



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:

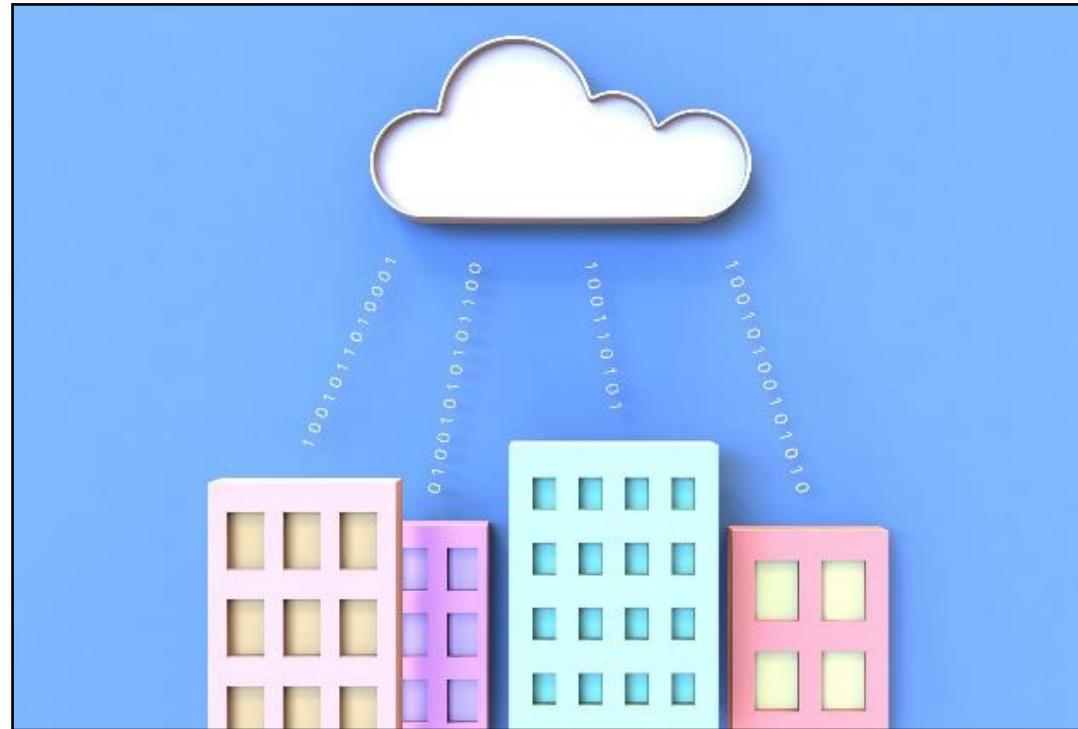
- Define different types of cloud computing models
- Describe six advantages of cloud computing
- Recognize the main AWS service categories and core services
- Review the AWS Cloud Adoption Framework (AWS CAF)

Section 1: Introduction to cloud computing

Module 1: Cloud Concepts Overview

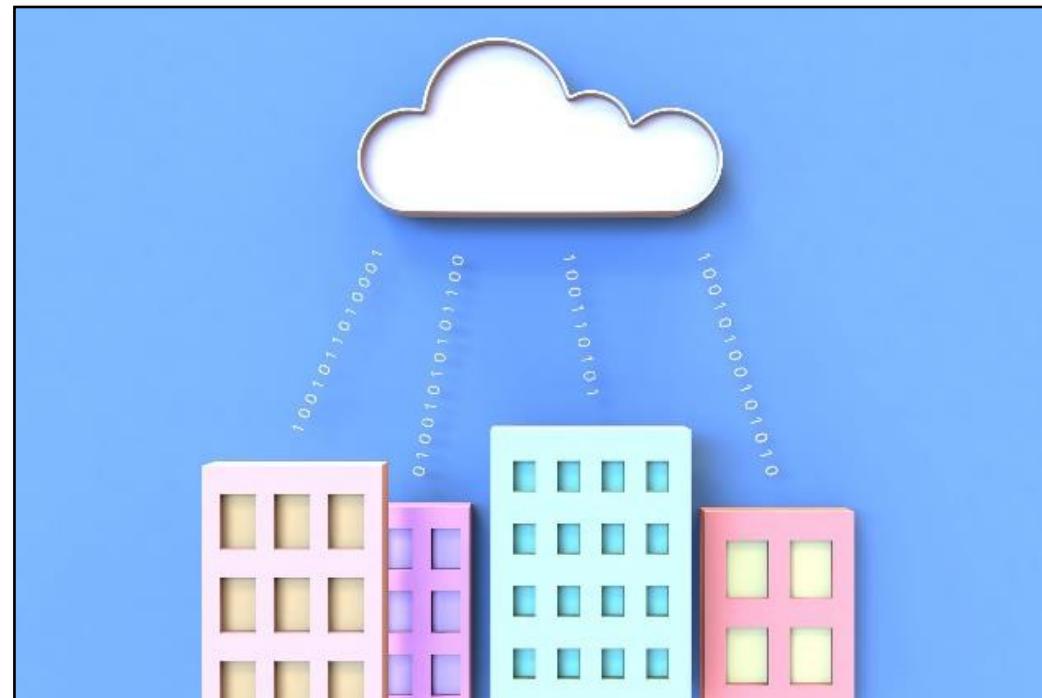


What is cloud computing?



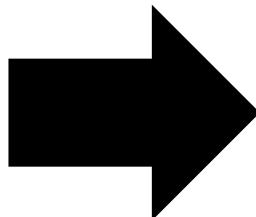
Cloud computing defined

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**.

A dark blue rectangular area containing a grid of binary code. The binary digits are arranged in a grid pattern, with each row and column consisting of approximately 16 characters. The background is a dark blue color, and the binary digits are in a lighter shade of blue or white.

