



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?



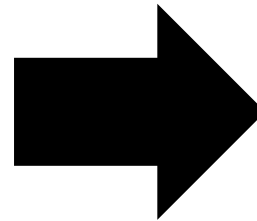
Cloud computing defined

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



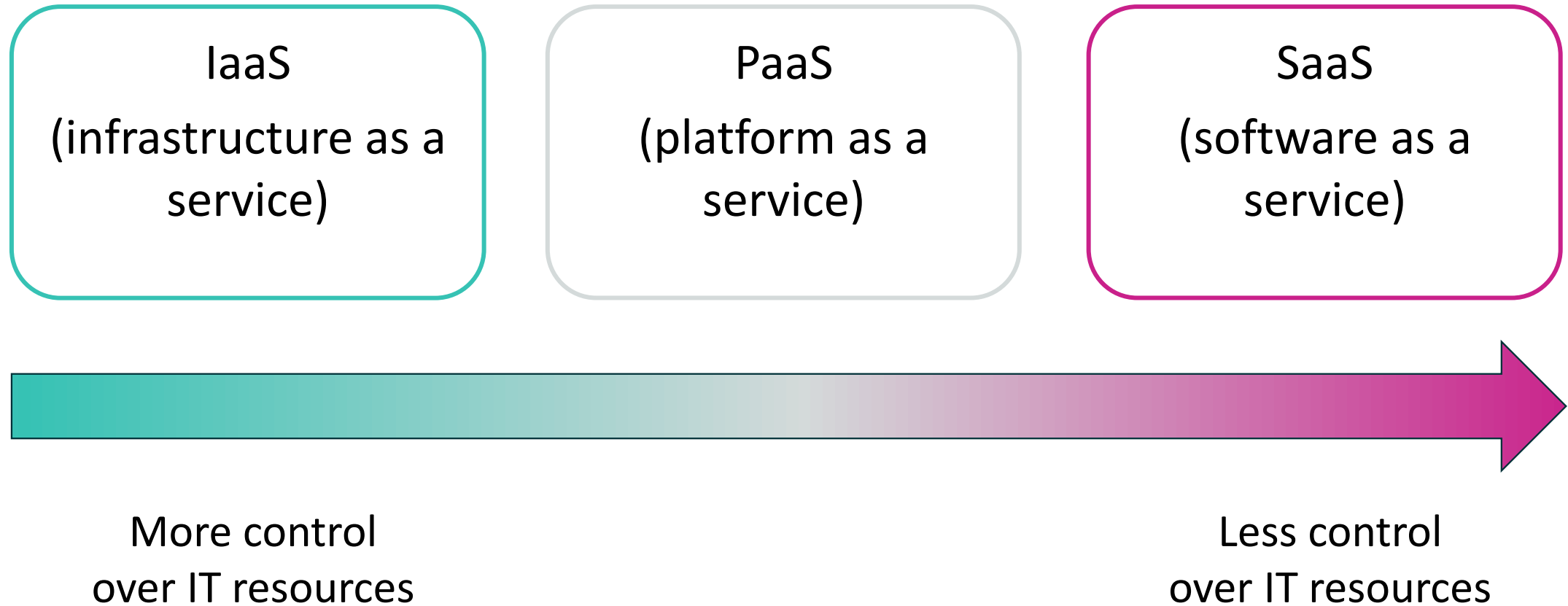
- Infrastructure as hardware
- Hardware solutions:
 - Require space, staff, physical security, planning, capital expenditure
 - Have a long hardware procurement cycle
 - Require you to provision capacity by guessing theoretical maximum peaks

