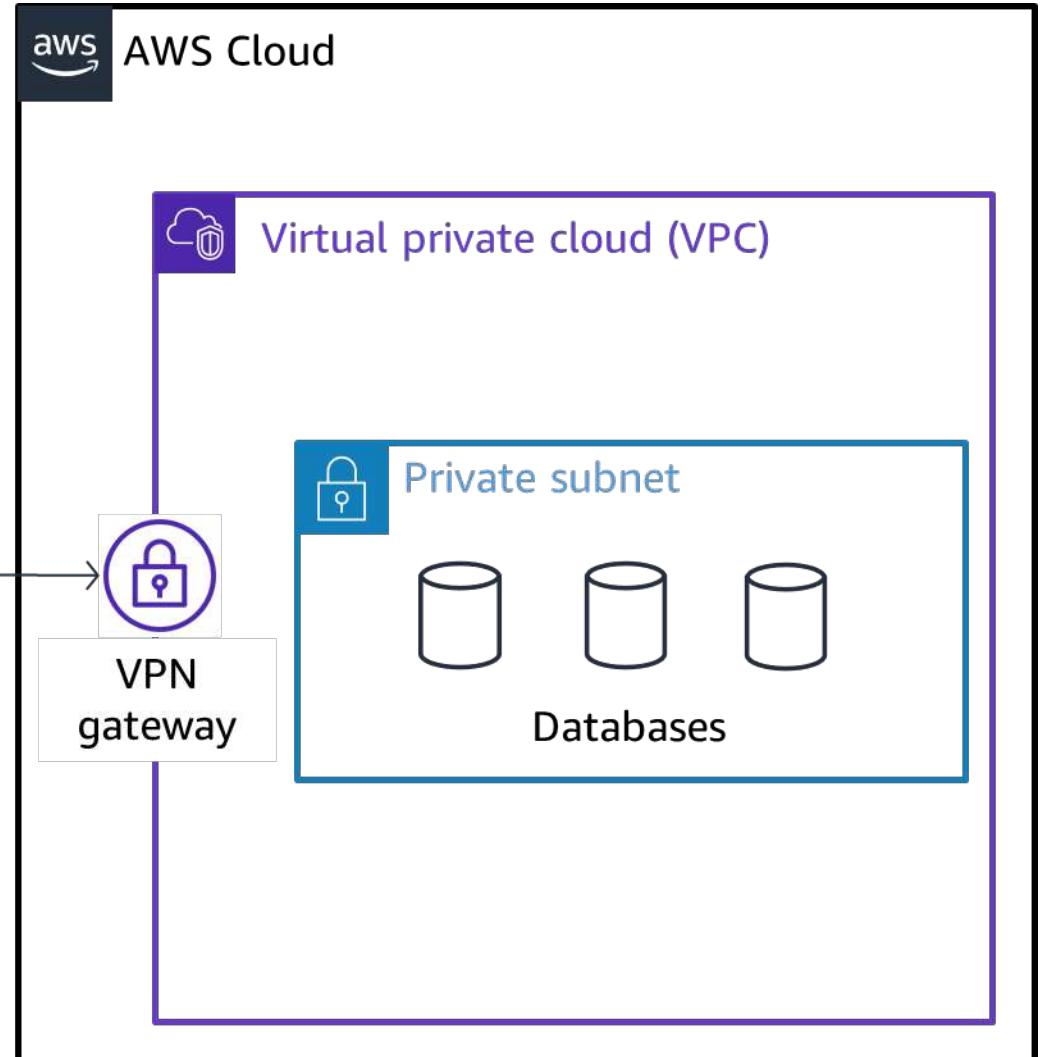
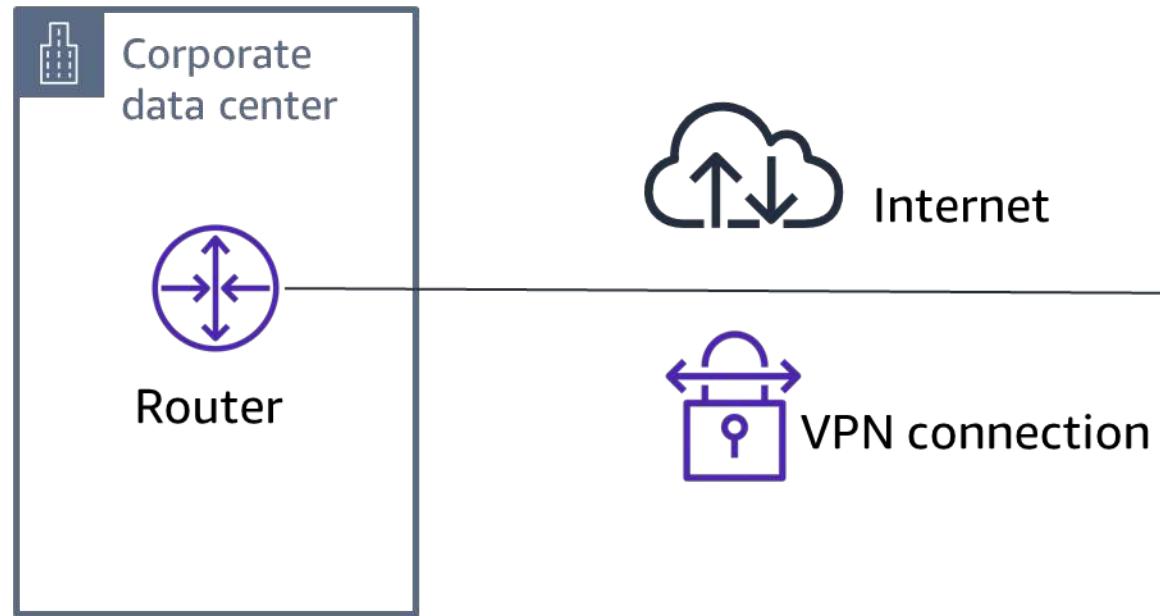
A subnet can be public or private.



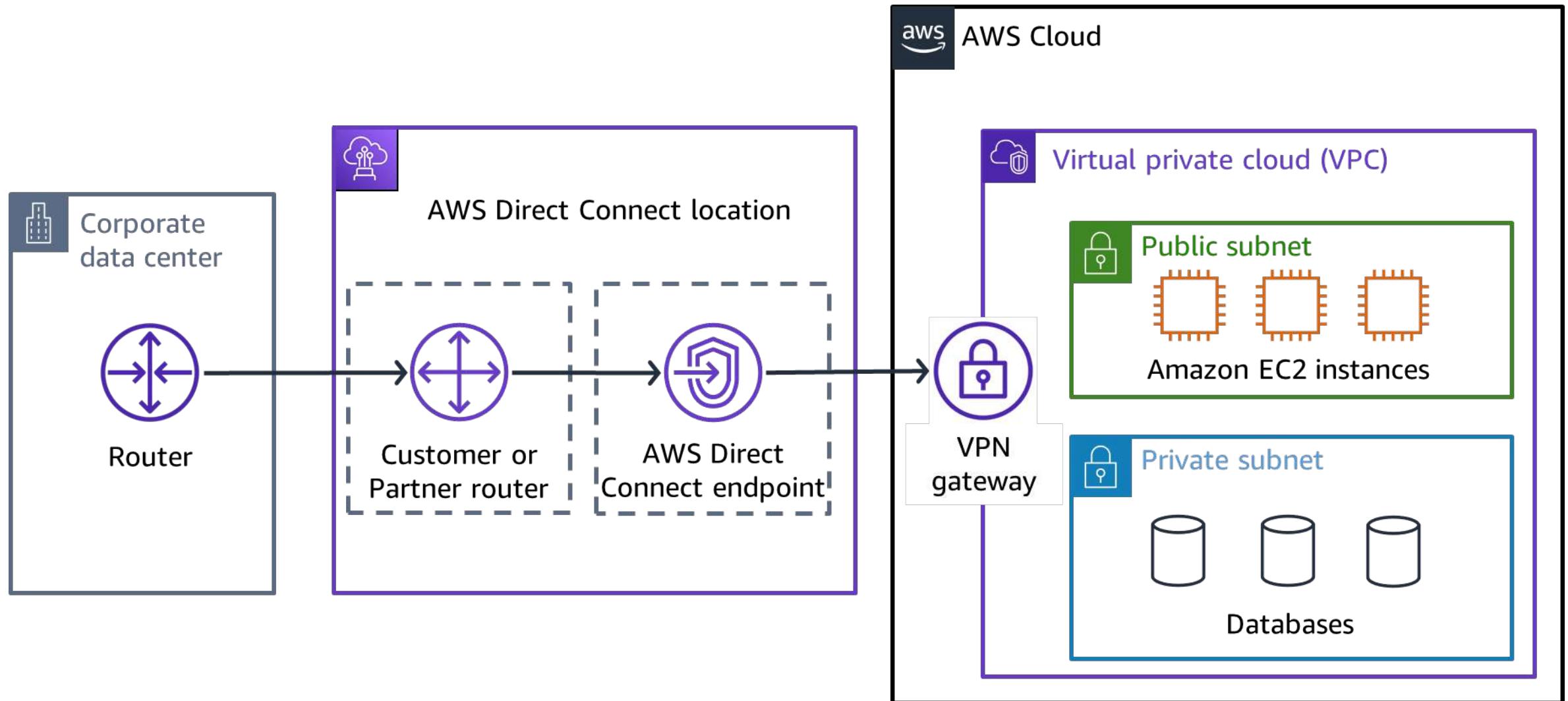
# Internet gateway



# Virtual private gateway



# AWS Direct Connect



# Match: VPC components

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1. Isolate databases containing customers' personal information