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



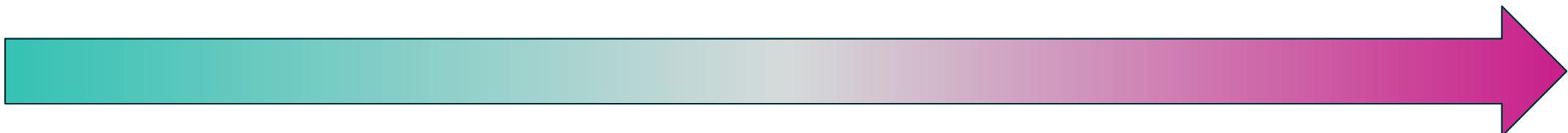
- Infrastructure as software
- Software solutions:
 - Are flexible
 - Can change more quickly, easily, and cost-effectively than hardware solutions
 - Eliminate the undifferentiated heavy-lifting tasks

Cloud service models

IaaS
(infrastructure as a service)

PaaS
(platform as a service)

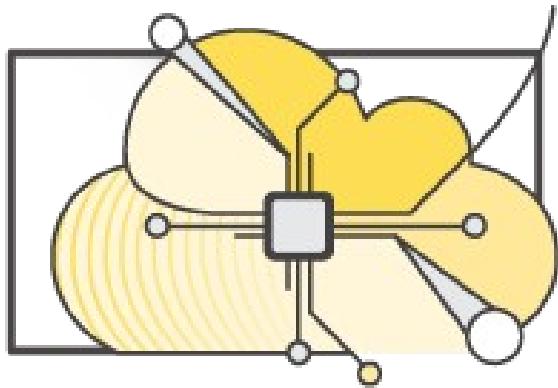
SaaS
(software as a service)



