# Module 1: Cloud Concepts Overview

## AWS Academy Cloud Foundations

# Module overview

## Topics

- Introduction to cloud computing
- Advantages of cloud computing
- Introduction to Amazon Web Services (AWS)
- AWS Cloud Adoption Framework (AWS CAF)

**Knowledge check**

# Module objectives

After completing this module, you should be able to:

- Define different types of cloud computing models
- Describe six advantages of cloud computing
- Recognize the main AWS service categories and core services
- Review the AWS Cloud Adoption Framework (AWS CAF)

# Section 1: Introduction to cloud computing

## Module 1: Cloud Concepts Overview

# What is cloud computing?

# Cloud computing defined

**Cloud computing** is the **on-demand** delivery of compute power, database, storage, applications, and other IT resources **via the internet** with **pay-as-you-go** pricing.

# Infrastructure as software

Cloud computing enables you to **stop thinking of your infrastructure as hardware**, and instead **think of (and use) it as software.**

# Traditional computing model

- Infrastructure as hardware
- Hardware solutions:
  - Require space, staff, physical security, planning, capital expenditure
  - Have a long hardware procurement cycle
  - Require you to provision capacity by guessing theoretical maximum peaks

# Cloud computing model

- Infrastructure as software
- Software solutions:
  - Are flexible
  - Can change more quickly, easily, and cost-effectively than hardware solutions
  - Eliminate the undifferentiated heavy-lifting tasks

# Cloud service models

IaaS
(infrastructure as a service)

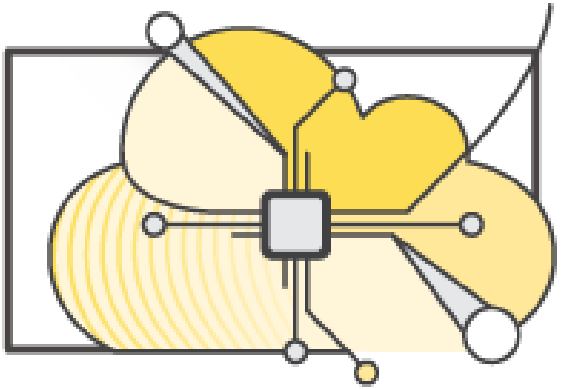
PaaS
(platform as a service)

SaaS
(software as a service)

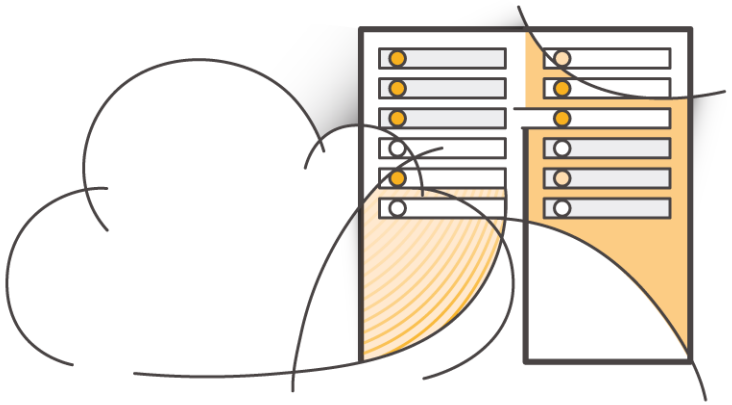
More control
over IT resources

Less control
over IT resources

# Cloud computing deployment models



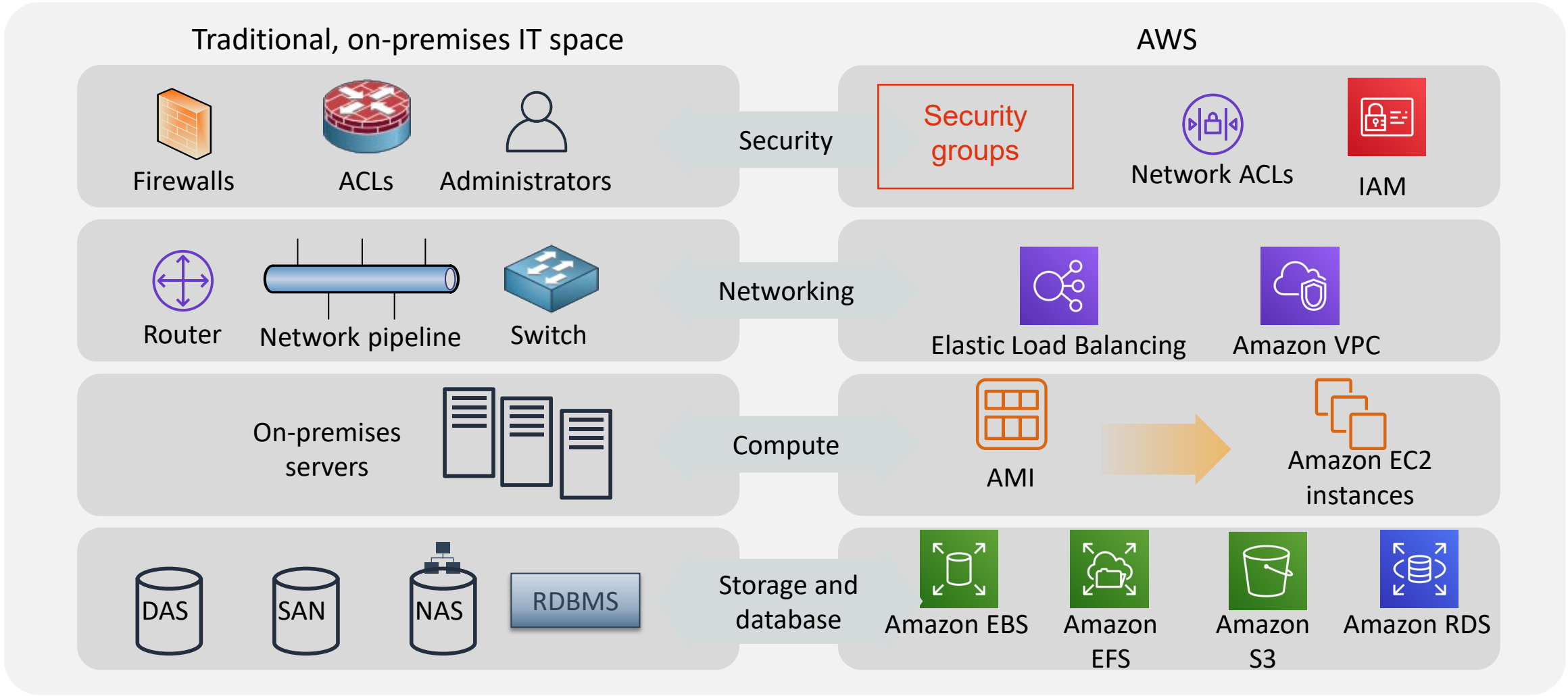
Cloud



Hybrid

On-premises
(private cloud)