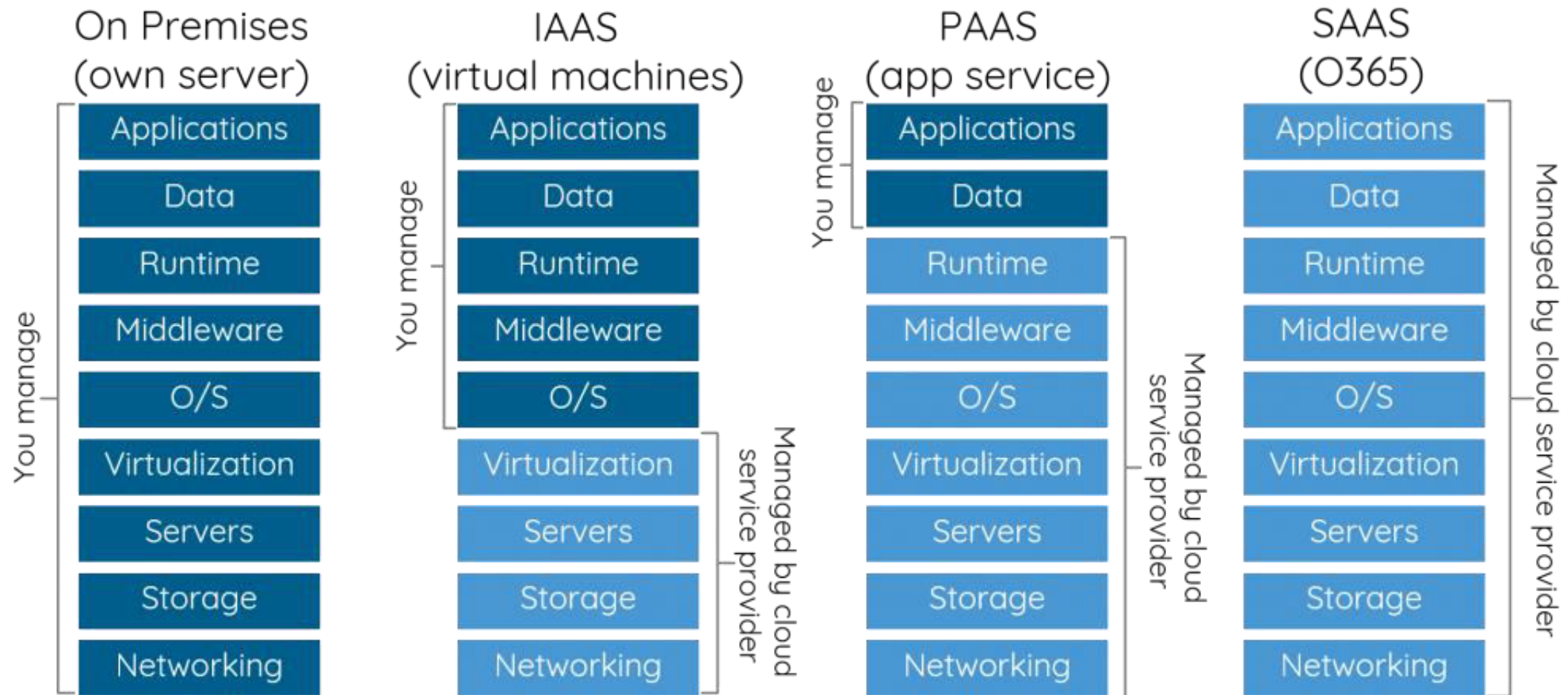
Cloud computing model

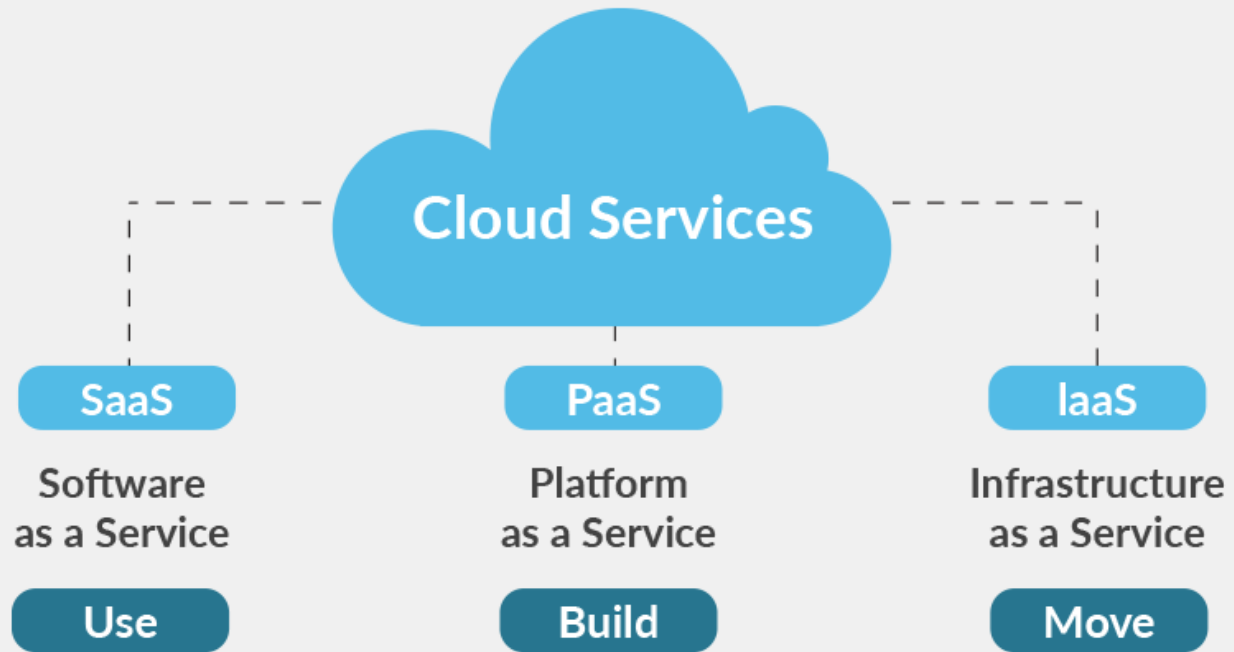


- Infrastructure as software
- Software solutions:
 - Are flexible
 - Can change more quickly, easily, and cost-effectively than hardware solutions
 - Eliminate the undifferentiated heavy-lifting tasks