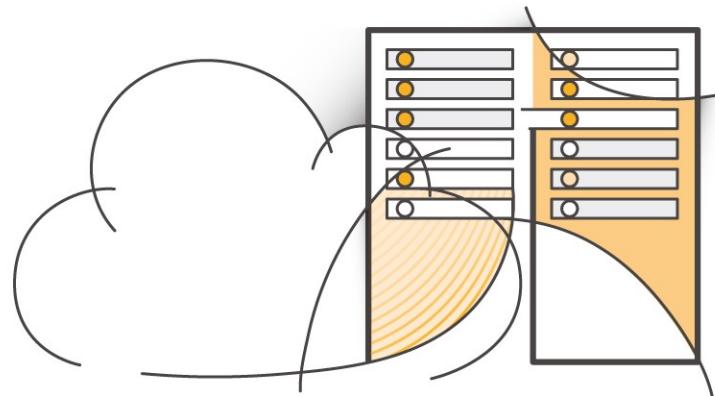
More control over IT resources

Less control over IT resources

Cloud computing deployment models



Cloud

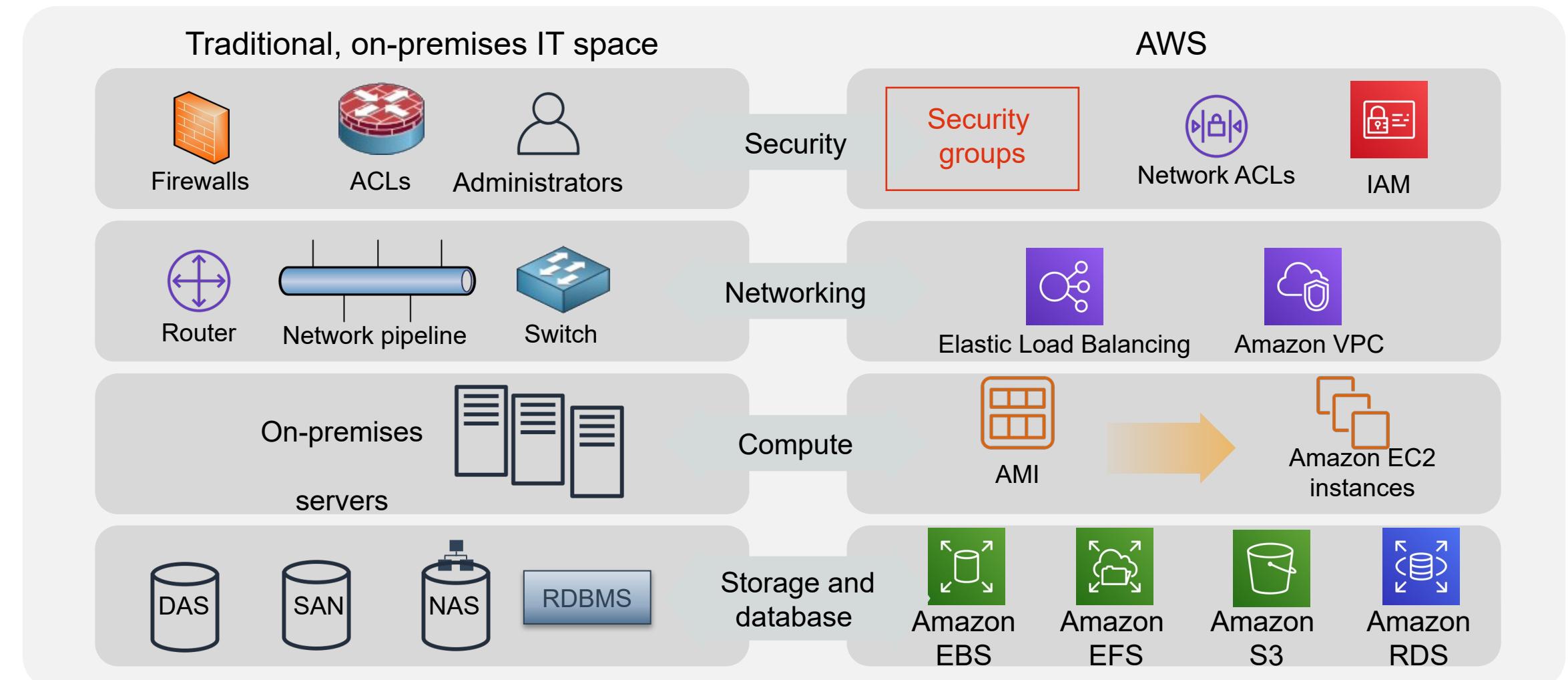


Hybrid



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

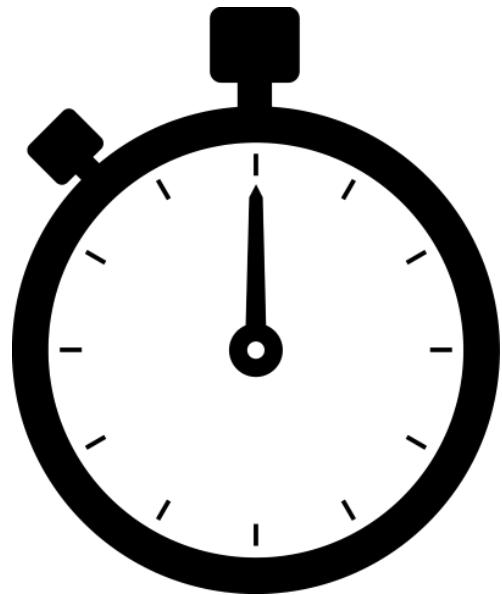
Module 1: Cloud Concepts Overview



Trade capital expense for variable expense



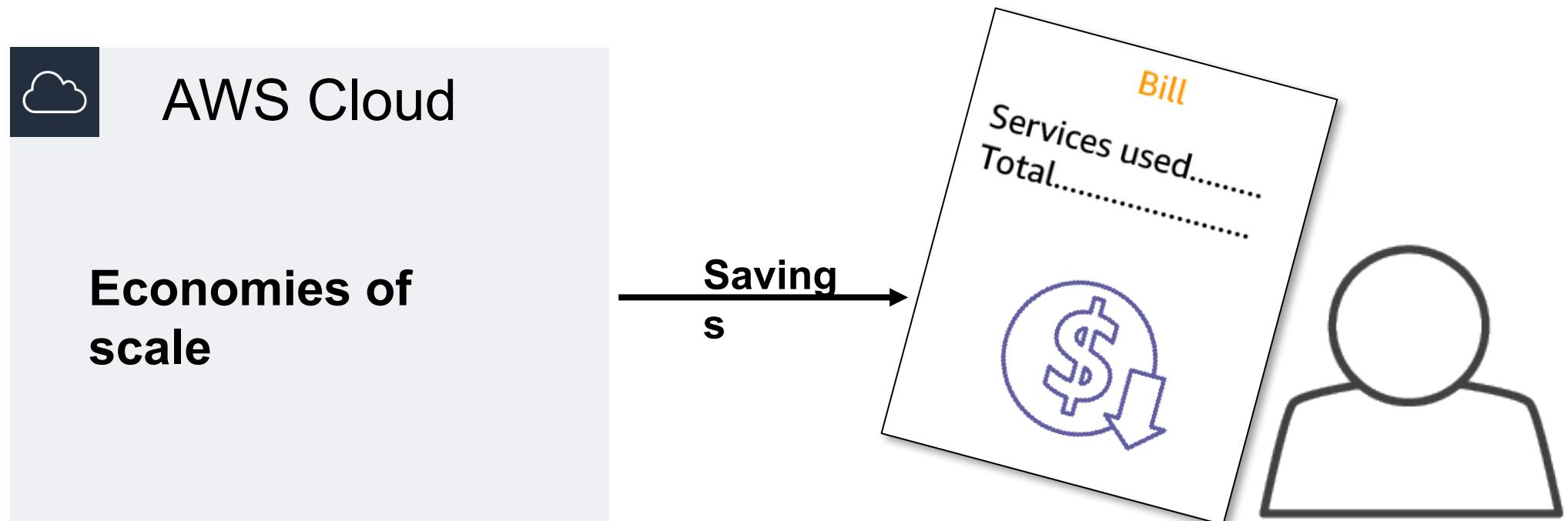
Data center investment
based on forecast



Pay only for the amount
you consume

Massive economies of scale

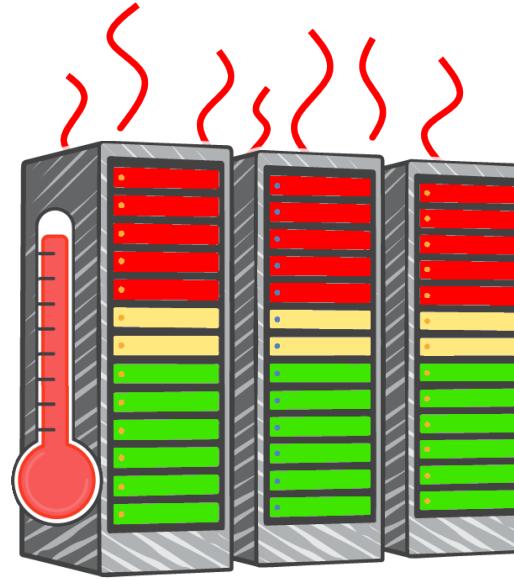
Because of aggregate usage from all customers, AWS can achieve higher economies of scale and pass savings on to customers.