# Similarities between AWS and traditional IT



# Section 1 key takeaways

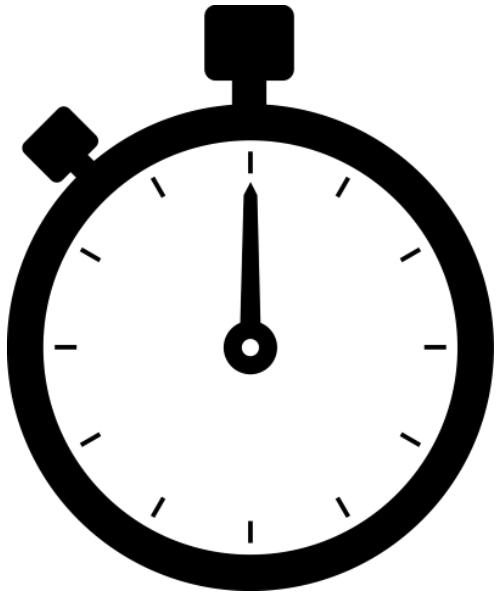

- Cloud computing is the on-demand delivery of IT resources via the internet with pay-as-you-go pricing.
- Cloud computing enables you to think of (and use) your infrastructure as software.
- There are three cloud service models: IaaS, PaaS, and SaaS.
- There are three cloud deployment models: cloud, hybrid, and on-premises or private cloud.
- Almost anything you can implement with traditional IT can also be implemented as an AWS cloud computing service.

# Section 2: Advantages of cloud computing

Module 1: Cloud Concepts Overview

# Trade capital expense for variable expense


Data center investment based on forecast



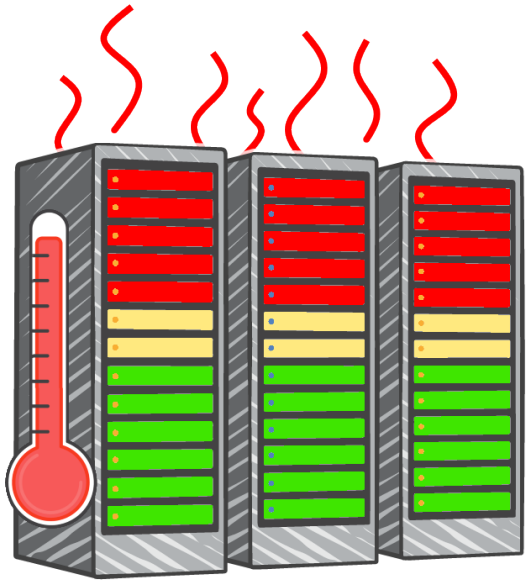
Pay only for the amount you consume

# Massive economies of scale

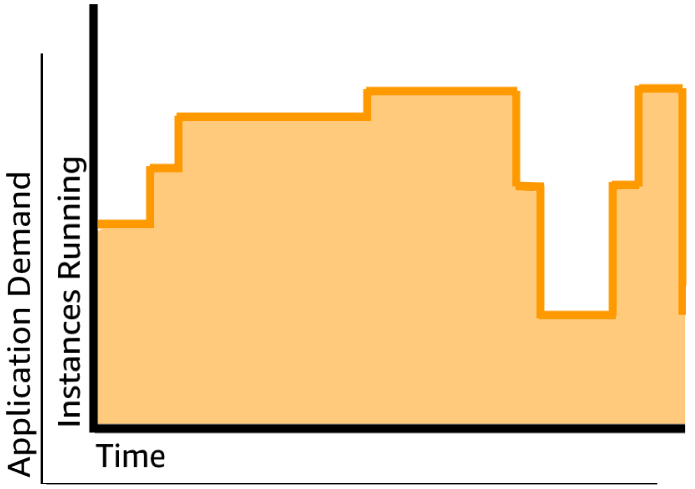
Because of aggregate usage from all customers, AWS can achieve higher economies of scale and pass savings on to customers.