A. Public subnet

2. Create a VPN connection between the VPC and the internal corporate network

B. Private subnet

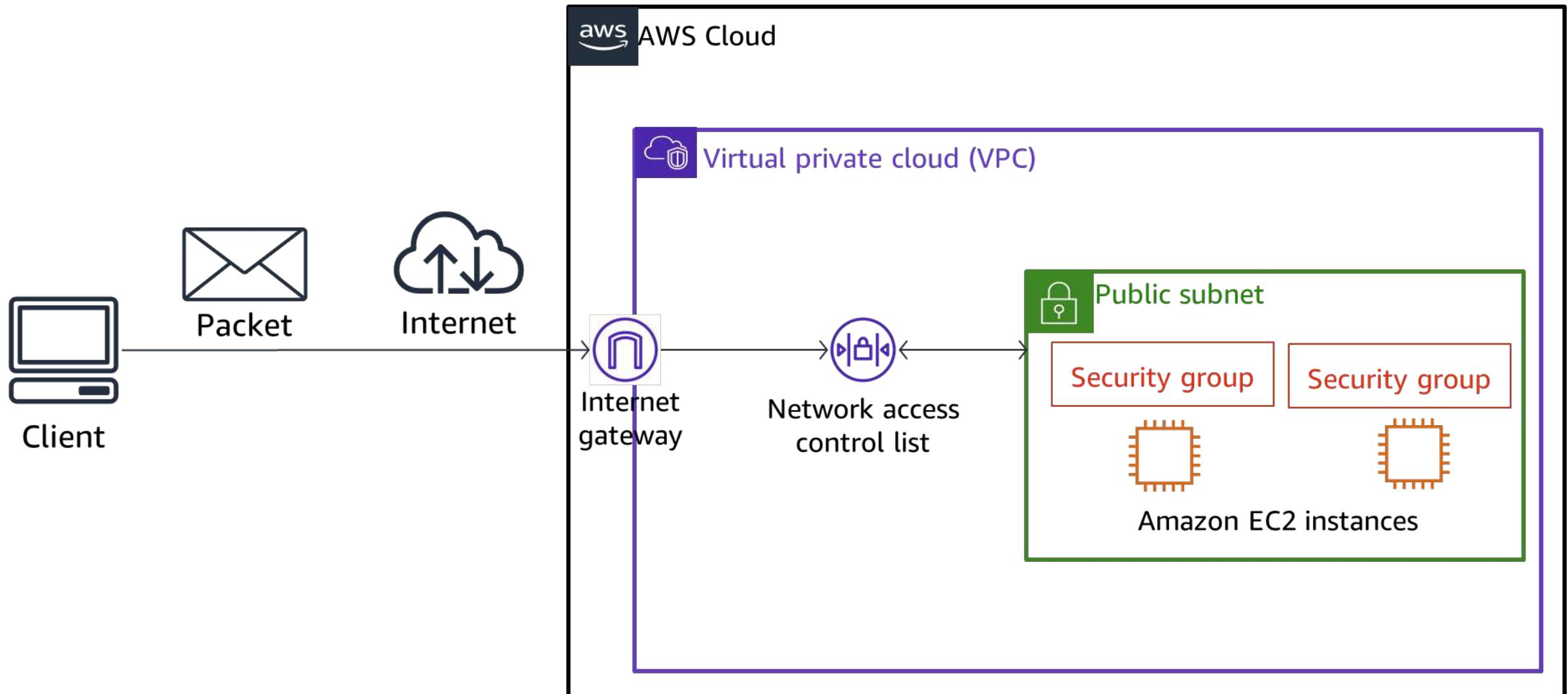
3. Support customer-facing website

C. Virtual Private Gateway

4. Establish a dedicated connection between an on-premises data center and the VPC

D. AWS Direct Connect

# Network traffic in a VPC

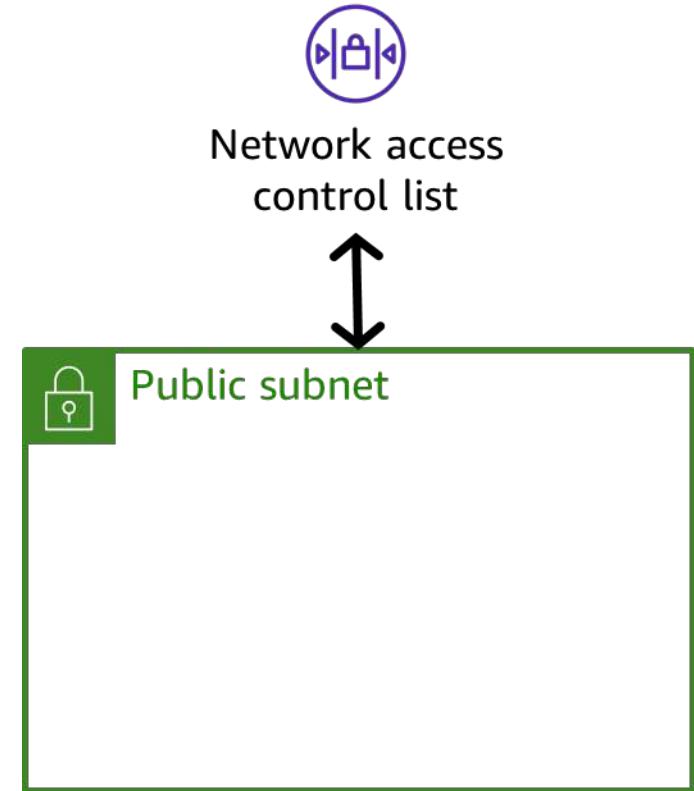


# Network access control lists

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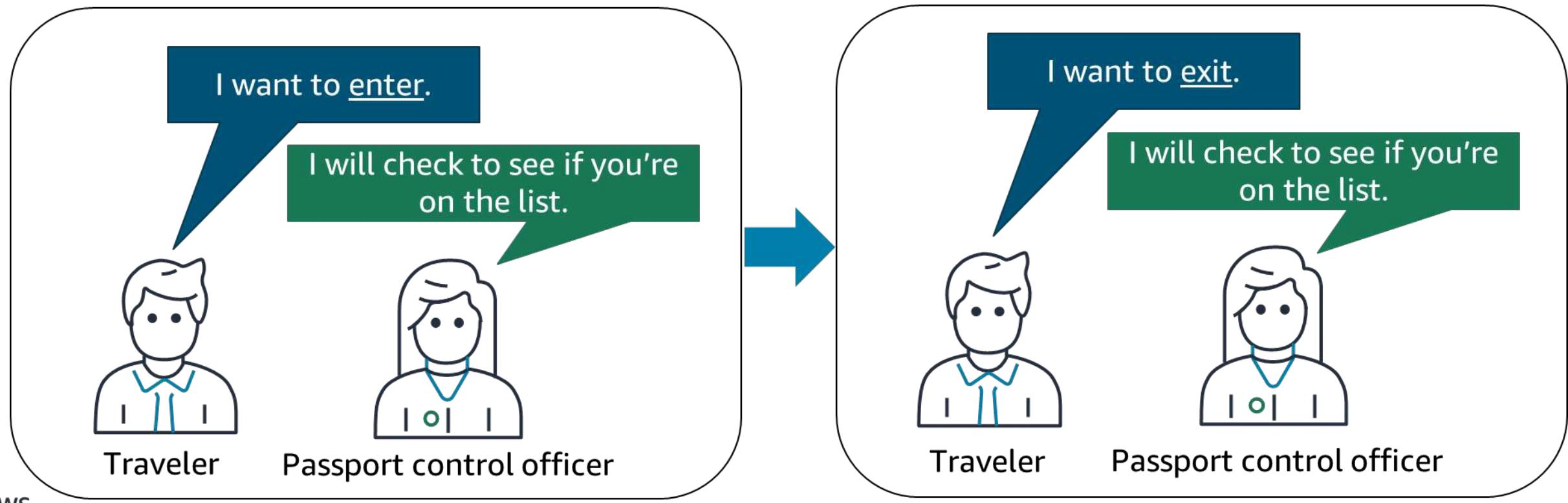
A **network access control list (network ACL)** is a virtual firewall for a subnet. By default:

- The default network ACL allows all inbound and outbound traffic.
- Customer network ACLs deny all inbound and outbound traffic



# Stateless packet filtering

- Network ACLs perform stateless packet filtering.
- Before a packet can exit a subnet, it must be checked against the outbound rules.



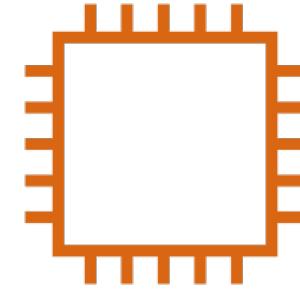
# Security groups

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A security group is a virtual firewall for an Amazon EC2 instance.

By default, a security group denies all inbound traffic and allows all outbound traffic.

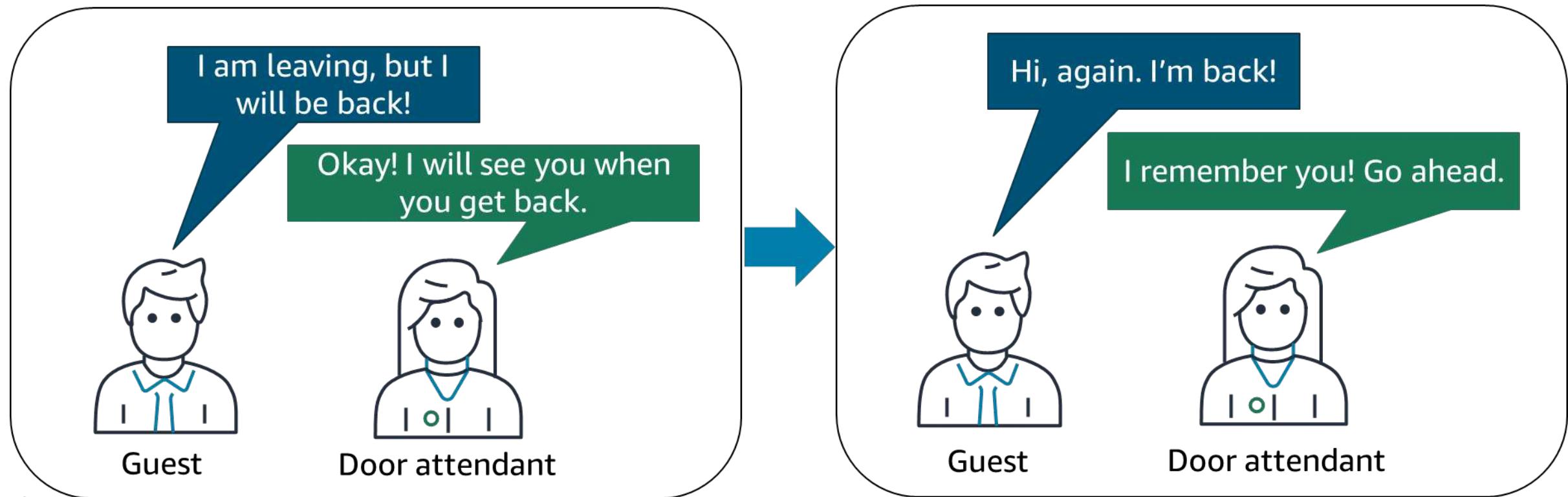
Security group



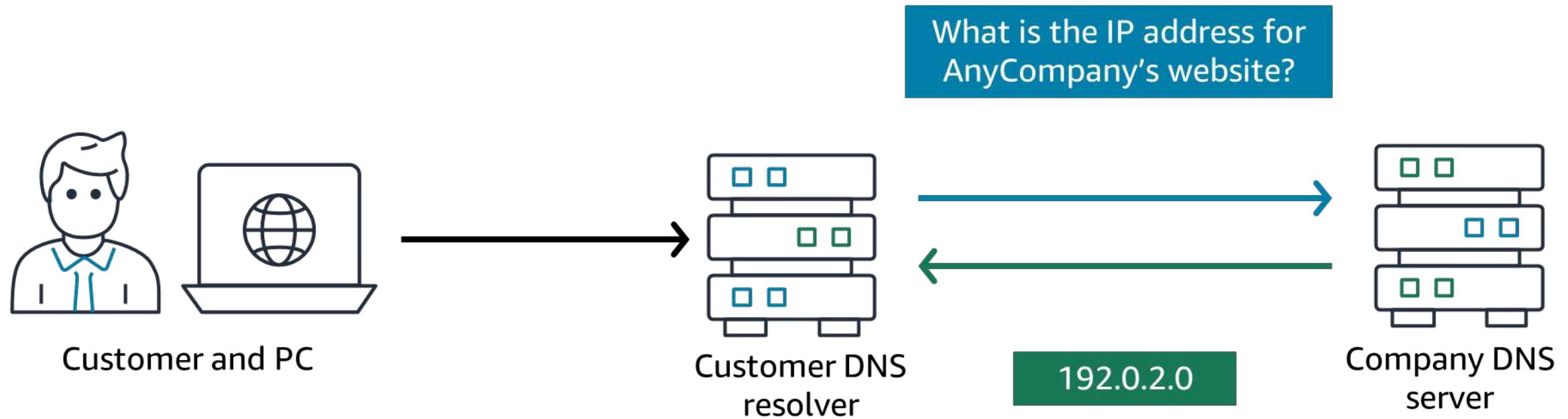
Amazon EC2 instance

# Stateful packet filtering

- Security groups perform stateful packet filtering.
- They remember previous decisions that were made for incoming packets.

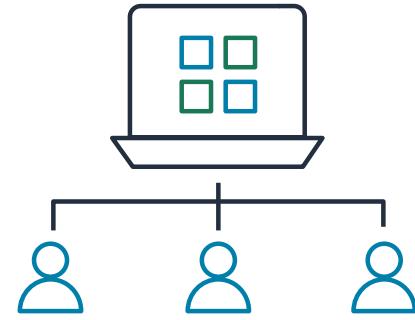


# Domain Name System (DNS)



# Amazon Route 53

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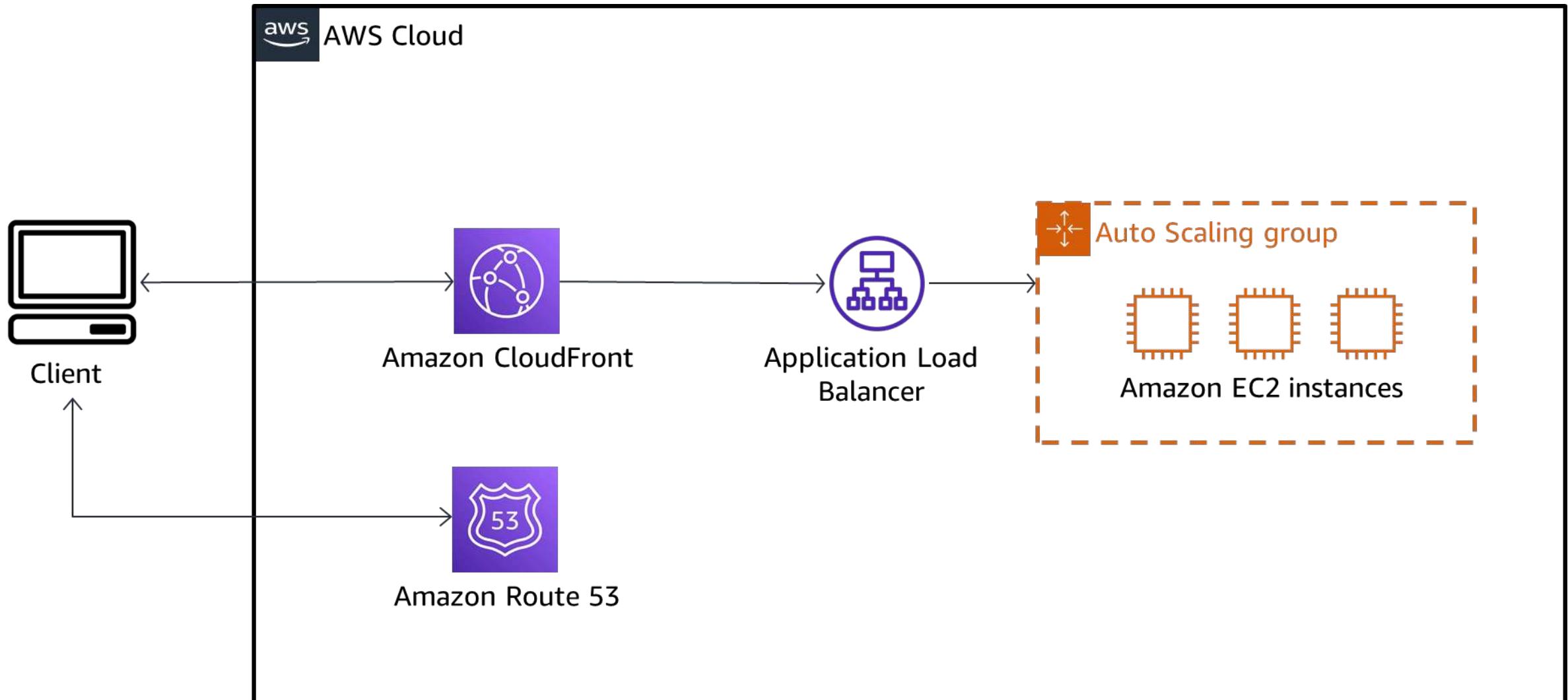


Route users to  
internet applications

Connect user requests  
to infrastructure in  
AWS and outside of  
AWS

Manage DNS records  
for domain names

# Amazon Route 53 and CloudFront



# Knowledge check

Which component or service can be used to establish a private dedicated connection between a company's data center and AWS?