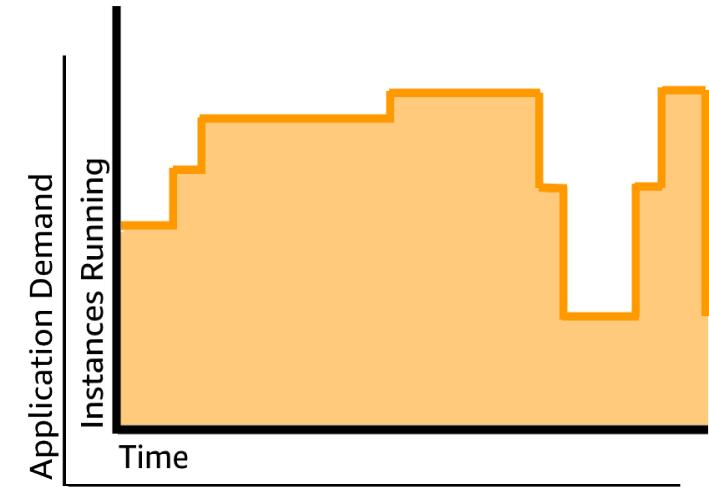
Stop guessing capacity



Overestimated
server capacity



Underestimated
server capacity

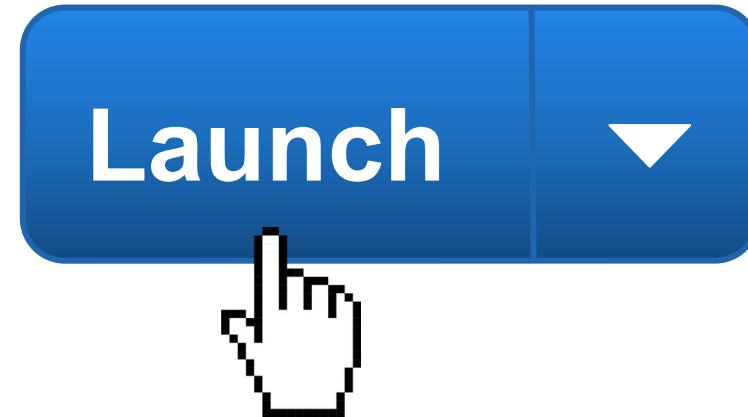


Scaling on
demand

Increase speed and agility

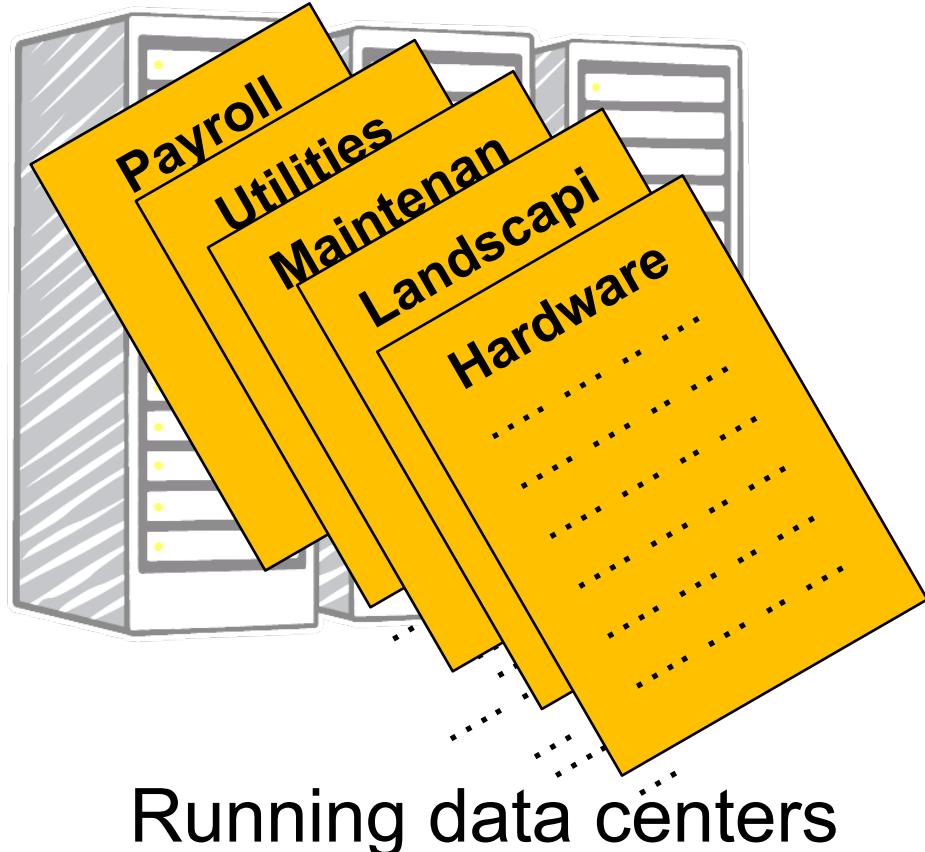


Weeks between wanting resources and having resources

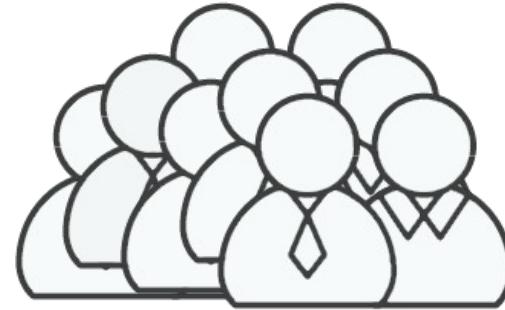
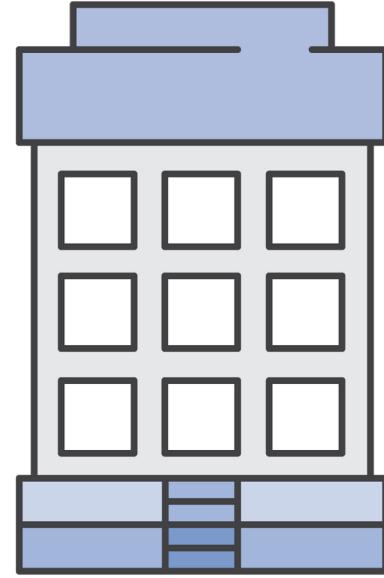
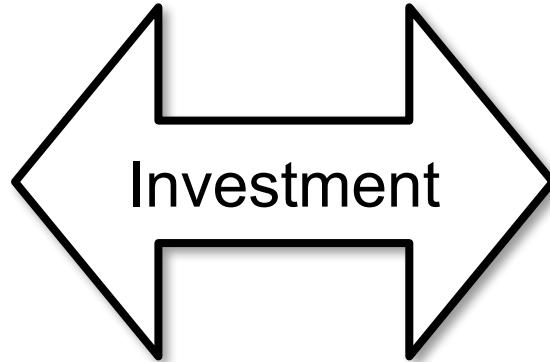