# Stop guessing capacity

Overestimated server capacity



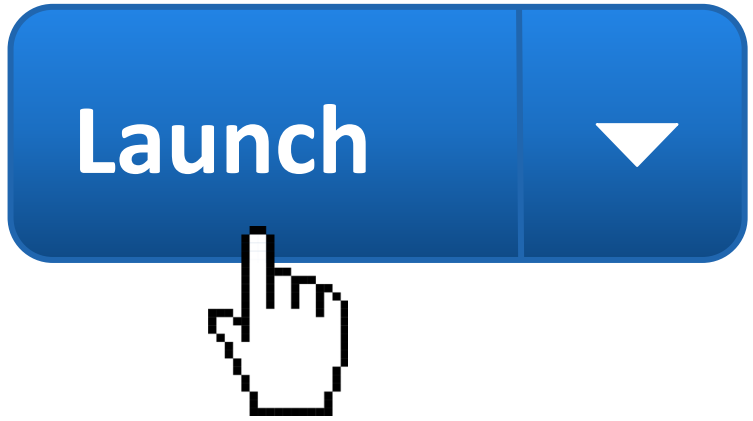
Underestimated server capacity




Scaling on demand

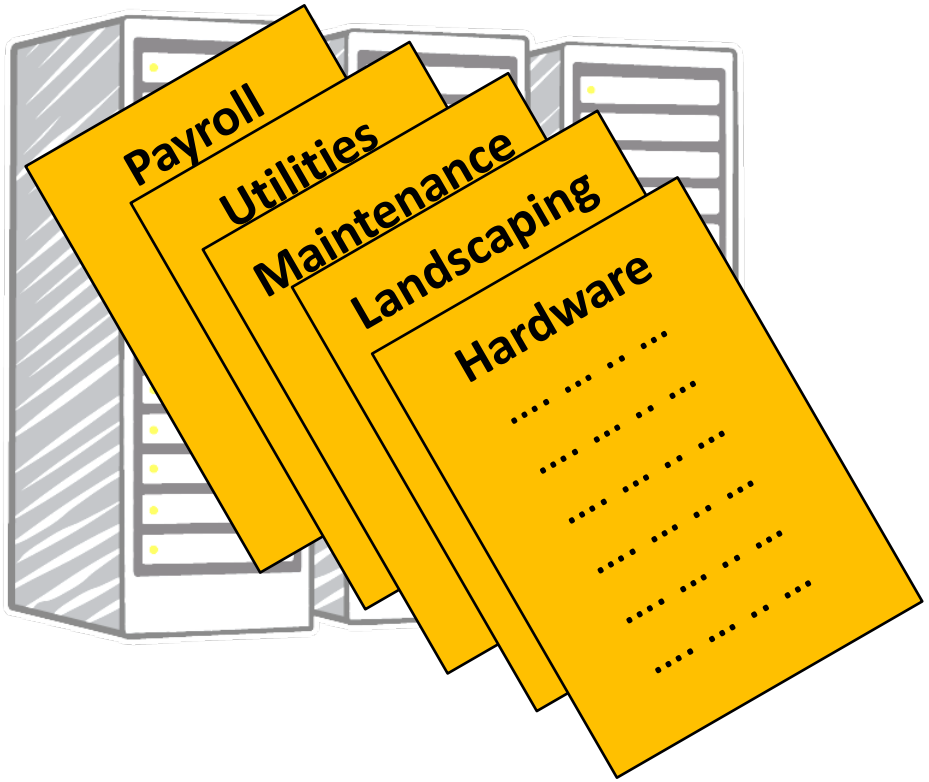
# Increase speed and agility


*Weeks* between wanting resources and having resources

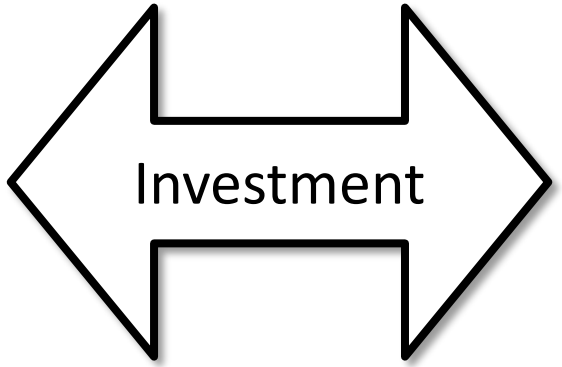


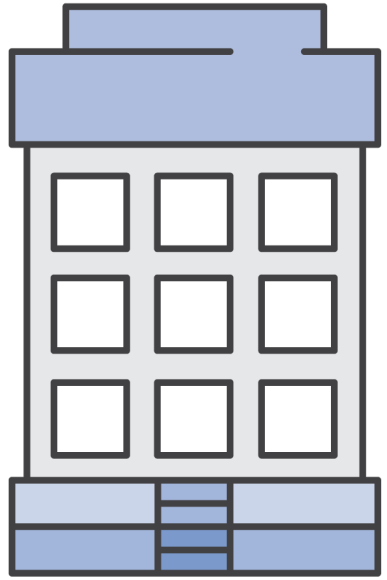

*Minutes* between wanting resources and having resources

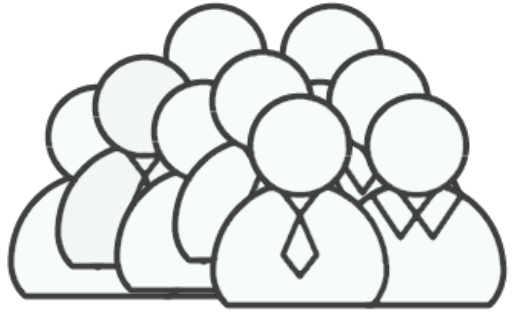
# Stop spending money on running and maintaining data centers