The correct response is C.

- A Private subnet
- B DNS
- C **AWS Direct Connect**
- D Amazon CloudFront



# Knowledge check

Which statement describes security groups?

The correct response is B.

- A They are stateful and allow all inbound traffic by default.
- B They are stateful and deny all inbound traffic by default.**
- C They are stateless and allow all inbound traffic by default.
- D They are stateless and deny all inbound traffic by default.

# Knowledge check

Which component is used to connect a VPC to the internet?

The correct response is A.

- A Internet gateway
- B Public subnet
- C Edge location
- D Security group



# AWS Partner: Cloud Practitioner Essentials

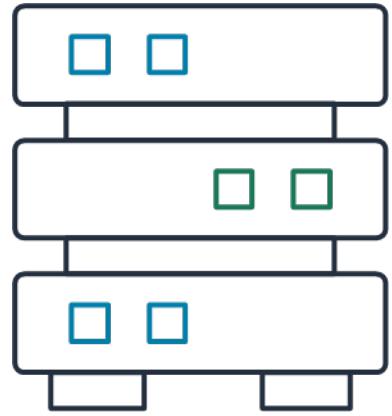
## Module 5: Storage and Databases



# Topic A: AWS storage

# AWS storage types

---



Block storage



Object storage

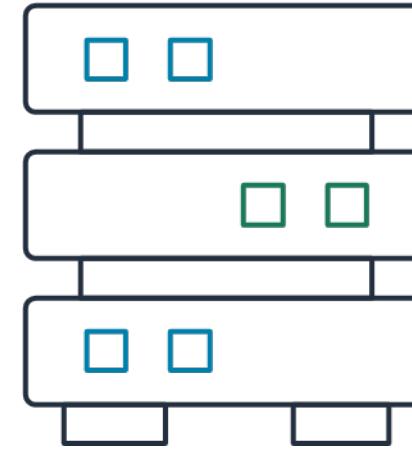


File storage

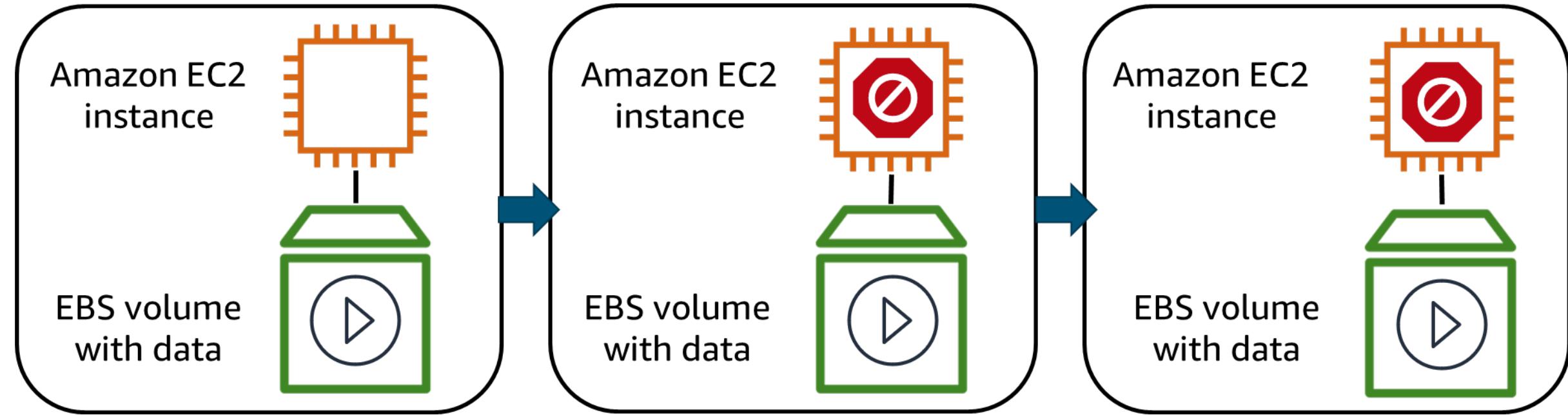
# Block storage

---

- In **block storage**, files are separated into equal-sized pieces (blocks) of data.
- Block storage is used for applications that run on Amazon EC2 instances.



# Amazon EBS volumes



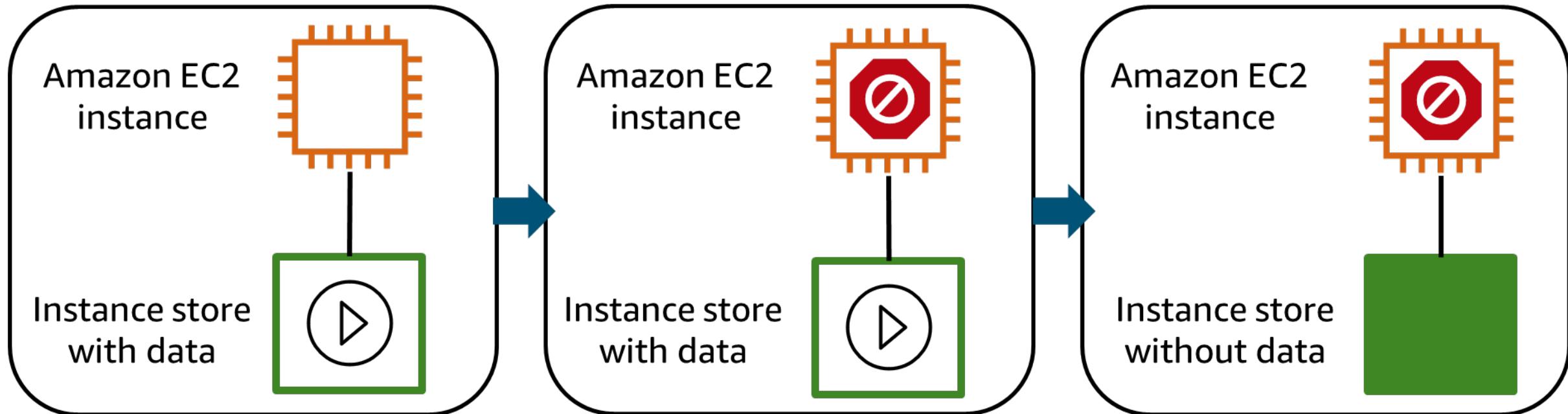
An Amazon EC2 instance with an attached EBS volume is running

The instance is stopped or terminated. (If terminated, the EBS volume is removed by default.)

All data on the attached EBS volume remains available.

# Instance store

An **instance store** provides temporary block-level storage for an Amazon EC2 instance. If you stop or terminate an Amazon EC2 instance, all the data written to the attached instance store is deleted.



An Amazon EC2 instance with an attached instance store is running.

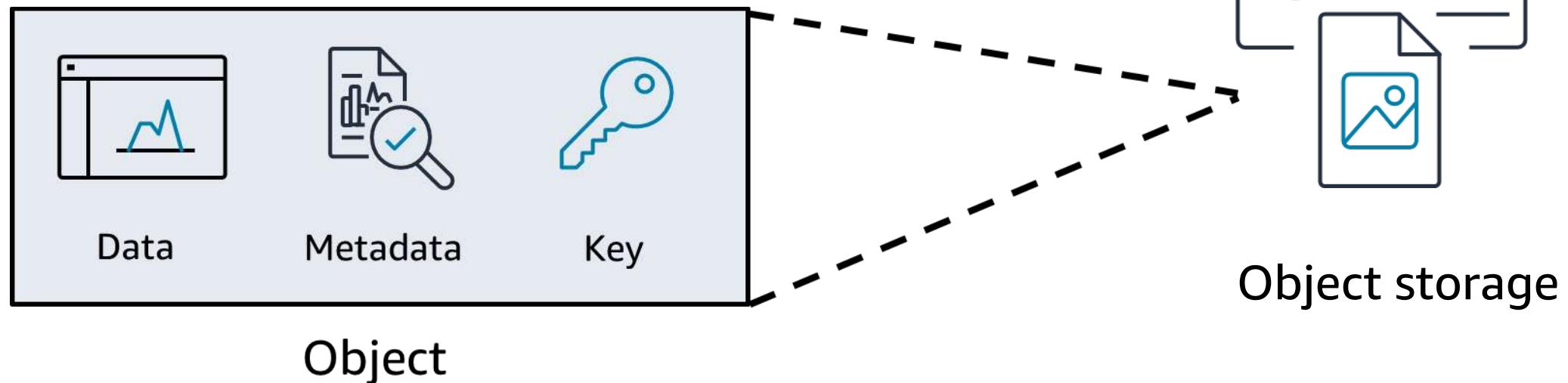
The instance is stopped or terminated.

All data on the attached instance store is deleted.

# Object storage

---

In **object store**, each object consists of data, metadata, and a key.

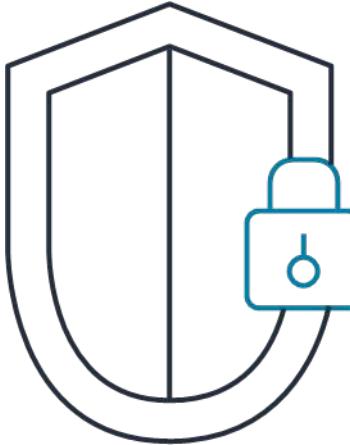


# Amazon Simple Storage Service

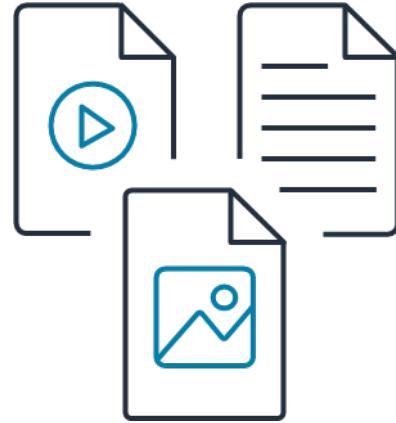
---



Store objects in buckets



Set permissions to control  
access to objects



Choose from a range of  
storage classes for  
different use cases

# Amazon S3 storage classes (1 of 2)

## S3 Standard

- Designed for frequently accessed data
- Stores data in a minimum of three Availability Zones

## S3 Standard-IA

- Ideal for infrequently accessed data
- Similar to S3 Standard but has a lower storage price and higher retrieval price

## S3 One Zone-IA

- Stores data in a single Availability Zone
- Has a lower storage price than S3 Standard-IA

# Amazon S3 storage classes (2 of 2)

## S3 Intelligent-Tiering

- Ideal for data with unknown or changing access patterns
- Requires a small monthly monitoring and automation fee per object

## S3 Glacier Instant Retrieval

- Low-cost storage designed for data archiving
- Able to retrieve objects in milliseconds

## S3 Glacier Flexible Retrieval

- Lowest-cost object storage class
- Configurable retrieval time from minutes to hours

## S3 Glacier Deep Archive

- Lowest-cost object storage class
- Able to retrieve objects within 12 hours

# Knowledge Check

You want to store data that is infrequently accessed but must be immediately available when needed. Which Amazon S3 storage class should you use?

Choice	Response
A	S3 Intelligent-Tiering
B	S3 Glacier Deep Archive
C	S3 Standard-IA
D	S3 Glacier Flexible Retrieval



# Knowledge Check Answer

You want to store data that is infrequently accessed but must be immediately available when needed. Which Amazon S3 storage class should you use?

The correct response is C.

The correct response option is **C. S3 Standard-IA**.

The S3 Standard-IA storage class is ideal for data that is infrequently accessed but requires high availability when needed. Both S3 Standard and S3 Standard-IA store data in a minimum of three Availability Zones. S3 Standard-IA provides the same level of availability as S3 Standard but at a lower storage price.

# Knowledge check

Which statement is *true* about Amazon EBS volumes and Amazon EFS file systems?

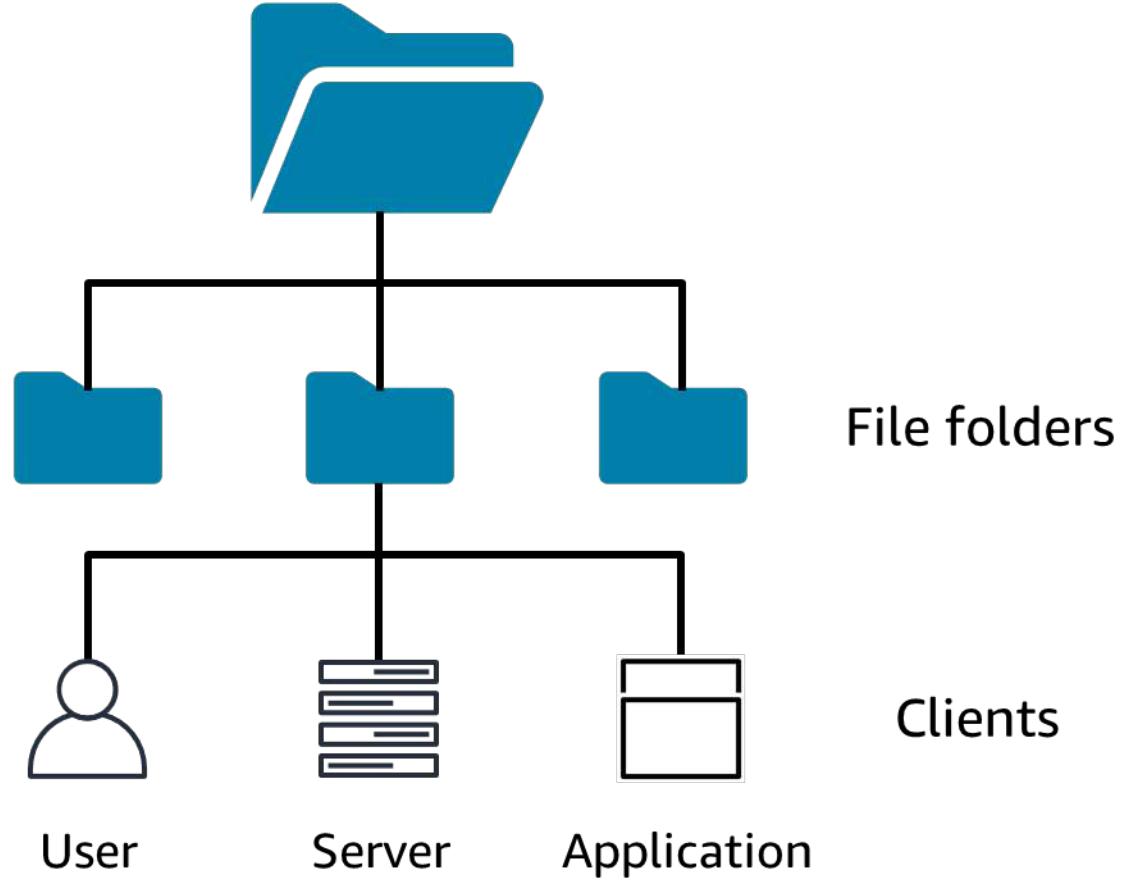
The correct response is A.