Minutes between wanting resources and having resources

Stop spending money on running and maintaining data centers

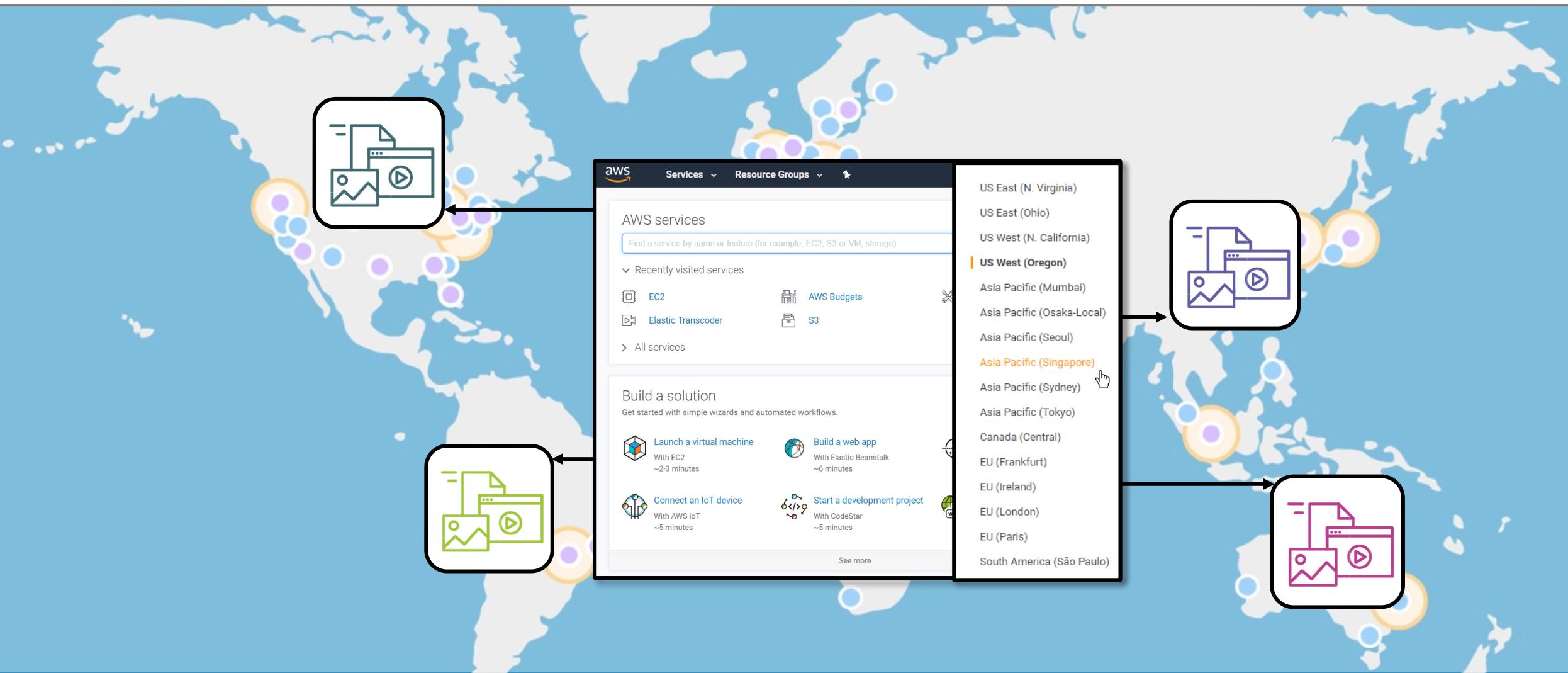


Running data centers



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

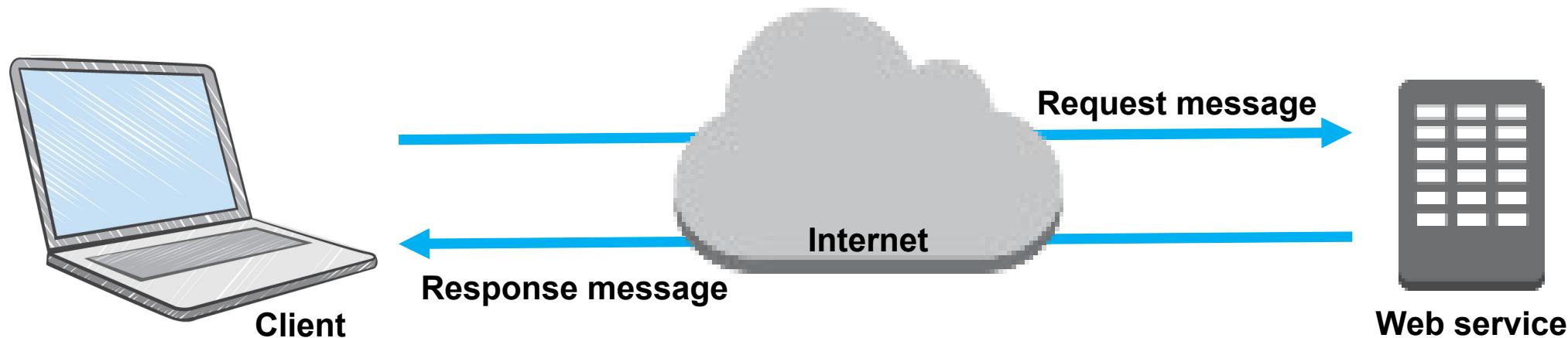
Section 3: Introduction to Amazon Web Services (AWS)