Running data centers

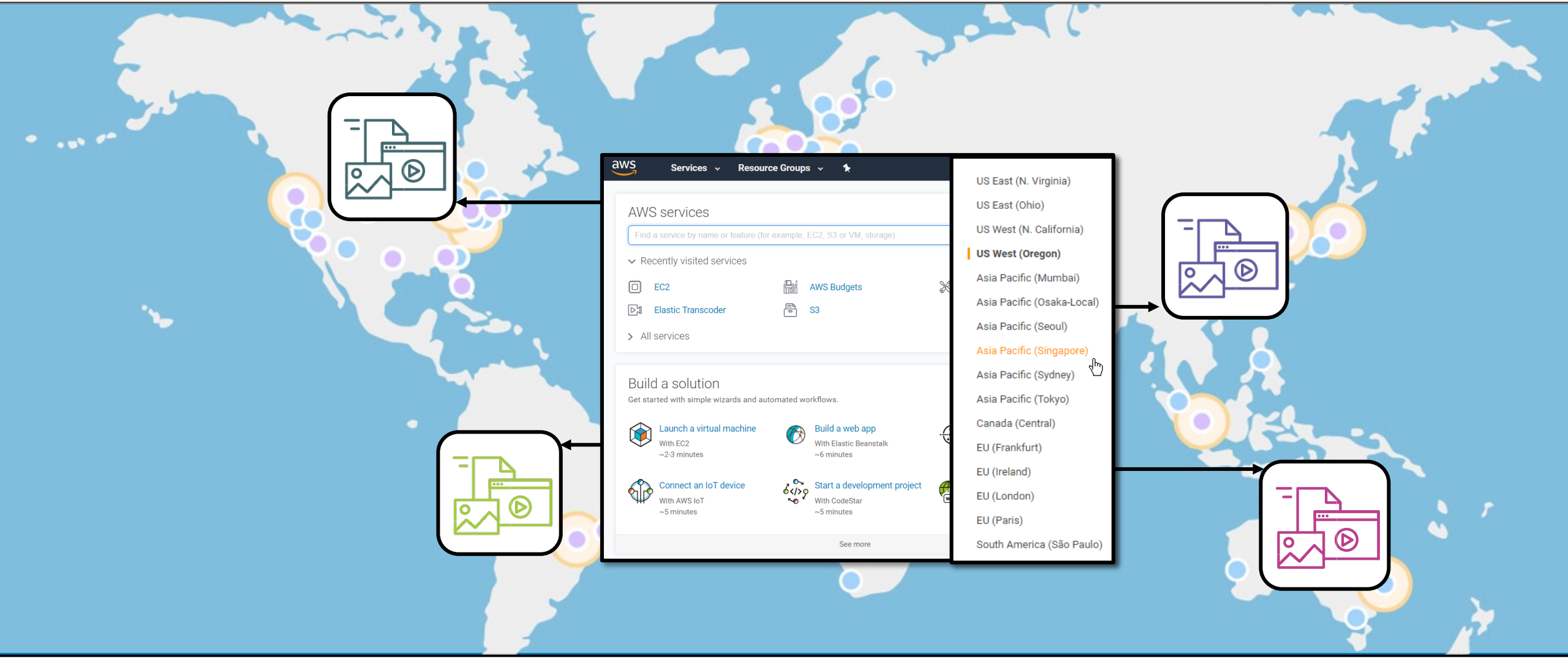




Business and customers

# Go global in minutes



# Section 2 key takeaways

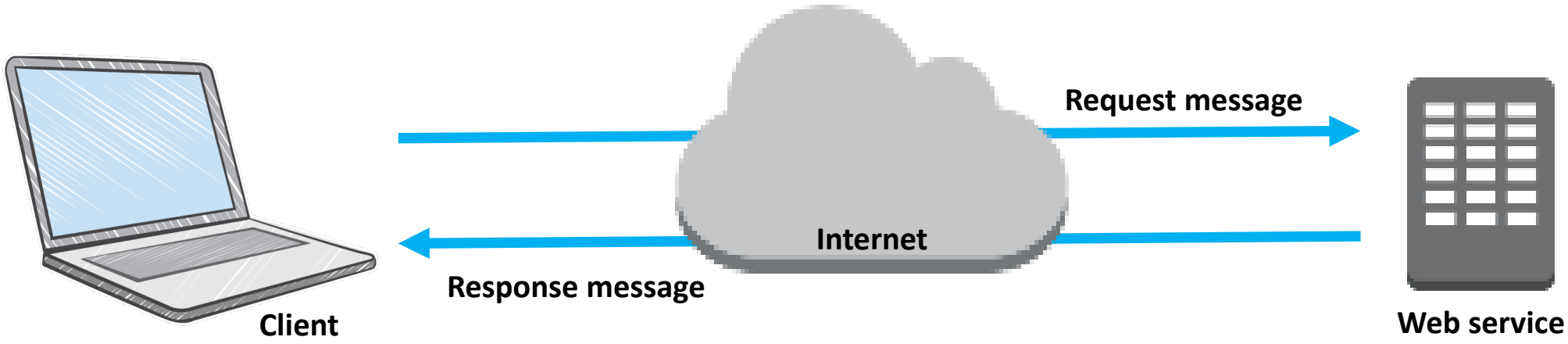

- Trade capital expense for variable expense
- Benefit from massive economies of scale
- Stop guessing capacity
- Increase speed and agility
- Stop spending money on running and maintaining data centers
- Go global in minutes

# Section 3: Introduction to Amazon Web Services (AWS)

## Module 1: Cloud Concepts Overview

# What are web services?

A **web service** is any piece of software that makes itself available over the internet and uses a **standardized format**—such as Extensible Markup Language (XML) or JavaScript Object Notation (JSON)—for the request and the response of an **application programming interface (API) interaction**.



# What is AWS?

- AWS is a **secure cloud platform** that offers a **broad set of global cloud-based products**.
- AWS provides you with **on-demand access** to compute, storage, network, database, and other IT resources and management tools.
- AWS offers **flexibility**.
- You **pay only for the individual services you need**, for **as long as you use them**.
- AWS services **work together** like building blocks.