- A **EBS volumes store data within a single Availability Zone. Amazon EFS file systems store data across multiple Availability Zones by default.**
- B EBS volumes store data across multiple Availability Zones. Amazon EFS file systems store data within a single Availability Zone by default.
- C EBS volumes and Amazon EFS file systems both store data within a single Availability Zone.
- D EBS volumes and Amazon EFS file systems both store data across multiple Availability Zones.

# File storage

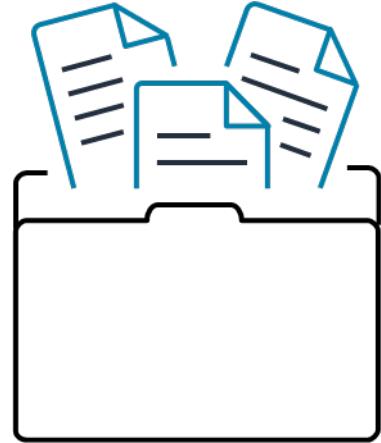
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In **file storage**, multiple clients can access data that is stored in shared file folders

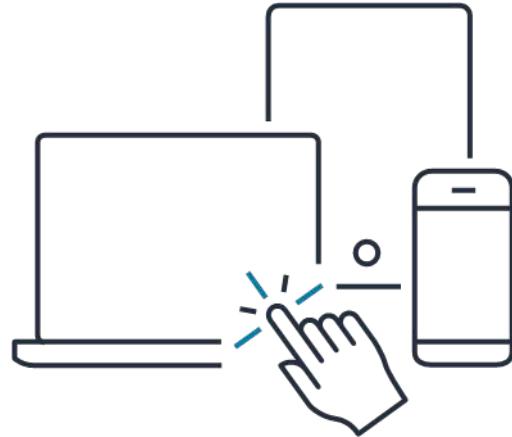


# Amazon Elastic File System

---



Store data in a scalable  
file system



Provide data to thousands  
of Amazon EC2 instance  
concurrently



Store data in and across  
multiple Availability  
Zones by default



# Topic B: AWS databases

# Database types

Relational database

Nonrelational database

ID	Product name	Size	Price
1	Medium roast ground coffee	12 oz.	\$5.30
2	Dark roast ground coffee	20 oz.	\$9.27

Key	Value
1	Name: John Doe Address: 123 Any Street Favorite drink: Medium latte
2	Name: Mary Major Address: 100 Main Street Birthday: July 5, 1994



# Relational databases

---

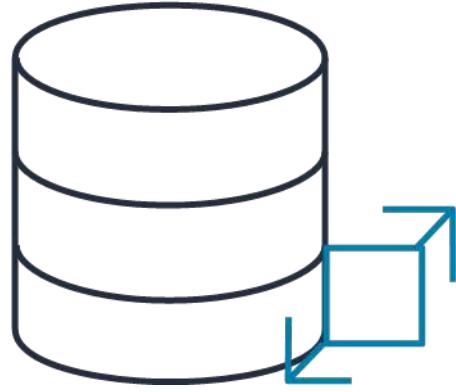
- In a **relational database**, data is stored in a way that relates it to other pieces of data.
- Relational databases use **structured query language (SQL)** to store and query data.

Example of data in a relational database

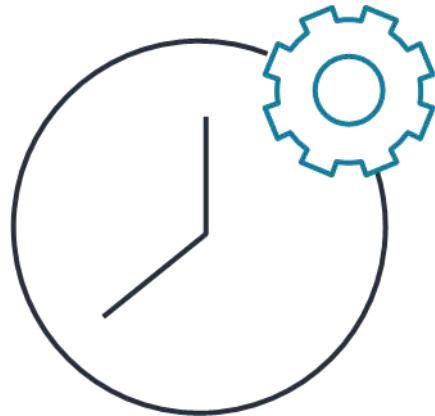
ID	Product name	Size	Price
1	Medium roast ground coffee	12 oz.	\$5.30
2	Dark roast ground coffee	20 oz.	\$9.27

# Amazon Relational Database Service

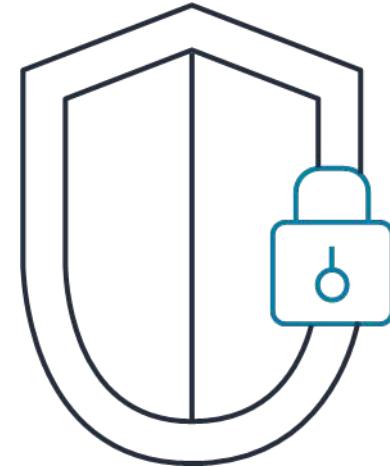
---



Operate and scale a relational database in the AWS Cloud



Automate time-consuming administrative tasks



Store and transmit data securely

# Amazon RDS database engines



Amazon Relational  
Database Service  
(Amazon RDS)

- Amazon Aurora
- PostgreSQL
- MySQL
- MariaDB
- Oracle Database
- Microsoft SQL Server

# Amazon Aurora

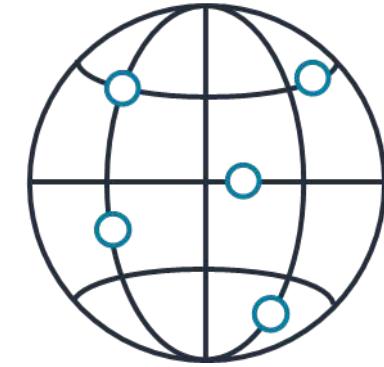
---



Store data in an enterprise-class relational database



Reduce database costs by eliminating unnecessary input/output (I/O) operations



Replicate six copies of data across three Availability Zones

# Nonrelational databases

---

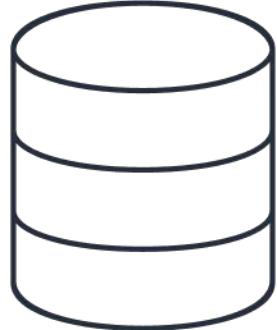
- A **nonrelational database** uses structures other than rows and columns to organize data.
- For example, with **key-value** pairs, data is organized into items (keys), and items have attributes (values).

Example of data in a nonrelational database

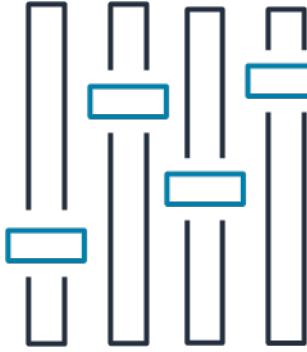
Key	Value
1	Name: John Doe Address: 123 Any Street Favorite drink: Medium latte
2	Name: Mary Major Address: 100 Main Street Birthday: July 5, 1994

# Amazon DynamoDB

---



**Amazon DynamoDB** is a serverless key-value database.



It automatically scales to adjust for capacity changes and maintain consistent performance.

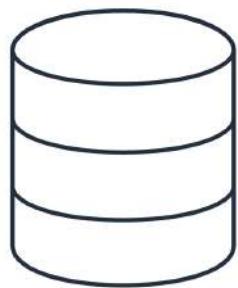


It is designed to handle over 10 trillion requests per day.

# AWS Database Migration Service

Migrate relational databases, nonrelational databases, and other types of datastores

Example:



MySQL database  
**(Source)**



AWS Database  
Migration Service  
**(AWS DMS)**



Amazon Aurora  
**(Target)**

# Amazon RDS and Amazon DynamoDB

For each scenario, should you use **Amazon RDS** or **Amazon DynamoDB**?

Amazon RDS

1. Storing data in a relational database

DynamoDB

DynamoDB

3. Storing data in a key-value database

Amazon RDS

DynamoDB

5. Scaling up to 10 trillion requests per day

Amazon RDS

2. Running a serverless database

4. Using SQL to organize data

6. Storing data in an Amazon Aurora database



# Additional database services (1 of 2)



Amazon Redshift

- Query and analyze data across a data warehouse



Amazon DocumentDB

- Run MongoDB workloads in a document database service



Amazon Neptune

- Run applications that use highly connected datasets

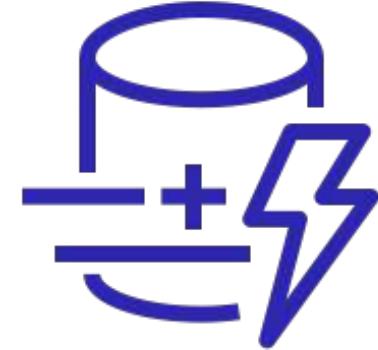


Amazon QLDB

- Review a complete history of changes to your application data

# Additional database services (2 of 2)

---



## Amazon Managed Blockchain

- Run a decentralized ledger database

## Amazon ElastiCache

- Add caching layers to improve database read times

## Amazon DynamoDB Accelerator

- Improve DynamoDB response times from single-digit milliseconds to microseconds

# Knowledge check

Which statement best describes Amazon DynamoDB?

The correct response is B.

- A A service that allows customers to run relational databases in the AWS Cloud
- B A serverless key-value database service**
- C A service that customers can use to migrate relational databases, nonrelational databases, and other types of data stores
- D An enterprise-class relational database





# AWS Partner: Cloud Practitioner Essentials

## Module 6: Security

# Shared responsibility model

Customers	Customer Data		
	Platform, Applications, Identity and Access Management		
	Operating Systems, Network and Firewall Configuration		
	Client-side Data Encryption	Server-side Encryption	Network Traffic Protection

AWS	Software				
	Compute	Storage	Database	Networking	
	Hardware/AWS Global Infrastructure				
	Regions		Availability Zones		Edge Locations

# Customers: Security in the cloud

---

Customers	Customer Data		
	Platform, Applications, Identity and Access Management		
	Operating Systems, Network and Firewall Configuration		
	Client-side Data Encryption	Server-side Encryption	Network Traffic Protection

Examples of customer responsibilities include:

- Instance operating system
- Applications
- Security groups
- Host-based firewalls
- Account management

# AWS: Security of the cloud

---



Examples of AWS responsibilities include:

- Physical security of data centers
- Network infrastructure
- Hardware and software infrastructure
- Virtualization infrastructure

# Review: Shared responsibility model

Are these tasks the responsibilities of **customers** or **AWS**?