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



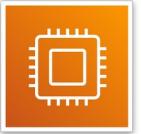
AR and
VR



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

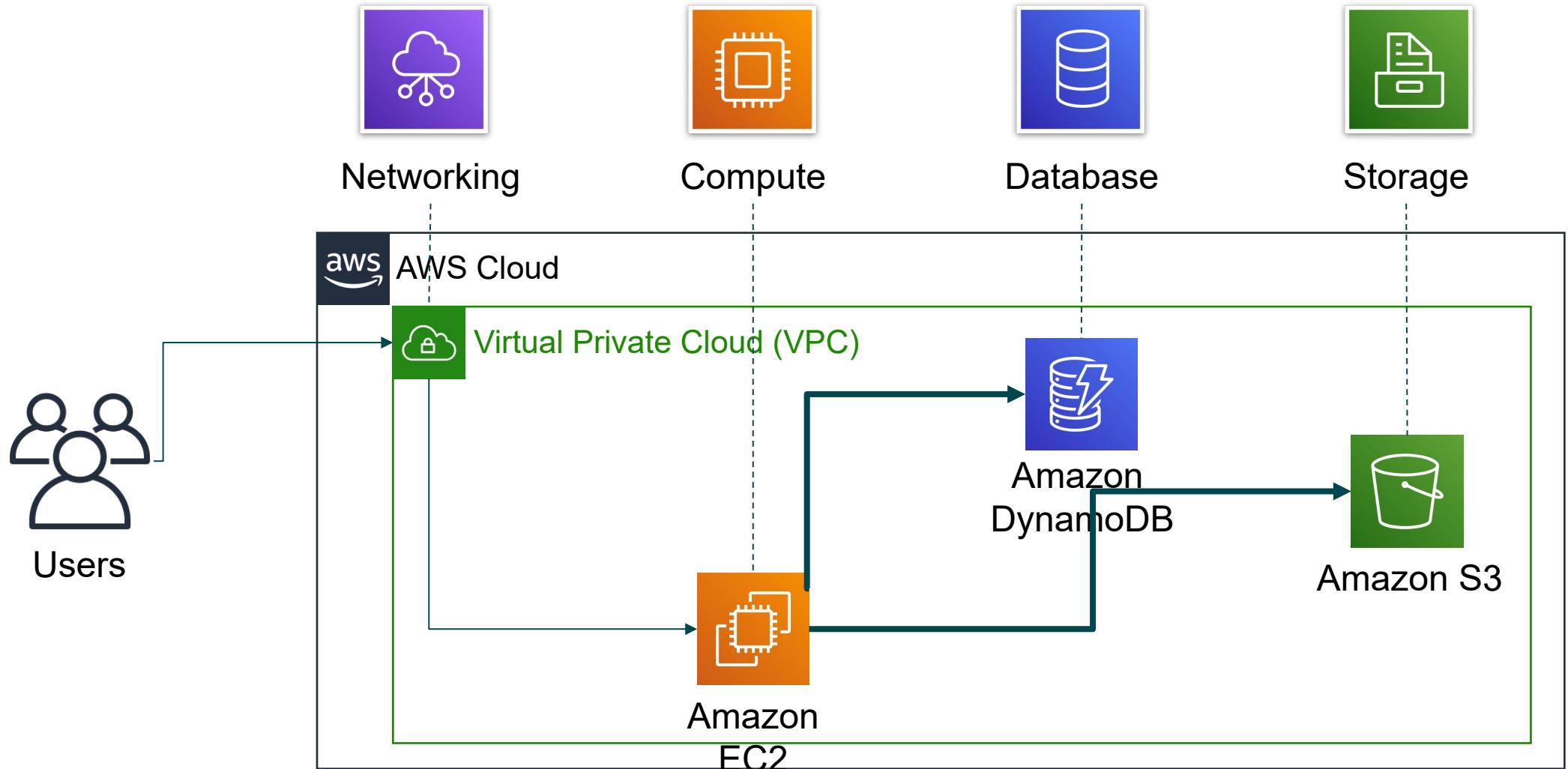


Security, Identity, and
Compliance



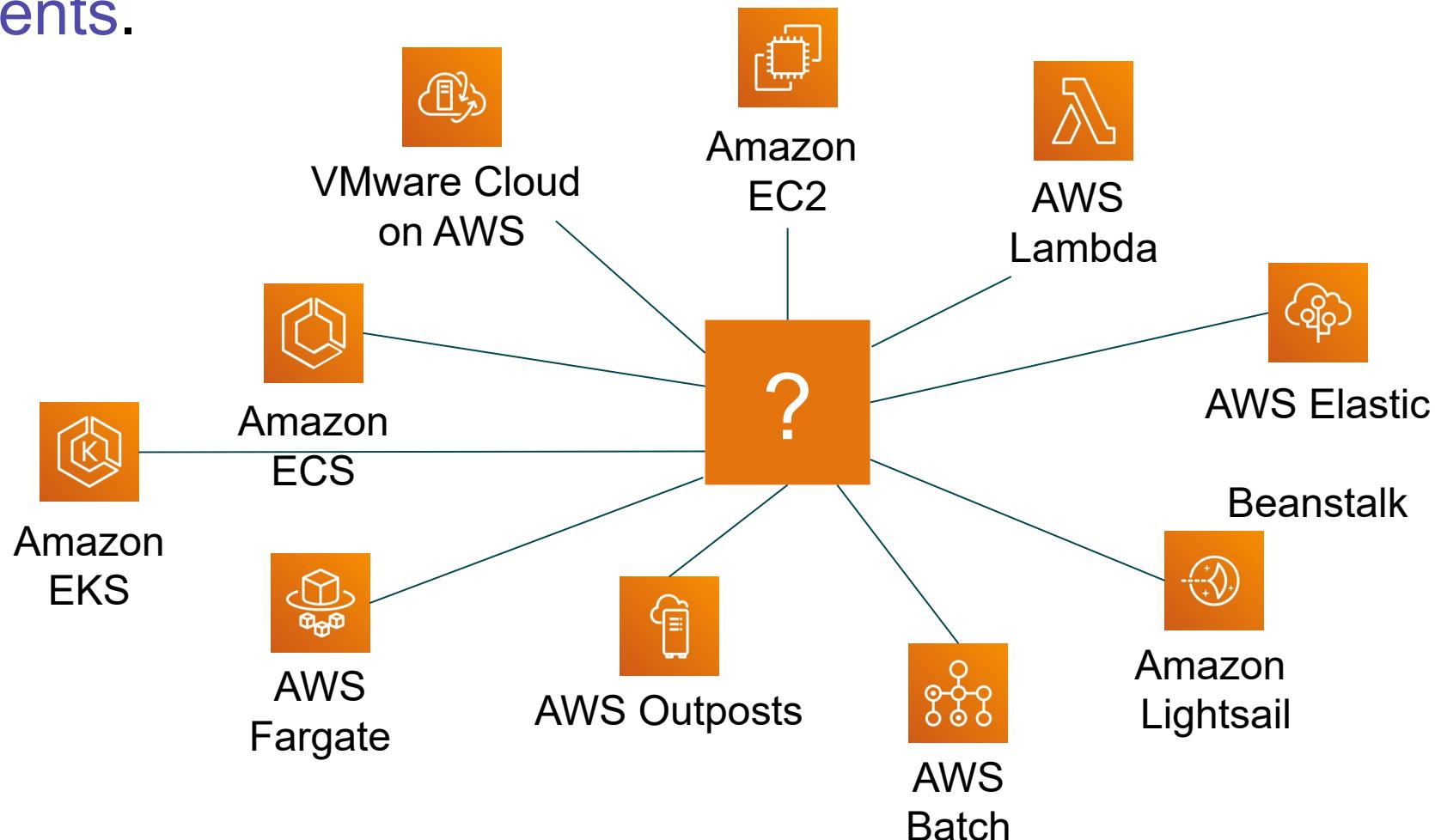
Storage

Simple solution example



Choosing a service

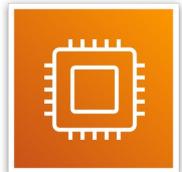
The service you select **depends on your business goals and technology requirements.**



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



Storage services –

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



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



Security, Identity, and Compliance services –

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



Networking and Content Delivery services –

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



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

```
AWS Storage Gateway Network Configuration
1: Describe Adapter
2: Configure DHCP
3: Configure Static IP
4: Reset all to DHCP
5: Select Network Adapter
6: View DNS Configuration
7: View Routes

Press "x" to exit
Enter command: 2
Available adapters: eth0
Enter Network Adapter: eth0
Reset to DHCP [y/n]: y
Adapter eth0 set to use DHCP
You must exit Network Configuration to complete this configuration.
Press Return to Continue...
```

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



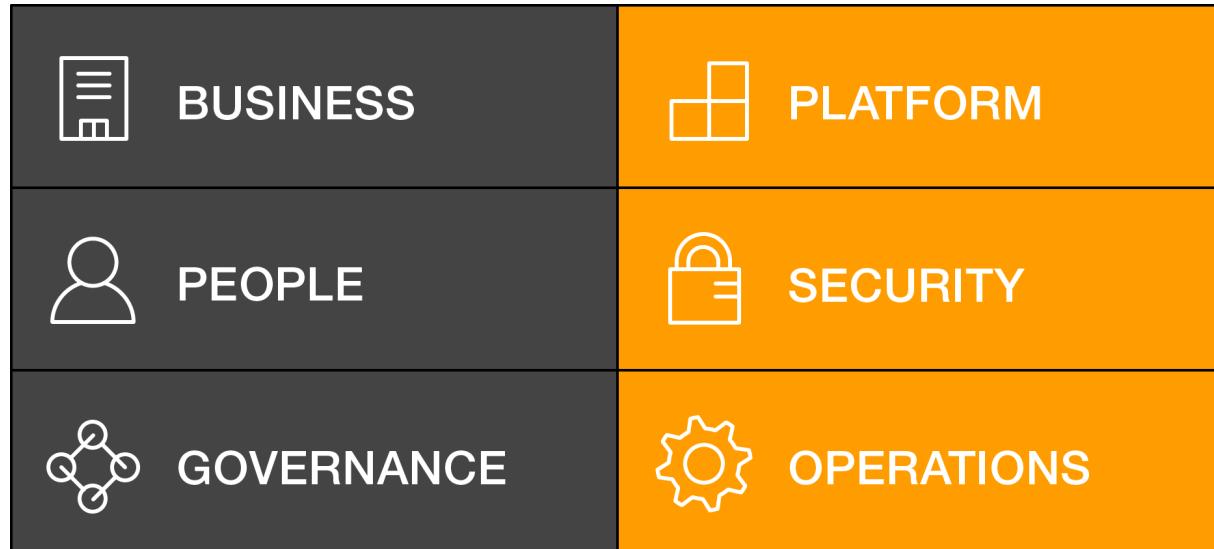
- AWS is a secure cloud platform that offers a broad set of global cloud-based products called services that are designed to work together.
- There are many categories of AWS services, and each category has many services to choose from.
- Choose a service based on your business goals and technology requirements.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