# Categories of AWS services


Analytics


Application Integration


AR and VR


Blockchain


Business Applications


Compute


Cost Management


Customer Engagement


Database


Developer Tools


End User Computing


Game Tech


Internet of Things


Machine Learning


Management and Governance


Media Services


Migration and Transfer


Mobile


Networking and Content Delivery

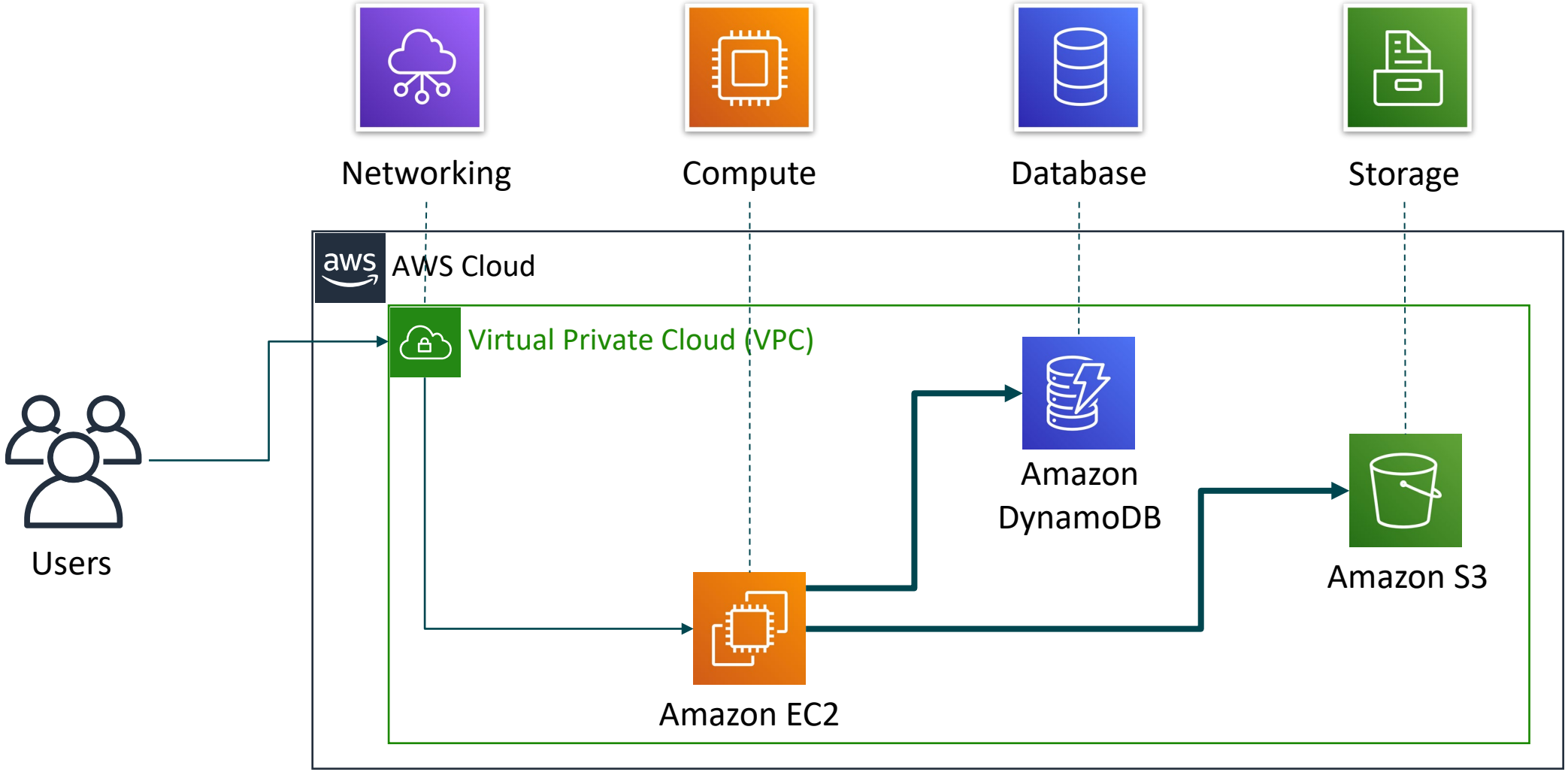

Robotics


Satellite


Security, Identity, and Compliance

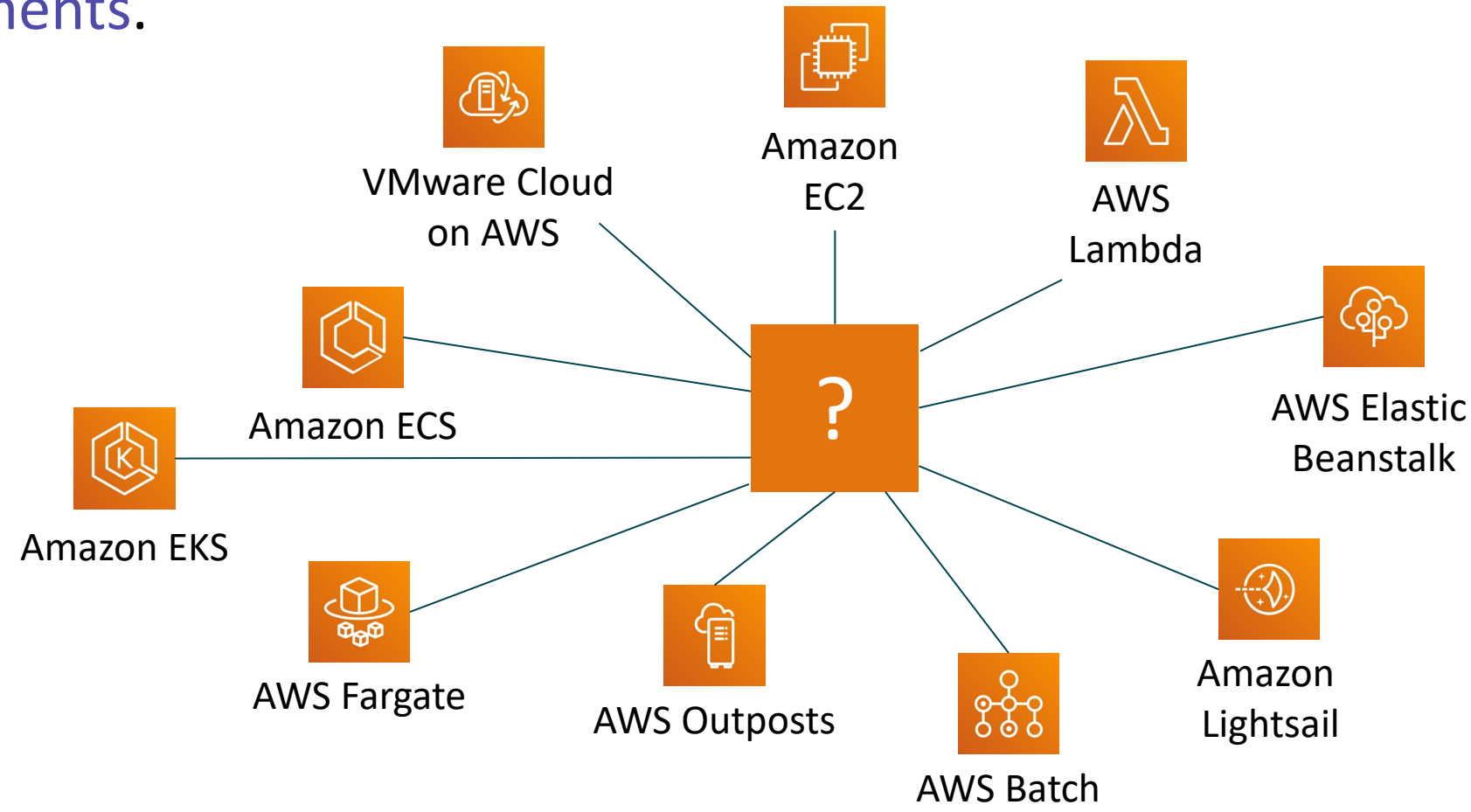

Storage

# Simple solution example



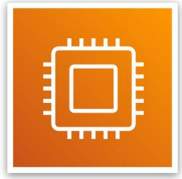
# Choosing a service

The service you select depends on your business goals and technology requirements.