Customers

1. Configuring security groups  
on Amazon EC2 instances

AWS

3. Implementing physical  
security controls at data  
centers

AWS

5. Maintaining servers that  
run Amazon EC2 instances

AWS

2. Maintaining network  
infrastructure

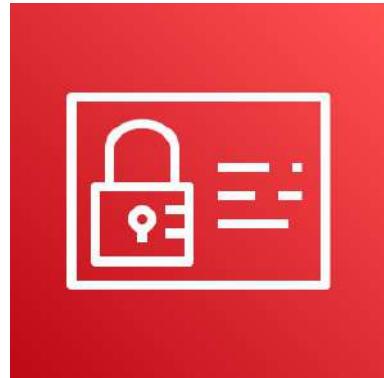
Customers

4. Patching software on  
Amazon EC2 instances

Customers

6. Setting permissions for  
Amazon S3 objects

# IAM



**AWS Identity and Access Management (IAM) allows you to manage access to AWS services and resources.**

## IAM features



IAM user



IAM policy



IAM group

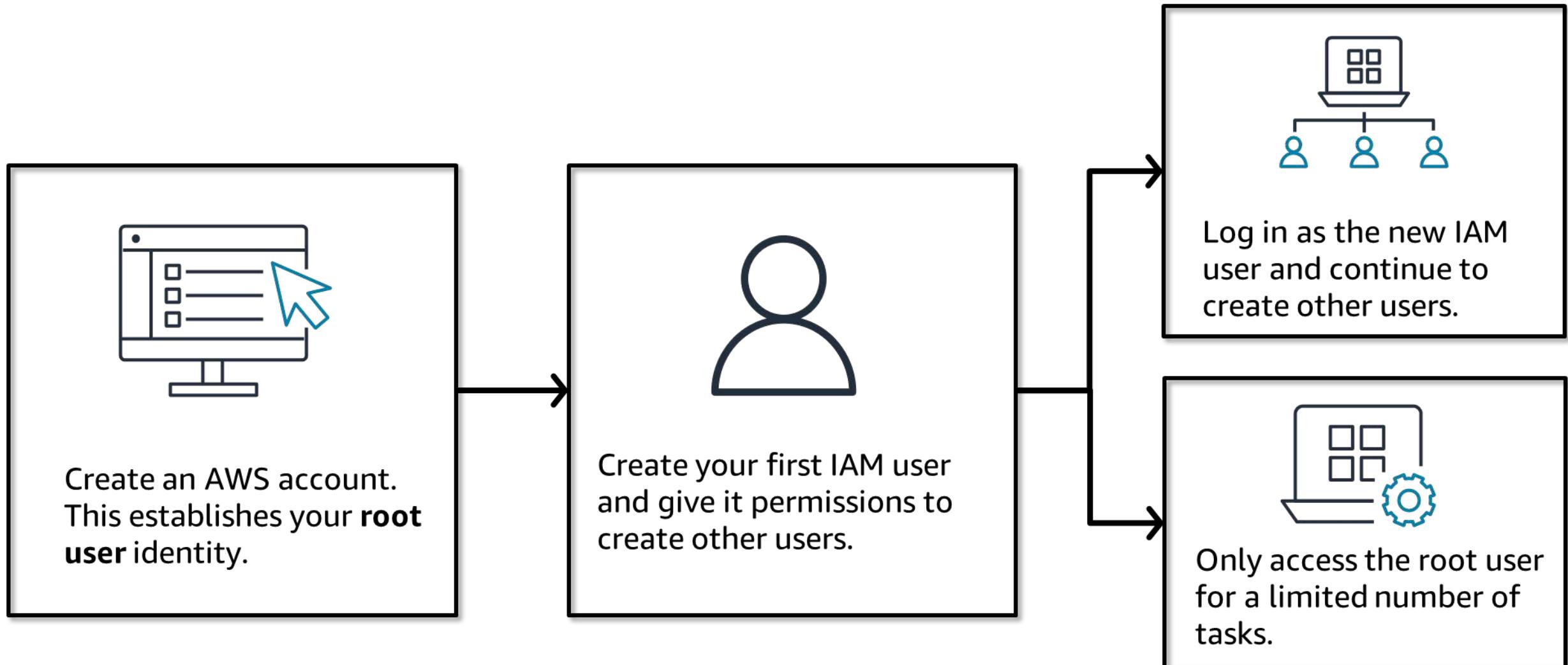


IAM role



Multi-factor authentication

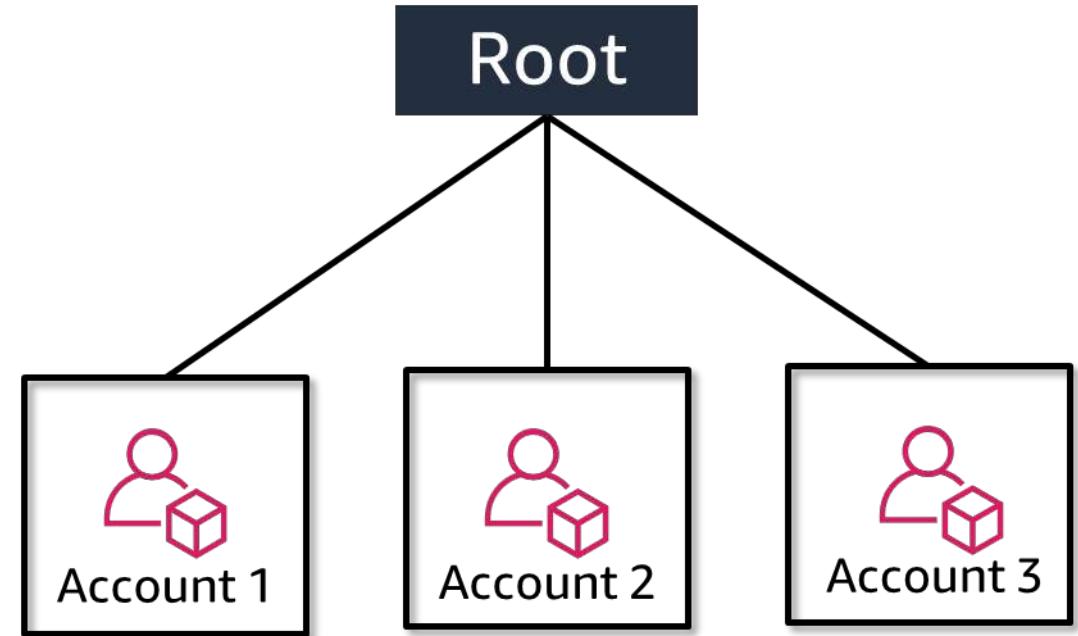
# AWS account root user



# AWS Organizations

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- AWS Organizations helps customers consolidate and manage multiple AWS accounts in a central location.
- Use service control policies (SCPs) to centrally control permissions for the accounts in your organization.



# AWS Artifact

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**AWS Artifact** provides on-demand access to security and compliance reports and select online agreements.



Access AWS compliance reports  
on demand



Review, accept, and manage  
agreements with AWS



Access compliance reports from  
third-party auditors

# AWS WAF

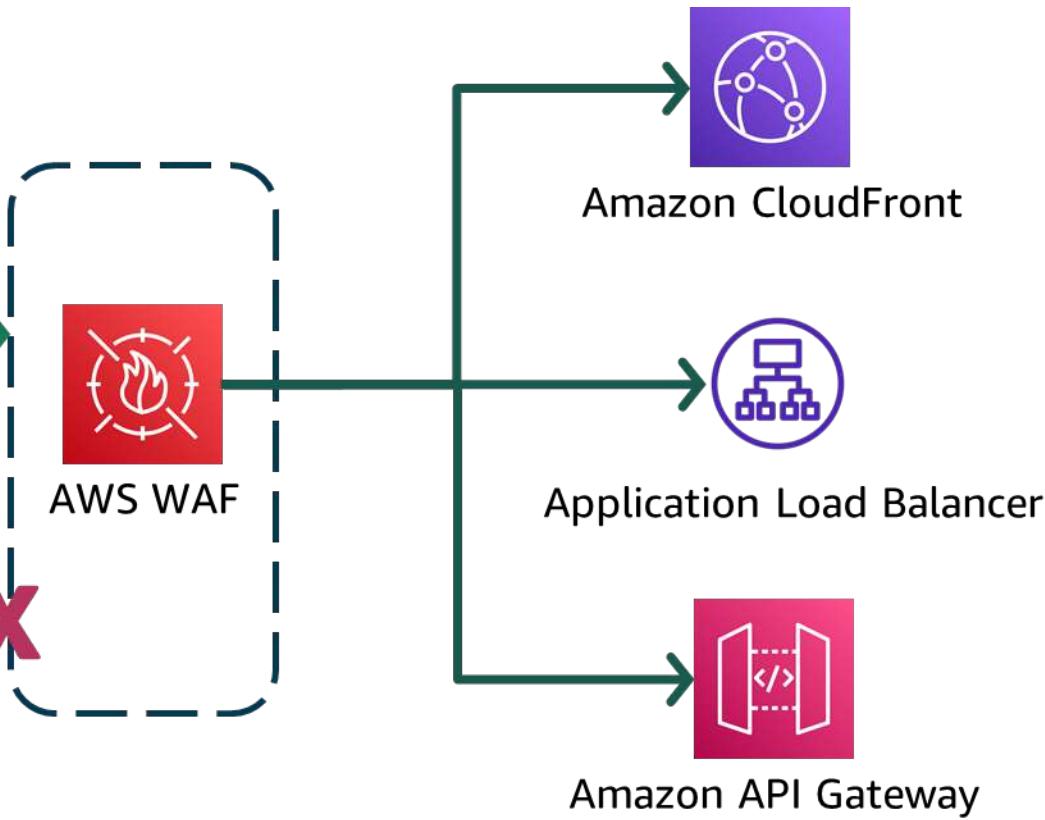


AWS WAF

Legitimate traffic

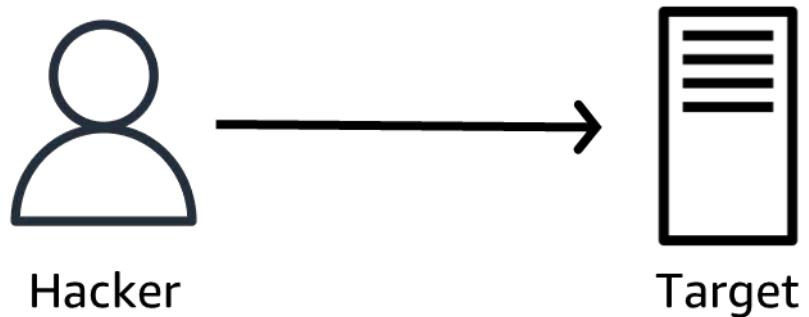
Malicious traffic  
(SQL injection, XSS, HTTP flood)

Helps protect your web applications and APIs against common web exploits



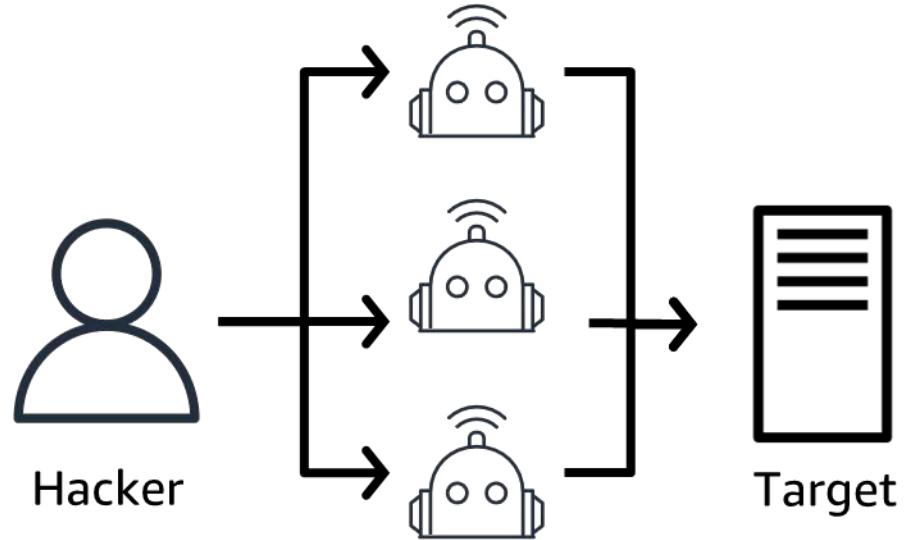
# DoS and DDoS attacks

Denial of service attack



The attack originates from a **single** source.

Distributed denial of service attack



The attack originates from **multiple** sources.

# AWS Shield

---

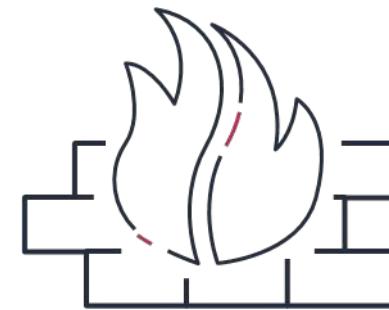
**AWS Shield** provides protection against distributed denial of service (DDoS) attacks.



Protect applications  
against DDoS attacks



Integrate AWS Shield  
Advanced with other  
AWS services

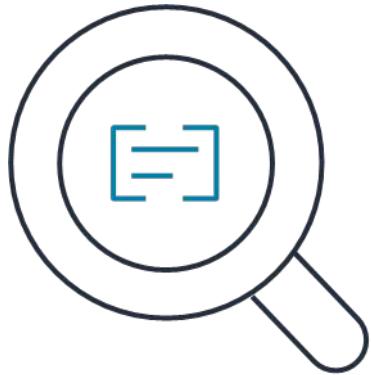


Write custom web ACL  
rules with AWS WAF to  
mitigate complex DDoS  
attacks

# Amazon Inspector

---

**Amazon Inspector** allows you to perform automated security assessments on your applications.



Automatically conduct application security assessments



Identify security vulnerabilities and deviations from best practices



Receive recommendations for how to fix security issues

# AWS Key Management Service



AWS Key Management  
Service (AWS KMS)

- **AWS Key Management Service (AWS KMS)** helps customers perform encryption operations through the use of cryptographic keys.
- You can choose the specific levels of access control that you need for your keys.