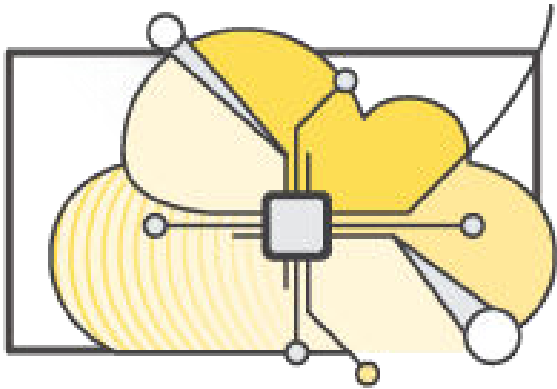
Cloud service models







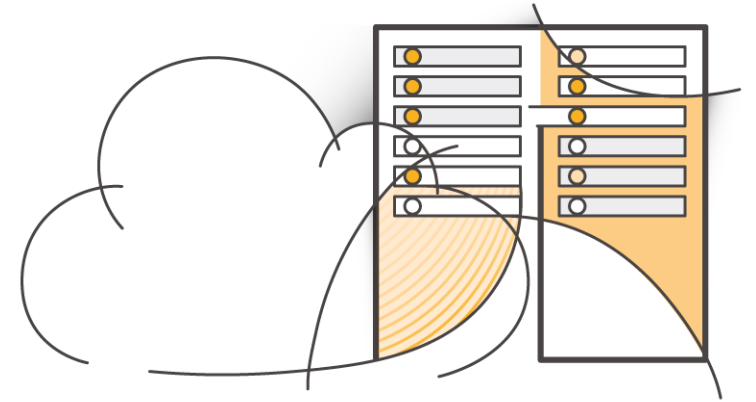
Cloud computing deployment models



Cloud

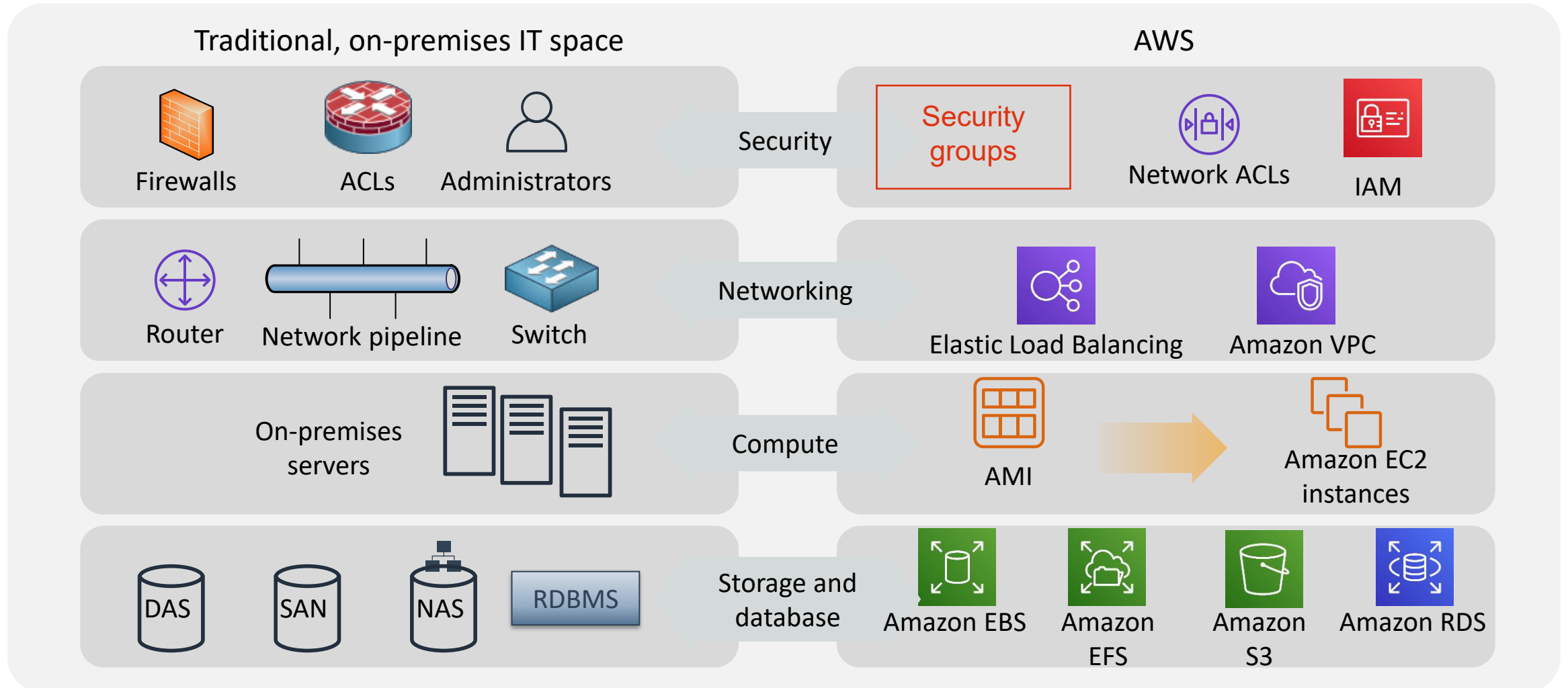


Hybrid



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.

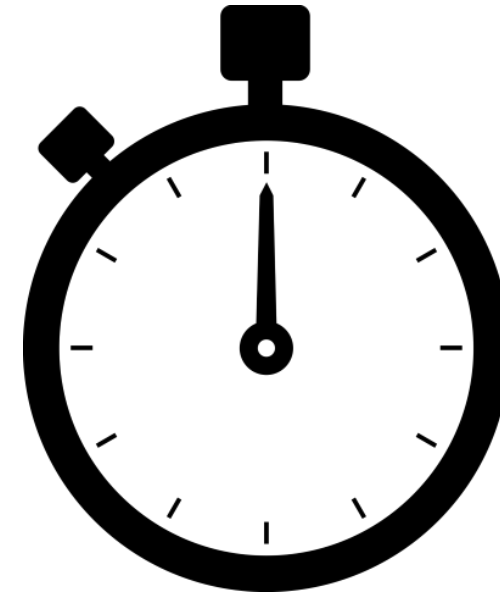
Section 2: Advantages of cloud computing

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