# Services covered in this course

**Compute services** –



- Amazon EC2
- AWS Lambda
- AWS Elastic Beanstalk
- Amazon EC2 Auto Scaling
- Amazon ECS
- Amazon EKS
- Amazon ECR
- AWS Fargate

**Security, Identity, and Compliance services** –

- AWS IAM
- Amazon Cognito
- AWS Shield
- AWS Artifact
- AWS KMS

**Storage services** –

- Amazon S3
- Amazon S3 Glacier
- Amazon EFS
- Amazon EBS

**Database services** –

- Amazon RDS
- Amazon DynamoDB
- Amazon Redshift
- Amazon Aurora

**Networking and Content Delivery services** –

- Amazon VPC
- Amazon Route 53
- Amazon CloudFront
- Elastic Load Balancing

**Management and Governance services** –

- AWS Trusted Advisor
- AWS CloudWatch
- AWS CloudTrail
- AWS Well-Architected Tool
- AWS Auto Scaling
- AWS Command Line Interface
- AWS Config
- AWS Management Console
- AWS Organizations

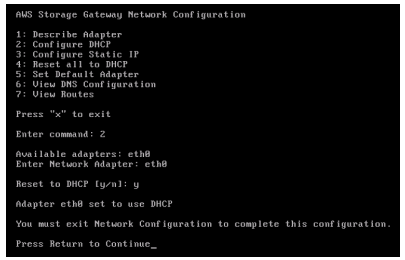
**AWS Cost Management services** –

- AWS Cost & Usage Report
- AWS Budgets
- AWS Cost Explorer

# Three ways to interact with AWS

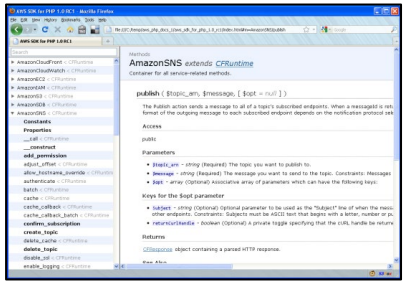
## AWS Management Console

Easy-to-use graphical interface




## Command Line Interface (AWS CLI)

Access to services by discrete commands or scripts



## Software Development Kits (SDKs)

Access services directly from your code (such as Java, Python, and others)

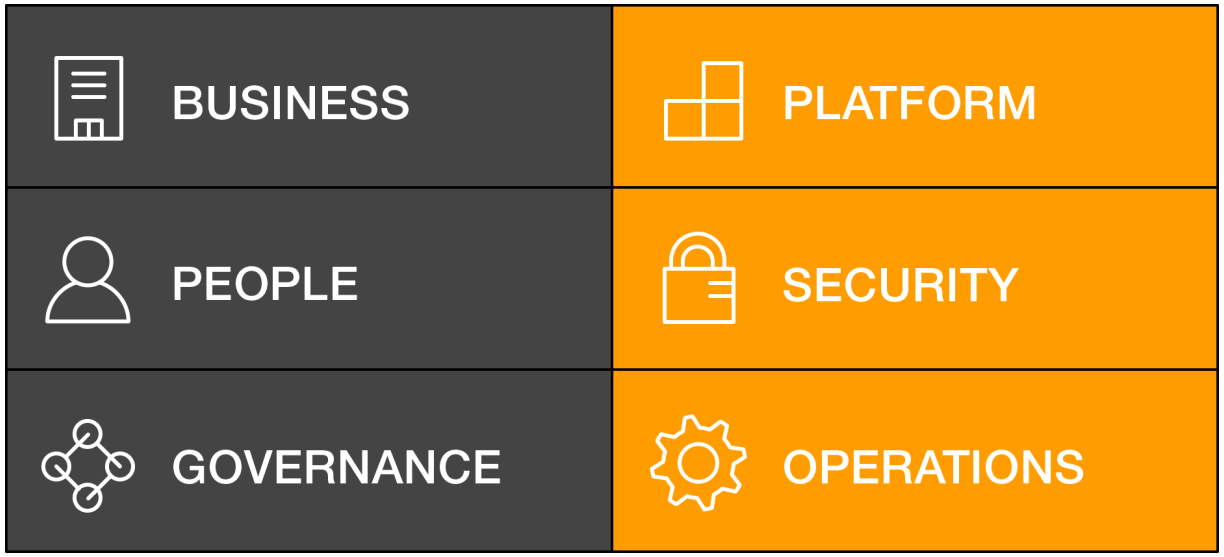
# Section 3 key takeaways


- AWS is a secure cloud platform that offers a broad set of global cloud-based products called services that are designed to work together.
- There are many categories of AWS services, and each category has many services to choose from.
- Choose a service based on your business goals and technology requirements.
- There are three ways to interact with AWS services.

# Section 4: Moving to the AWS Cloud – The AWS Cloud Adoption Framework (AWS CAF)

Module 1: Cloud Concepts Overview

# AWS Cloud Adoption Framework (AWS CAF)

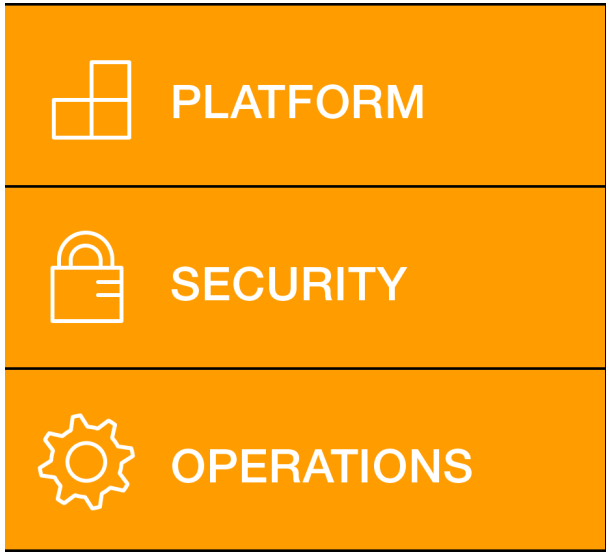



AWS CAF perspectives

- **AWS CAF provides guidance and best practices to help organizations** build a comprehensive approach to cloud computing across the organization and throughout the IT lifecycle to **accelerate successful cloud adoption**.
- AWS CAF is organized into **six *perspectives***.
- Perspectives consist of sets of ***capabilities***.