# Amazon GuardDuty

**Amazon GuardDuty** provides intelligent threat detection for AWS products and services.



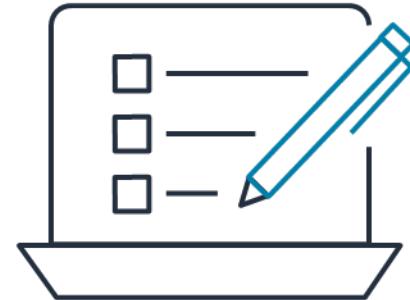
Enable Amazon  
GuardDuty



GuardDuty  
continuously analyzes  
network and account  
activity



GuardDuty intelligently  
detects threats



Review detailed  
findings and take  
actions

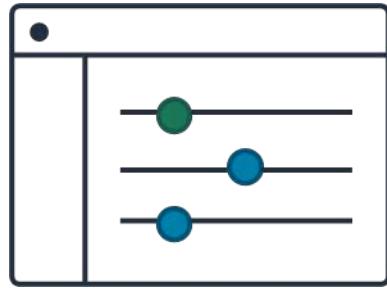


# AWS Partner: Cloud Practitioner Essentials

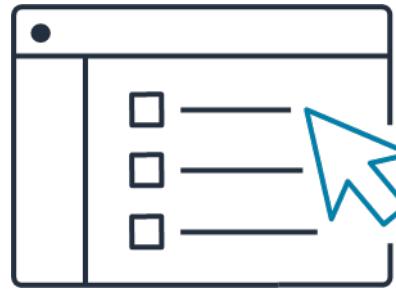
## Module 7: Monitoring and Analytics

# Amazon CloudWatch

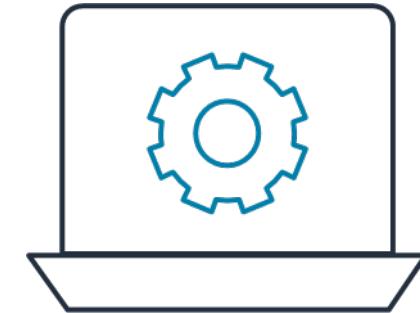
---



Monitor your AWS and on-premises infrastructure and resources in real time



Access all of your metrics from a single location



Configure automatic alerts and actions in response to metrics

# Amazon CloudWatch dashboard

## Amazon RDS metrics

2.06 %

20.1 GB

0.38 /s

0.23 /s

CPUUtilization

FreeStorageSpace

WriteIOPS

ReadIOPS

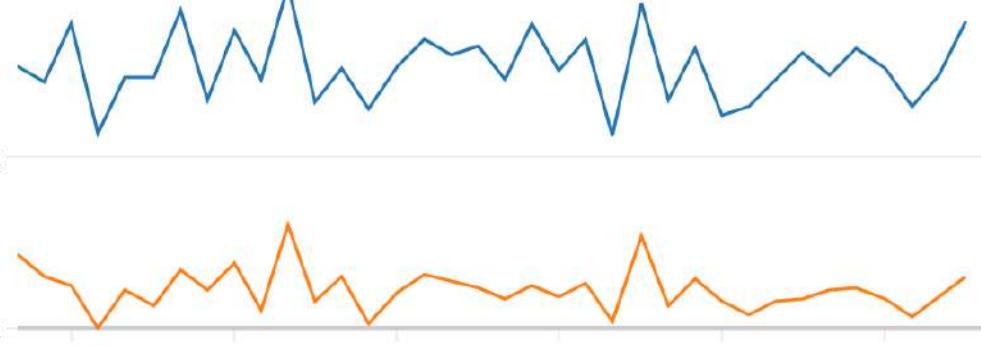
## Amazon EC2 metrics

Bytes

26.7k

18.0k

9.35k



NetworkIn NetworkOut

## Amazon EBS metrics

Bytes

8.13k

7.70k

7.26k

VolumeWriteBytes



# AWS CloudTrail

---



Track user activities and API requests throughout your AWS infrastructure



Filter logs generated by API calls to assist with operational analysis and troubleshooting



Automatically detect unusual account activity

# AWS CloudTrail event

*What happened?*

New IAM user (Mary) created



*Who made the request?*

IAM user John



*When did this occur?*

January 1, 2023 at 9:00 AM



*How was the request made?*

Through the AWS Management Console

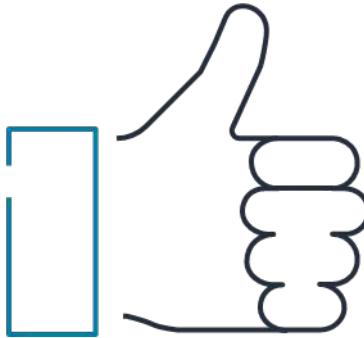


# AWS Trusted Advisor

---



Receive real-time  
guidance for improving  
your AWS environment



Compare your infrastructure  
to AWS best practices in five  
categories



Evaluate and implement  
guidance at all stages of  
deployment

# AWS Trusted Advisor dashboard



Number of items for which no problems have been detected

Number of recommended investigations

Number of recommended actions

## Cost Optimization



0 ✓ 9 ▲ 0 !

\$7,516.85

Potential monthly savings

## Performance



3 ✓ 7 ▲ 0 !

## Security



2 ✓ 4 ▲ 11 !

## Fault Tolerance



0 ✓ 15 ▲ 5 !

## Service Limits



37 ✓ 0 ▲ 1 !

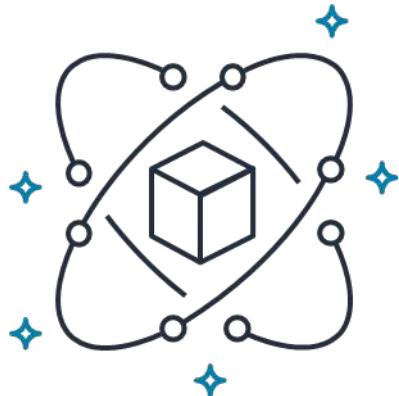


# AWS Partner: Cloud Practitioner Essentials

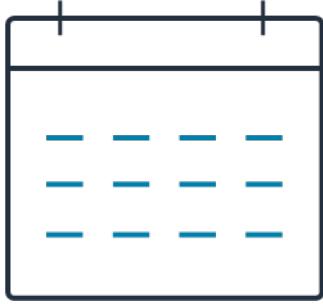
## Module 8: Pricing and Support

# AWS Free Tier categories

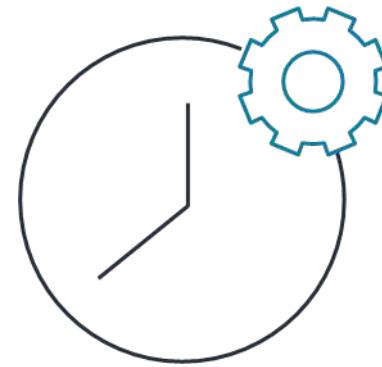
---



Always free



12 months free



Trials

# AWS Pricing Calculator

The screenshot shows the AWS Pricing Calculator interface for configuring Amazon EC2. The top navigation bar includes the AWS logo, "pricing calculator", "Feedback", "English" (with a dropdown arrow), and "Contact Sales". The breadcrumb navigation shows "AWS Pricing Calculator > My Estimate > Add Amazon EC2". On the left, a sidebar indicates "Step 1 Select service" and "Step 2 Configure Amazon EC2". The main content area is titled "Configure Amazon EC2" with an "Info" link. It starts with a "Region" section set to "US East (Ohio)". Below this are two options: "Quick estimate" (selected) and "Advanced estimate". The "Quick estimate" option is described as providing a fast and easy route to a ballpark estimate based on minimum requirements or a specific instance search, assuming consistent utilization. The "Advanced estimate" option is described as providing a more detailed estimate that accounts for workload, data transfer costs, additional storage options, and other less common instance requirements, such as traffic patterns. Further down, there is a section for "EC2 instance specifications" with an "Info" link, currently set to "Linux" under "Operating system".

AWS Pricing Calculator > My Estimate > Add Amazon EC2

Step 1  
Select service

Step 2  
Configure Amazon EC2

## Configure Amazon EC2 Info

**Region**

US East (Ohio)

**Quick estimate**  
Choose this option for fast and easy route to a ballpark estimate based on minimum requirements or a specific instance search. The estimate assumes consistent utilization.

**Advanced estimate**  
Choose this option for a more detailed estimate that accounts for workload, data transfer costs, additional storage options, and other, less common instance requirements. For example, you know that you get a lot of traffic on Mondays but not much traffic throughout the rest of the week, and you want an estimate that takes this workload into account.

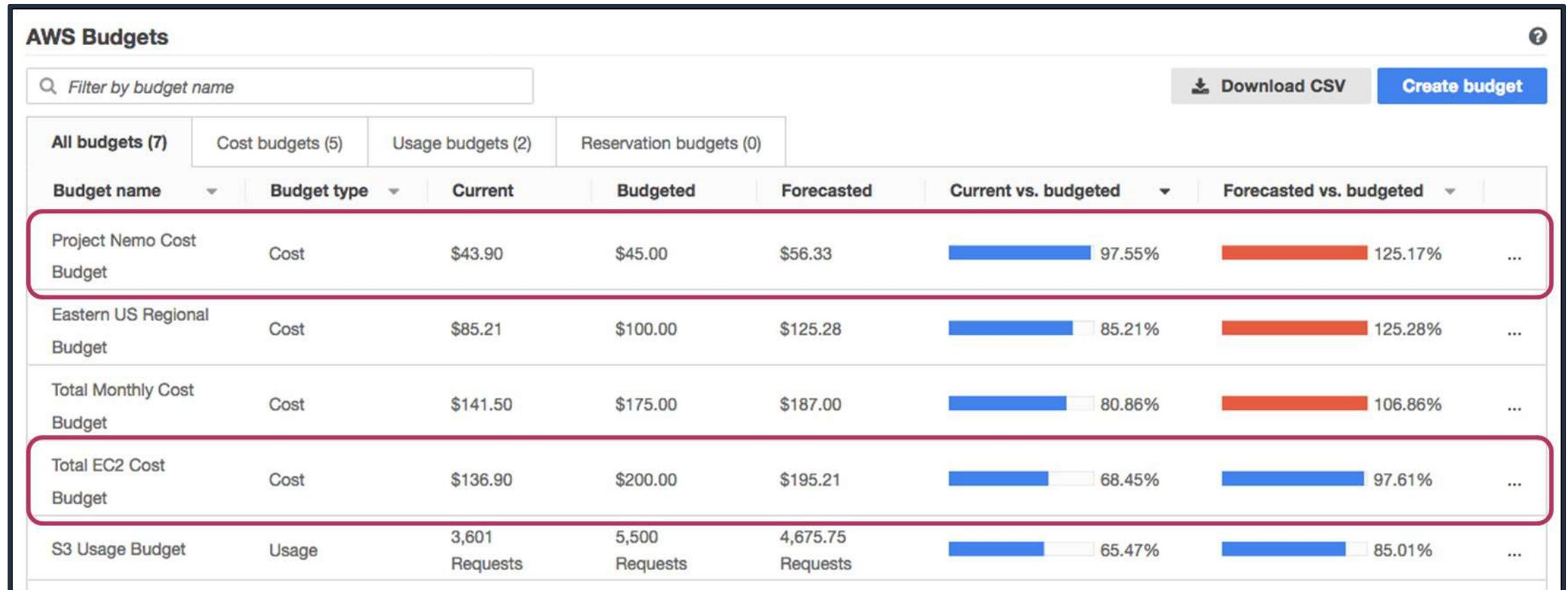
**EC2 instance specifications Info**

**Operating system**  
Choose which operating system you'd like to run Amazon EC2 instances on.

Linux

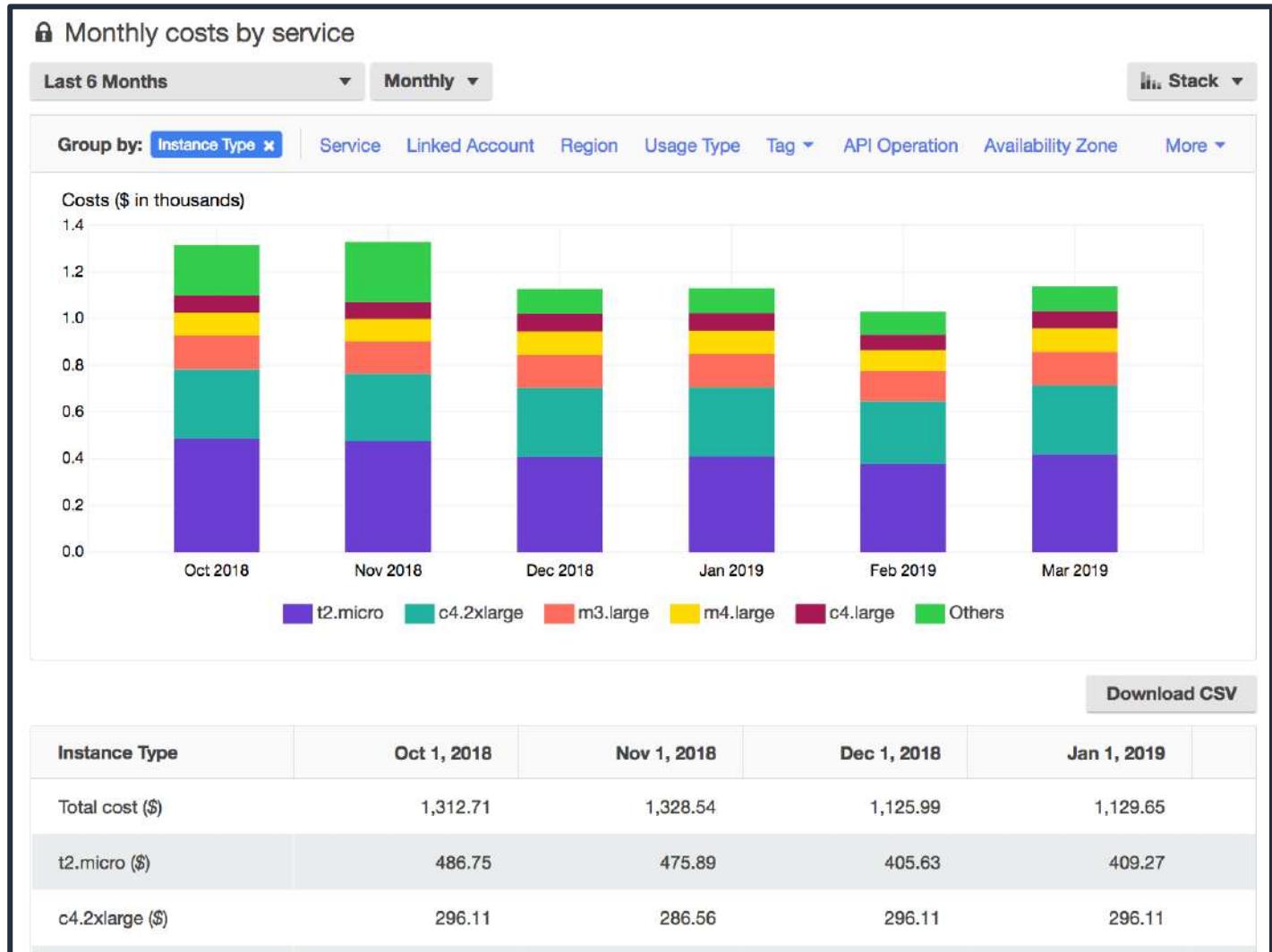
# AWS Budgets

AWS Budgets is a tool that you can use to set thresholds for your AWS service usage and costs.