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

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AWS Cloud Adoption Framework (AWS CAF)



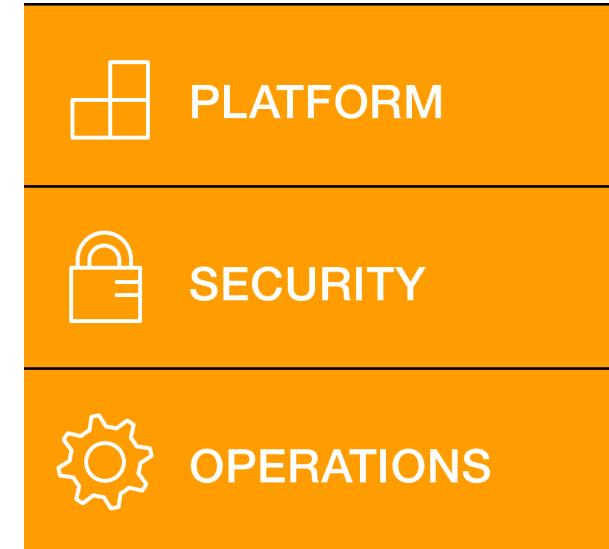
AWS CAF
perspectives

- **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

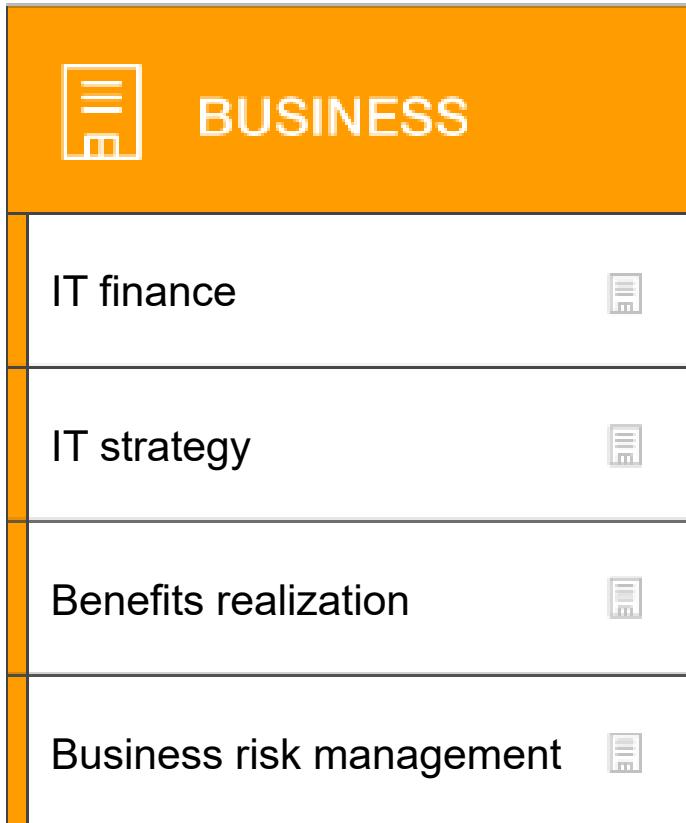


Focus on
business
capabilities



Focus on **technical**
capabilities

Business perspective



**Business perspective
capabilities**

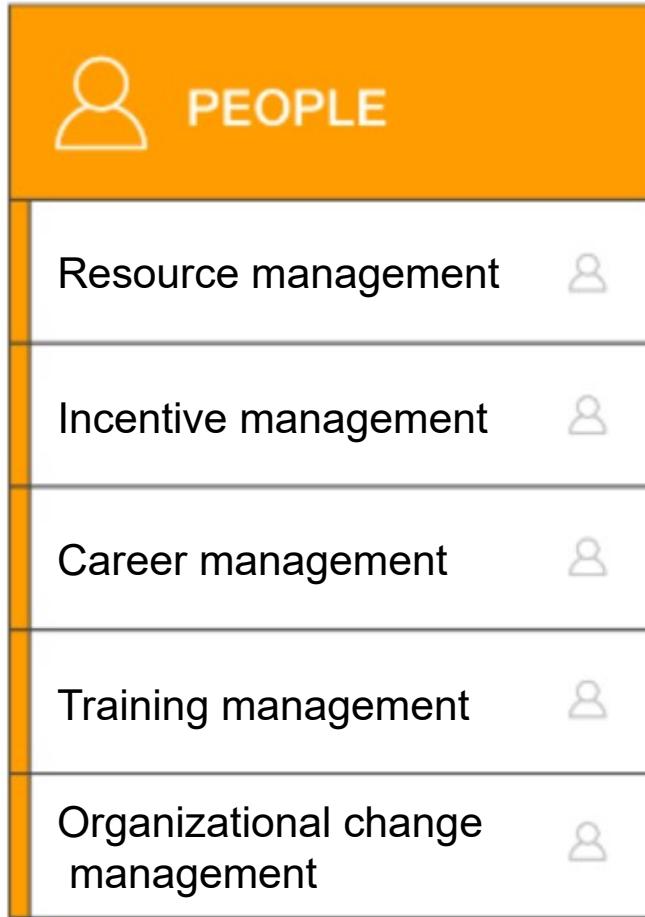
We must ensure that **IT is aligned with business needs**, and that IT investments can be traced to demonstrable business results.