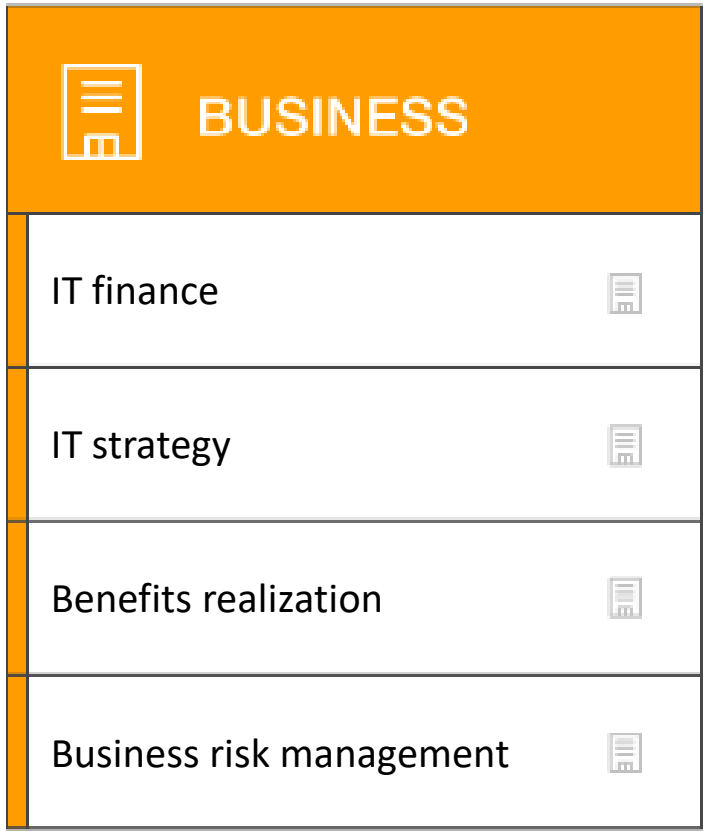
# Six core perspectives


Focus on **business** capabilities




Focus on **technical** capabilities

# Business perspective

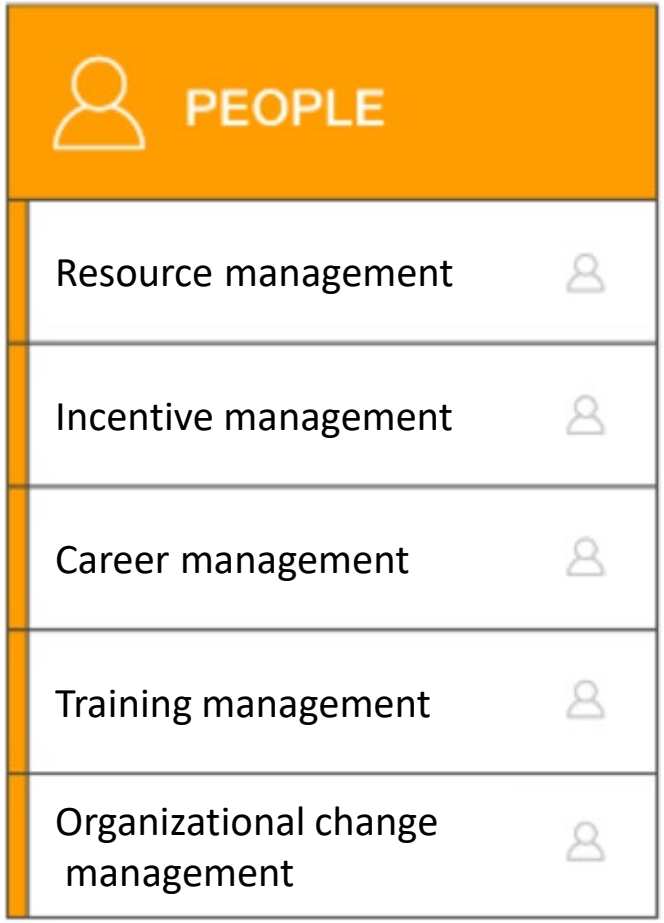



**Business perspective capabilities**

We must ensure that **IT is aligned with business needs**, and that IT investments can be traced to demonstrable business results.

Business managers, finance managers, budget owners, and strategy stakeholders

# People perspective




**People perspective capabilities**

We must prioritize **training, staffing, and organizational changes** to build an agile organization.