# AWS Cost Explorer

**AWS Cost Explorer** is a tool that you can use to visualize, understand, and manage your AWS costs and usage over time.



# AWS Support plans

## Developer

- Best-practice guidance
- Client-side diagnostic tools
- Building-block architecture support

## Business

- Use-case guidance
- All AWS Trusted Advisor checks
- Limited support for third-party software

## Enterprise On-Ramp

- Application architecture guidance
- Infrastructure event management
- A pool of Technical Account Managers (TAM)

## Enterprise

- Application architecture guidance
- Infrastructure event management
- A designated TAM



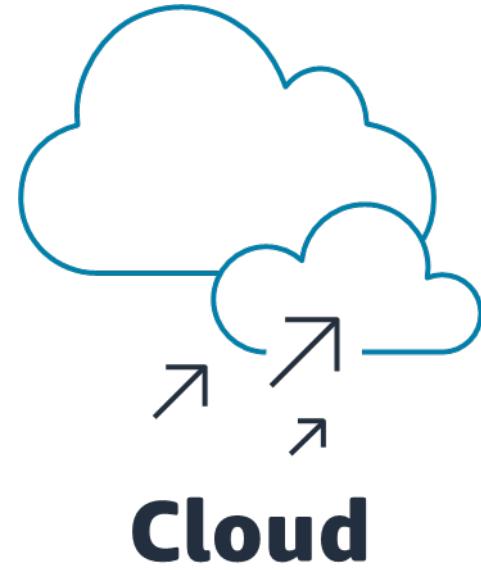
# AWS Partner: Cloud Practitioner Essentials

## Module 9: Migration and Innovation

# AWS Cloud Adoption Framework

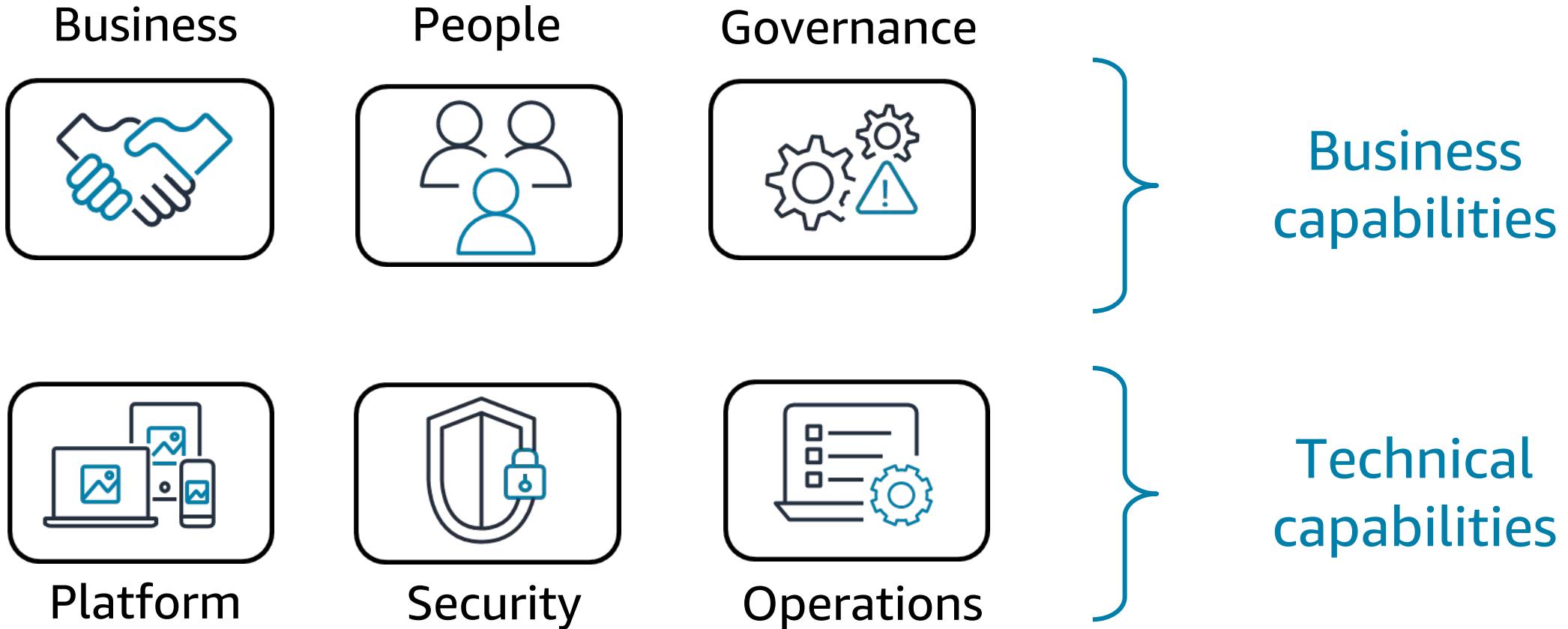
---

- Provides advice to a company to enable a quick and smooth migration to AWS
- Organizes guidance into six areas of focus, called **perspectives**



# Perspectives

---



# Business perspective

## Business



### Goal:

Ensures that IT aligns with business needs and IT investments link to key business results

### Common roles:

- Business managers
- Finance managers
- Budget owners
- Strategy stakeholders

# People perspective

Business



People



Governance



Platform



Security



Operations

## Goal:

Supports development of an organization-wide change management strategy for successful cloud adoption

## Common roles:

- Human resources
- Staffing
- People managers

# Governance perspective

Business



People



Governance



Platform



Security



Operations

## Goal:

Focuses on the skills and processes to align IT strategy with business strategy

## Common roles:

- Chief information officer (CIO)
- Program managers
- Enterprise architects
- Business analysts
- Portfolio managers

# Platform perspective



## Goal:

Includes principles and patterns for implementing new solutions in the cloud, and migrating on-premises workloads to the cloud

## Common roles:

- Chief technology officer (CTO)
- IT managers
- Solutions architects

# Security perspective

Business



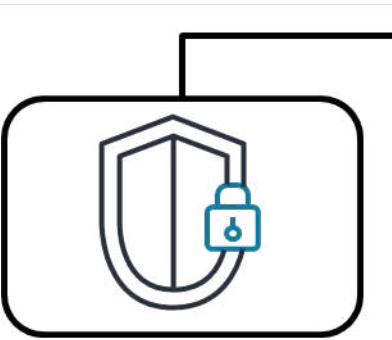
People



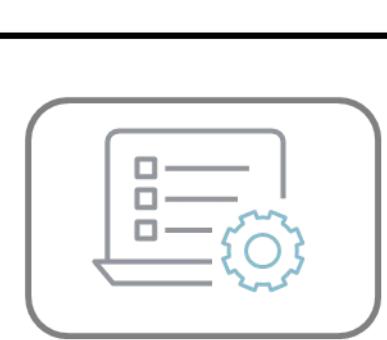
Governance



Platform



Security



Operations

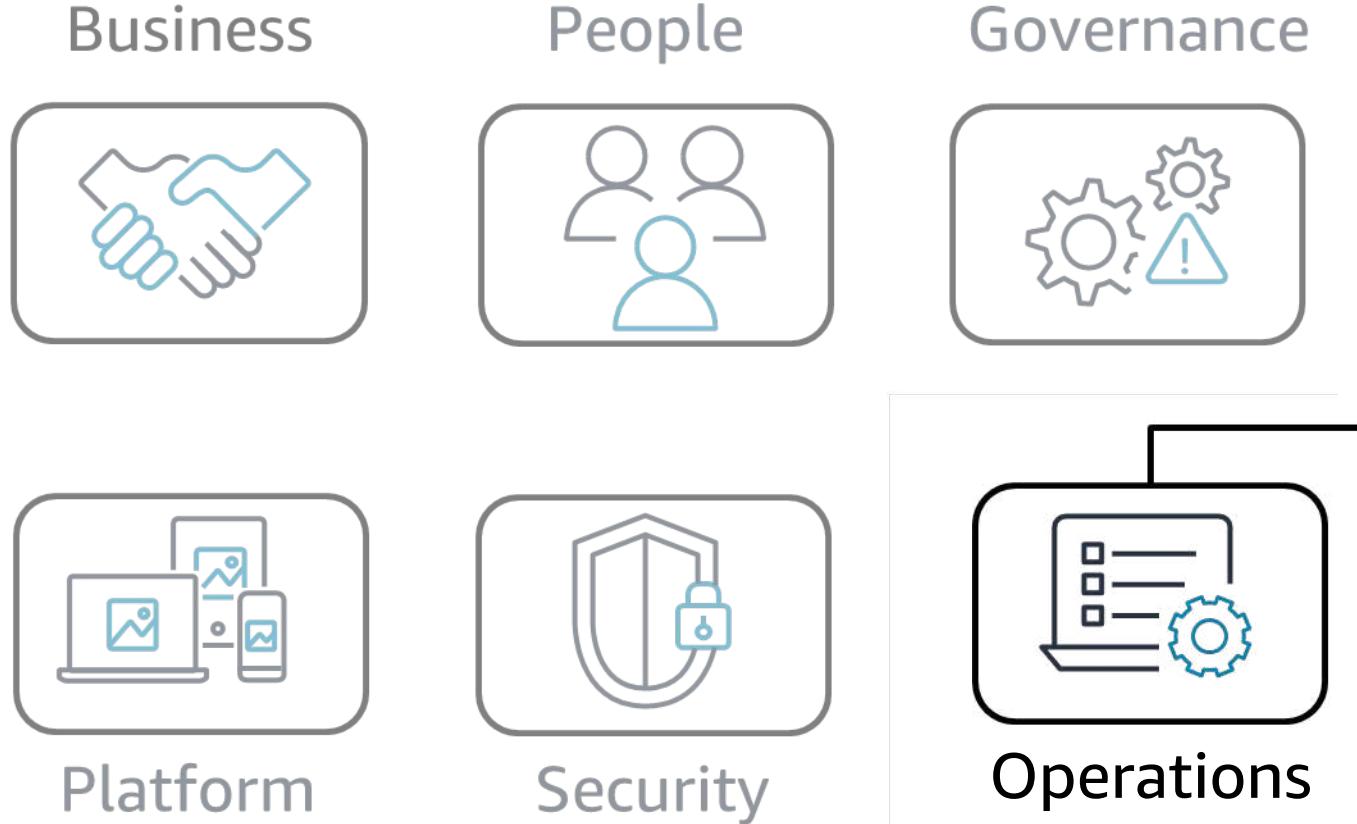
## Goal:

Ensures that the organization meets security objectives for visibility, auditability, control, and agility

## Common roles:

- Chief information security officer (CISO)
- IT security managers
- IT security analysts

# Operations perspective



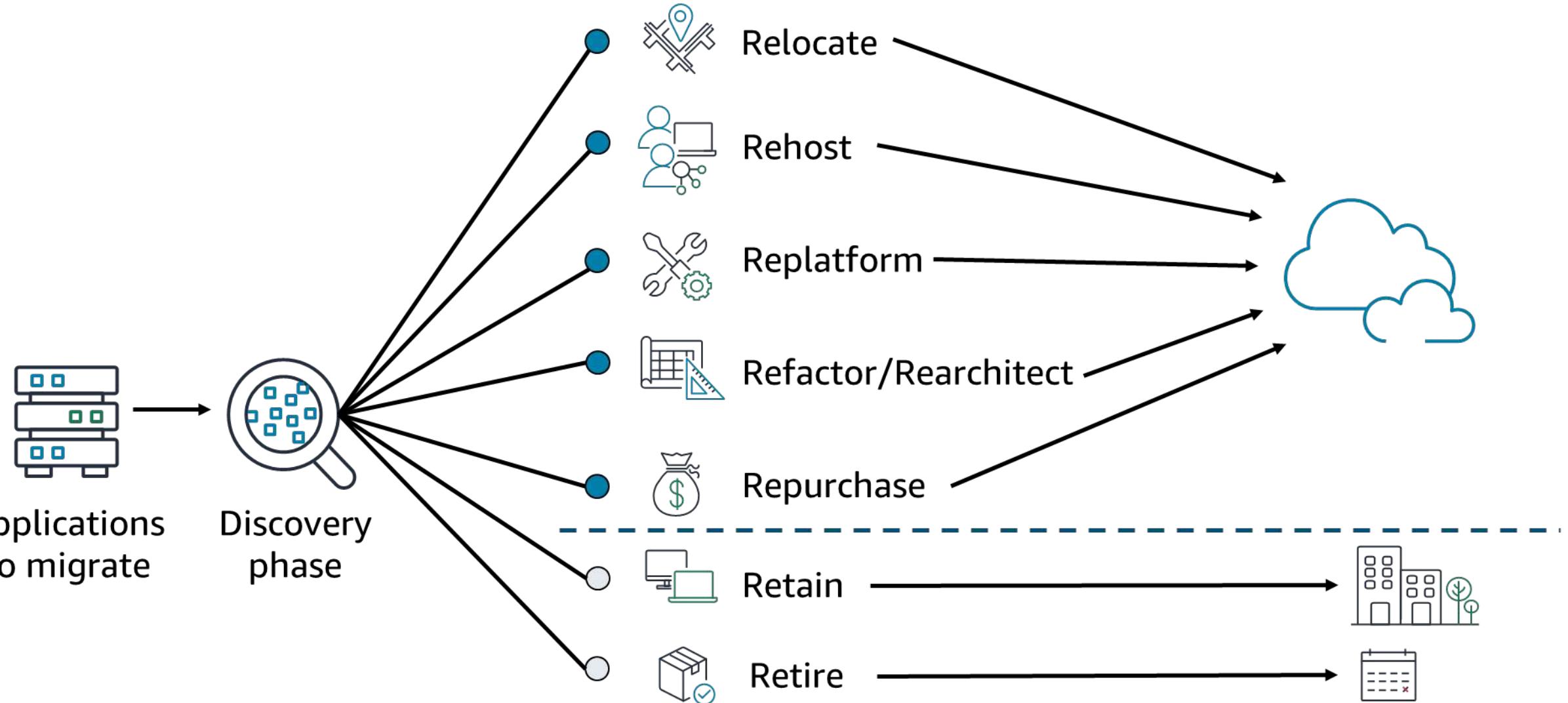
## Goal:

Helps you to enable, run, use, operate, and recover IT workloads to the level agreed on with your business stakeholders

## Common roles:

- IT operations managers
- IT support managers

# Seven migration strategies



# Knowledge check

Which migration strategy involves moving from a traditional license to a software as a service model?