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



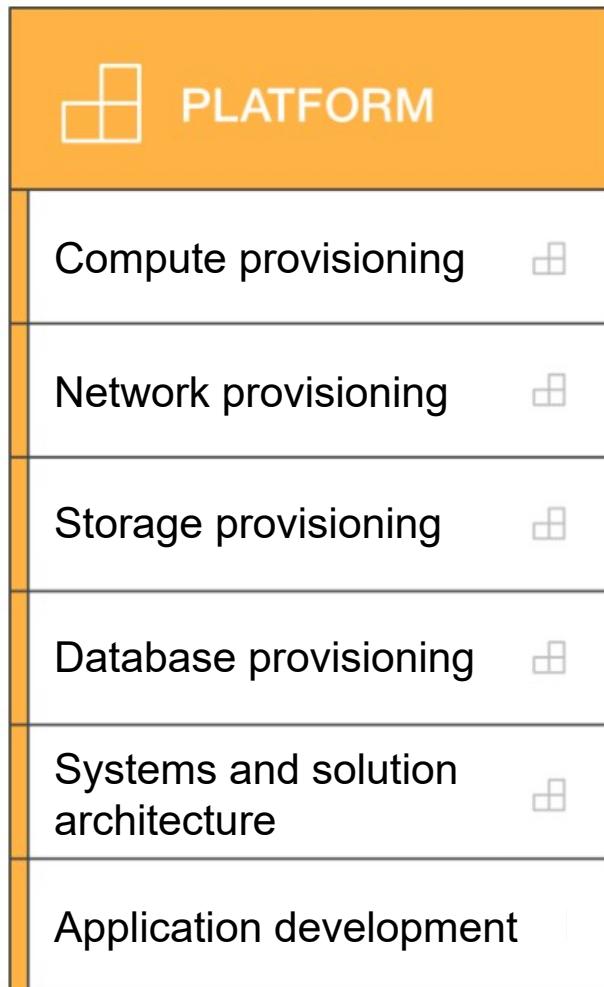
Governance perspective capabilities

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

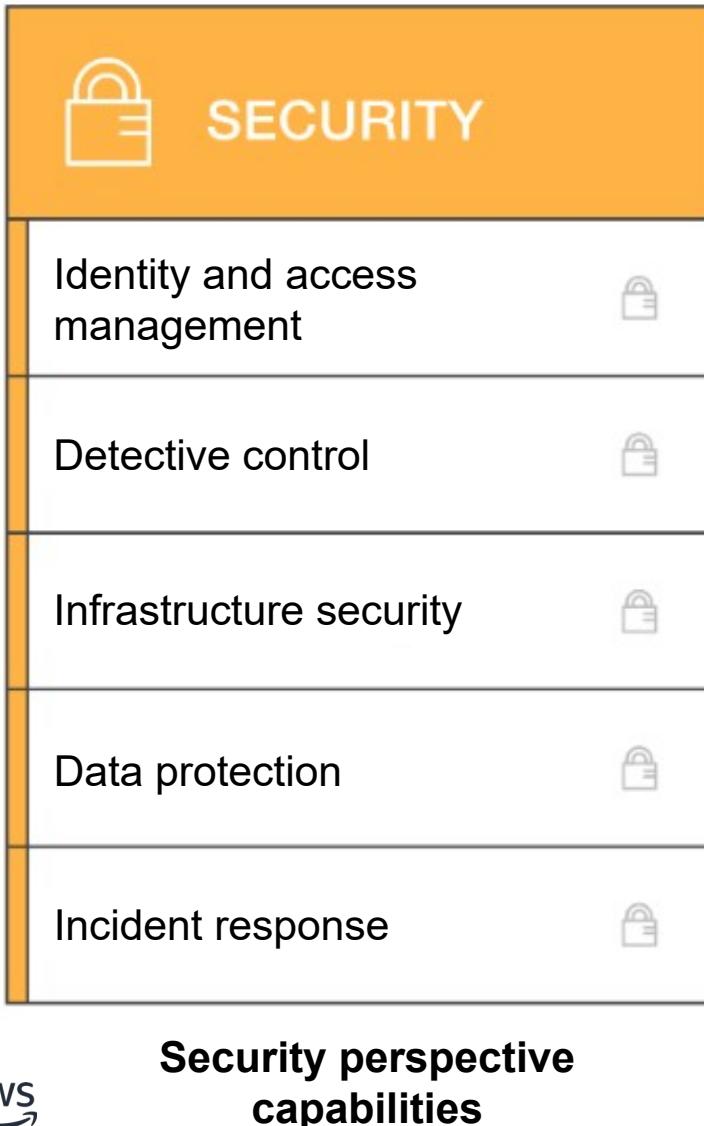


We must **understand and communicate the nature of IT systems and their relationships.** We must be able to **describe the architecture of the target state environment** in detail.



CTO, IT managers, and
solutions architects

Security perspective

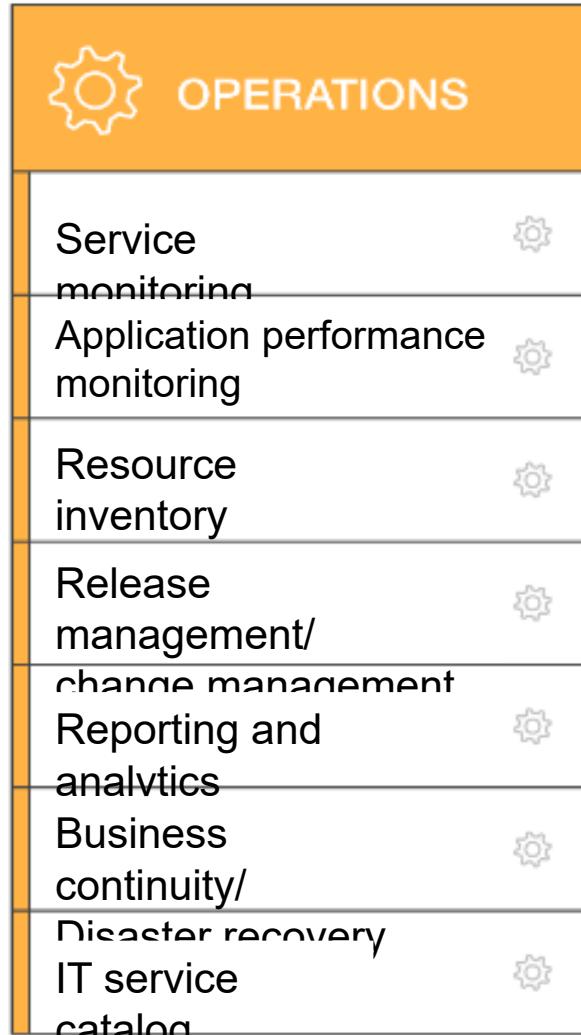


We must ensure that the organization **meets its security objectives**.



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



```
<div id="content">
<header id="topnav">
<nav>
<ul>
<li class="active"><a class="scroll" href="#service">
    Home </a></li>
<li><a class="scroll" href="#product">
    Service </a></li>
<li><a class="scroll" href="#portfolio">
    Products </a></li>
<li><a class="scroll" href="#team">
    Portfolio </a></li>
<li><a class="scroll" href="#contact">
    Team </a></li>
<li><a class="scroll" href="#">
    Contact </a></li>
<div class="clear"></div>
</ul>
</nav>
<div class="logo">
    <a href="/">
        
    </a>
</div>
```

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

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