Human resources, staffing, and people managers

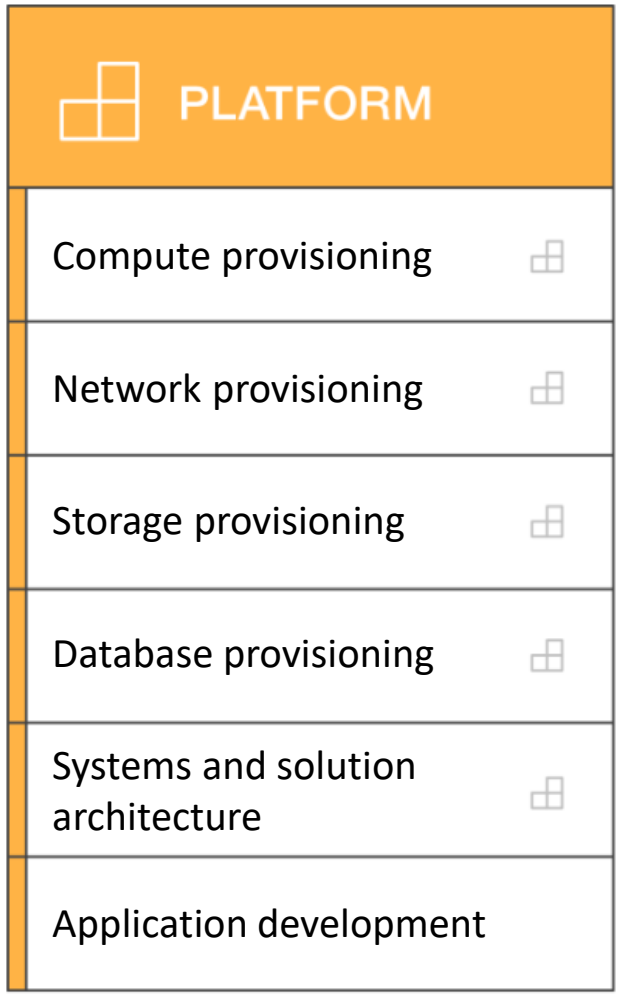
# Governance perspective


**Governance perspective capabilities**

We must ensure that **skills and processes align IT strategy and goals with business strategy and goals** so the organization can maximize the business value of its IT investment and minimize business risks.

CIO, program managers, enterprise architects, business analysts, and portfolio managers

# Platform perspective

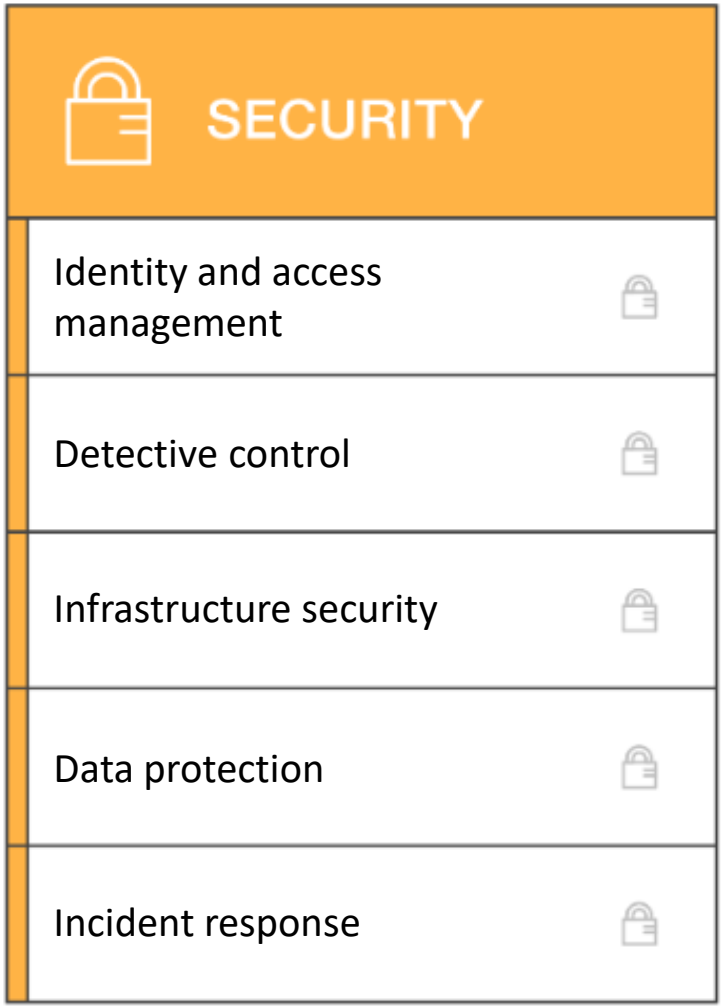



**Platform perspective capabilities**

We must **understand and communicate the nature of IT systems and their relationships**. We must be able to **describe the architecture of the target state environment** in detail.

CTO, IT managers, and solutions architects

# Security perspective




**Security perspective capabilities**

We must ensure that the organization **meets its security objectives**.

CISO, IT security managers, and IT security analysts

# Operations perspective


**Operations perspective capabilities**

We align with and support the operations of the business, and **define how day-to-day, quarter-to-quarter, and year-to-year business will be conducted**.

IT operations managers and
IT support managers

# Section 4 key takeaways


- Cloud adoption is not instantaneous for most organizations and requires a thoughtful, deliberate strategy and alignment across the whole organization.
- The AWS CAF was created to help organizations develop efficient and effective plans for their cloud adoption journey.
- The AWS CAF organizes guidance into six areas of focus, called perspectives.
- Perspectives consist of sets of business or technology capabilities that are the responsibility of key stakeholders.

# Module wrap-up

## Module 1: Cloud Concepts Overview

# Module summary

In summary, in this module you learned how to:

- Define different types of cloud computing models
- Describe six advantages of cloud computing
- Recognize the main AWS service categories and core services
- Review the AWS Cloud Adoption Framework

# Complete the knowledge check

# Sample exam question

Why is AWS more economical than traditional data centers for applications with varying compute workloads?

| Choice | Response |
| --- | --- |
| A | Amazon Elastic Compute Cloud (Amazon EC2) costs are billed on a monthly basis. |
| B | Customers retain full administrative access to their Amazon EC2 instances. |
| C | Amazon EC2 instances can be launched on-demand when needed. |
| D | Customers can permanently run enough instances to handle peak workloads. |

# Sample exam question answer

Why is AWS more economical than traditional data centers for applications with varying compute workloads?

The correct answer is C.

The keywords in the question are AWS is more economical than traditional data centers for applications with varying.

# Additional resources

- What is AWS? YouTube video: https://www.youtube.com/watch?v=mZ5H8sn_2ZI&feature=youtu.be
- Cloud computing with AWS website: https://aws.amazon.com/what-is-aws/
- Overview of Amazon Web Services whitepaper: https://d1.awsstatic.com/whitepapers/aws-overview.pdf
- An Overview of the AWS Cloud Adoption Framework whitepaper: https://d1.awsstatic.com/whitepapers/aws_cloud_adoption_framework.pdf
- 6 Strategies for Migrating Applications to the Cloud AWS Cloud Enterprise Strategy blog post: https://aws.amazon.com/blogs/enterprise-strategy/6-strategies-for-migrating-applications-to-the-cloud/

# Thank you

All trademarks are the property of their owners.