The correct response is D.

- A Refactoring
- B Retiring
- C Replatforming
- D Repurchasing

# AWS Snow Family

---

## AWS Snowcone

- Small, rugged, and secure edge computing and data transfer device
- Features up to 14 TB of usable storage

## AWS Snowball

- AWS Snowball Edge Storage Optimized
- AWS Snowball Edge Compute Optimized

# AWS Snow Family

---

## AWS Snowcone



## AWS Snowball devices



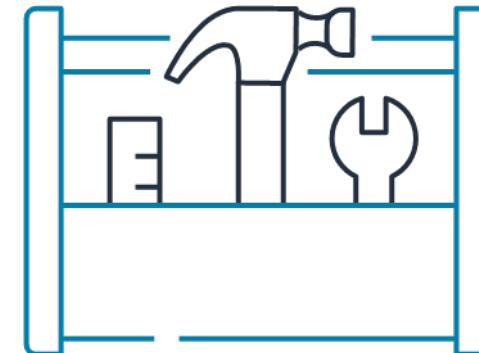
# Well-Architected Framework

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The **Well-Architected Framework** helps you understand how to design and operate reliable, secure, efficient, and cost-effective systems in the AWS Cloud.

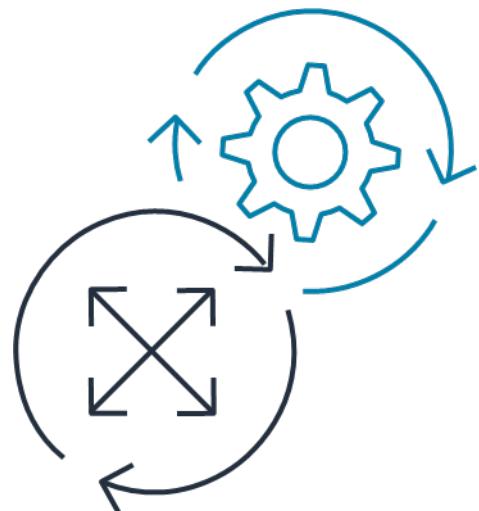
It is based on six pillars:

- Operational excellence
- Security
- Reliability
- Performance efficiency
- Cost optimization
- Sustainability



# Operational excellence

Run and monitor systems to deliver business value and to continually improve supporting processes and procedures



- Perform operations as code
- Annotate documentation
- Anticipate failure
- Refine operations procedures frequently
- Make frequent, small, reversible changes

# Security

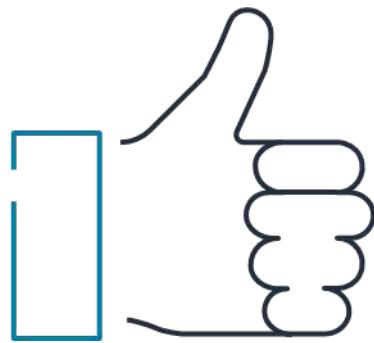
Protect information, systems, and assets while delivering business value through risk assessments and mitigation strategies



- Automate security best practices
- Apply security at all layers
- Protect data in transit and at rest

# Reliability

Test recovery procedures, scale horizontally to increase aggregate system availability, and automatically recover from failure



- Recover from infrastructure or service disruptions
- Dynamically acquire computing resources to meet demand
- Mitigate disruptions such as misconfigurations or transient network issues

# Performance efficiency

Use computing resources efficiently to meet system requirements and maintain that efficiency as demand changes and technologies evolve



- Experiment more often
- Use serverless architectures
- Go global in minutes

# Cost optimization

Run systems to deliver business value at the lowest price point



- Adopt a consumption model
- Analyze and attribute expenditure
- Use managed services to reduce cost of ownership

# Sustainability

Minimize the environmental impacts of running cloud workloads



- Understand your impact
- Establish sustainability goals
- Maximize utilization
- Reduce the downstream impact of workload



# AWS Partner: Cloud Practitioner Essentials

Module 10: AWS Certified  
Cloud Practitioner Basics

# Exam domains – CLF-C02

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Domain	% of Exam
Domain 1: Cloud Concepts	24%
Domain 2: Security and Compliance	30%
Domain 3: Cloud Technology and Services	34%
Domain 4: Billing, Pricing and Support	12%
Total	100%



# Recommended experience

---

For this exam, you should have:

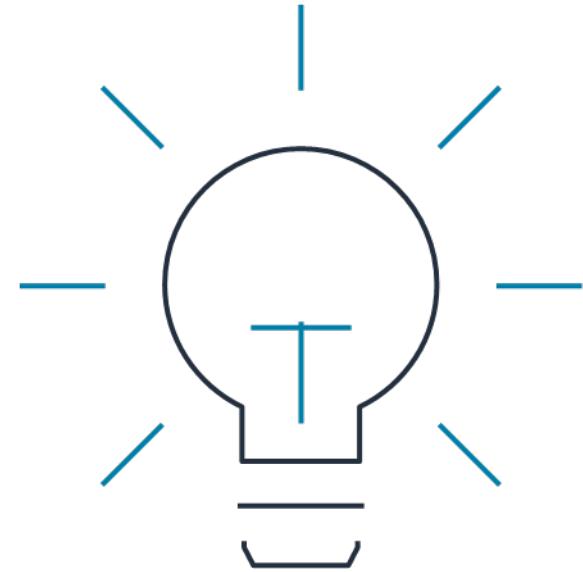
- Basic understanding of IT services
- At least 6 months experience with the AWS Cloud



# Exam details (1 of 2)

---

- You must complete the exam within 90 minutes.
- The minimum passing score is 700 (the maximum score is 1,000).
- The exam consists of multiple choice and multiple response questions.
- A 30-minute time extension is available upon request to non-native English speakers who are taking an exam in English.



# Exam details (2 of 2)

---

- There is no penalty for guessing.
- Unanswered questions are scored as incorrect.
- You can flag questions to review before submitting the exam.



# Exam strategies

---

1. Read the full question.
2. Predict the answer before looking at the response options.
3. Exclude incorrect response options.



# AWS Certification levels

## Foundational

Knowledge-based certification for foundational understanding of AWS Cloud. No prior experience necessary.



## Associate

Role-based certifications that showcase your knowledge and skills and build your credibility as an AWS Cloud professional. Prior AWS Cloud or strong on-premises IT experience recommended.



## Professional

Role-based certifications that validate advanced skills and knowledge. At least two years of AWS Cloud experience recommended.



## Specialty

Certifications focused on specific topics. Recommended level of experience varies.



# Core 4 – Steps to prepare for an AWS Certification exam

Approach exam day with confidence



Step 1

Get to know the exam and exam-style questions



Step 2

Learn about exam topics in AWS Skill Builder



Step 3

Take exam preparation training in AWS Skill Builder



Step 4

Validate your exam readiness with Official Practice Exams



Explore all AWS Certification Exams

# Prepare for AWS Certification – step 1

## Get to know the exam and exam-style questions



- 1 Review the exam guide.
- 2 Sign up for access to AWS Skill Builder, the AWS online learning center.
- 3 Enroll and take an AWS Certification Official Practice Question Set.

AWS Certified Solutions Architect - Associate Official Practice Question Set (SAA-C02 - English)

This Question: 00:16 | Total: 00:16 | Pause Exam

1/20

A solutions architect is designing a solution to run a containerized web application by using Amazon Elastic Container Service (Amazon ECS). The solutions architect wants to minimize cost by running multiple copies of a task on each container instance. The number of task copies must scale as the load increases and decreases.

Which routing solution distributes the load to the multiple tasks?

Report Content Errors

**A** Configure an Application Load Balancer to distribute the requests by using path-based routing.

Incorrect. With path-based routing, multiple services can use the same listener port on a single Application Load Balancer (ALB). The ALB forwards requests to specific target groups based on the URL path. However, this solution does not help with load distribution between different tasks of the same service.

For more information about load balancing, see [Service load balancing](#).

**B** Configure an Application Load Balancer to distribute the requests by using dynamic host port mapping.

Correct. With dynamic host port mapping, multiple tasks from the same service are allowed for each container instance.

For more information about load balancing, see [Service load balancing](#).

Incorrect

Your Answer: A

Correct Answer: B

Continue

# Prepare for AWS Certification – step 2

## Learn about exam topics in Skill Builder



- 1 Identify gaps in your exam topic knowledge.
- 2 Enroll in self-paced digital courses you need to learn about.
- 3 Access AWS Builder Labs to get hands-on; apply your skills in the AWS Console.

The screenshot shows the AWS Training and Certification homepage with a dark blue header. The header includes the AWS logo, navigation links for Contact Us, Support, English, My Account, and Sign In to the Console, as well as links for Products, Solutions, Pricing, Documentation, Learn, Partner Network, AWS Marketplace, Customer Enablement, and a search bar. Below the header, a main navigation bar has links for Get Trained, Get Certified, Develop Your Team, AWS Partner Training, Education Programs, and Blog. The main content area features a section titled "AWS Builder Labs" with the sub-headline "Learn cloud skills in a live AWS environment". A prominent orange button says "Subscribe for self-paced labs". To the right, there's a section titled "About AWS Builder Labs" with text explaining that it helps users learn cloud skills hands-on in the AWS Management Console. It mentions 100+ Builder Labs available with AWS Skill Builder Individual subscription and Team subscription. A small icon of a flask containing a cube is on the right side of this section.

# Prepare for AWS Certification – step 3

Take exam prep training in AWS Skill Builder



- 1 AWS Skill Builder offers courses across all domains.
- 2 AWS Builder Labs contain more than 500 self-paced labs.
- 3 Use gaming to prepare for your AWS Certification with AWS Cloud Quest.

Exam Prep: AWS Certified Solutions Architect - Associate

FREE

EN | 3h 00m

5.0

Digital training

A thumbnail for an AWS Skill Builder course titled "Exam Prep: AWS Certified Solutions Architect - Associate". It shows a document icon with a checkmark. The course is listed as "FREE" and "ENROLLED". The duration is "3h 00m" and it has a rating of "5.0". The category is "Digital training".

Exam Prep: AWS Certified Solutions Architect - Associate (with Practice Material...)

ENROLLED

EN | 6h 00m

5.0

Digital training

A thumbnail for an AWS Skill Builder course titled "Exam Prep: AWS Certified Solutions Architect - Associate (with Practice Material...)". It shows a document icon with a checkmark. The course is listed as "ENROLLED". The duration is "6h 00m" and it has a rating of "5.0". The category is "Digital training".

# Prepare for AWS Certification – step 4

Validate your exam readiness



Take an AWS  
Certification  
Official Practice  
Exam with exam-  
style scoring.

AWS Certified Solutions Architect - Associate Official Practice Exam (SAA-C03)    [Dashboard](#)    [Notes](#)    [Flags](#)    [Go to AWS Skill Builder](#)

◀ Back | AWS Certified Solutions Architect - Associate Official Practice Exam (SAA-C03)

100.0% Complete

1000    PASS    65 of 65    00:00:10    00:11:20  
Overall Scaled Score    Predicted Score    Questions Taken    Avg. Answer Time    Time Elapsed

12/30/2022    Attempt Date

Product Sections    Domain Scores

Domain Name	Complete	Outcome
1.0 Design Secure Architectures	20 of 20	Meets Requirements
1.1 Design secure access to AWS resources.	7 of 7	--
1.2 Design secure workloads and applications.	6 of 6	--
1.3 Determine appropriate data security controls.	7 of 7	--



# Register for your exam

Learn about options for taking the exam.



# AWS Skill Builder online learning center



Game-based learning



Self-paced labs



Use case challenges



Exam preparation

Continue to deepen the skills you need, your way, with more than 500 courses and interactive training developed by the experts at AWS.



Get started  
<https://aws.amazon.com/training/digital>



# Thanks for participating!

Corrections, feedback, or other questions?

Contact us at <https://support.aws.amazon.com/#/contacts/aws-training>.

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