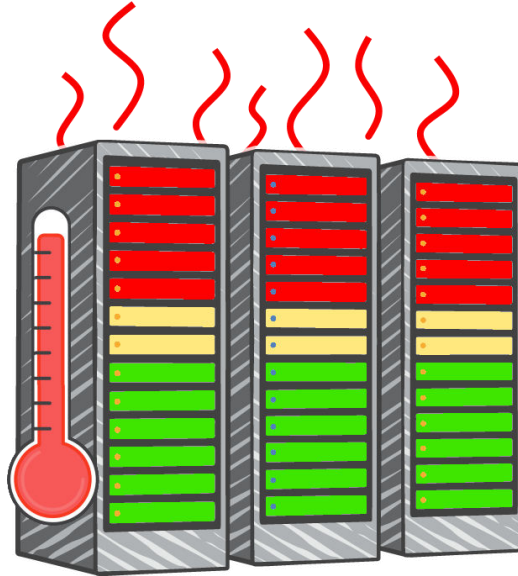
Because of aggregate usage from all customers, AWS can achieve higher economies of scale and pass savings on to customers.



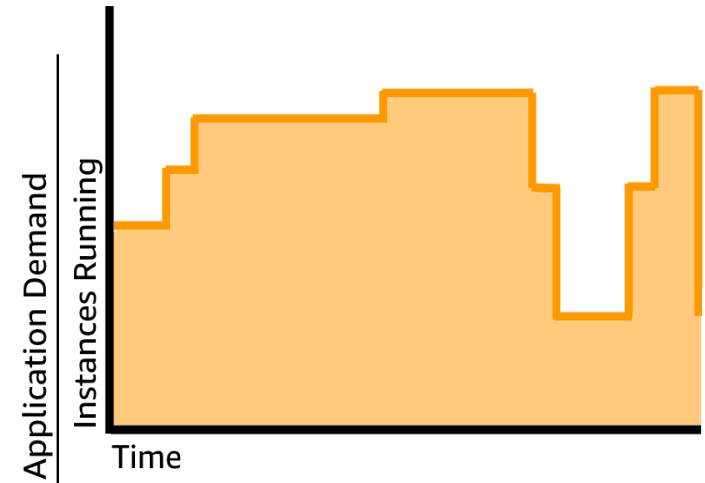
Stop guessing capacity



Overestimated
server capacity



Underestimated
server capacity



Scaling on demand

Increase speed and agility

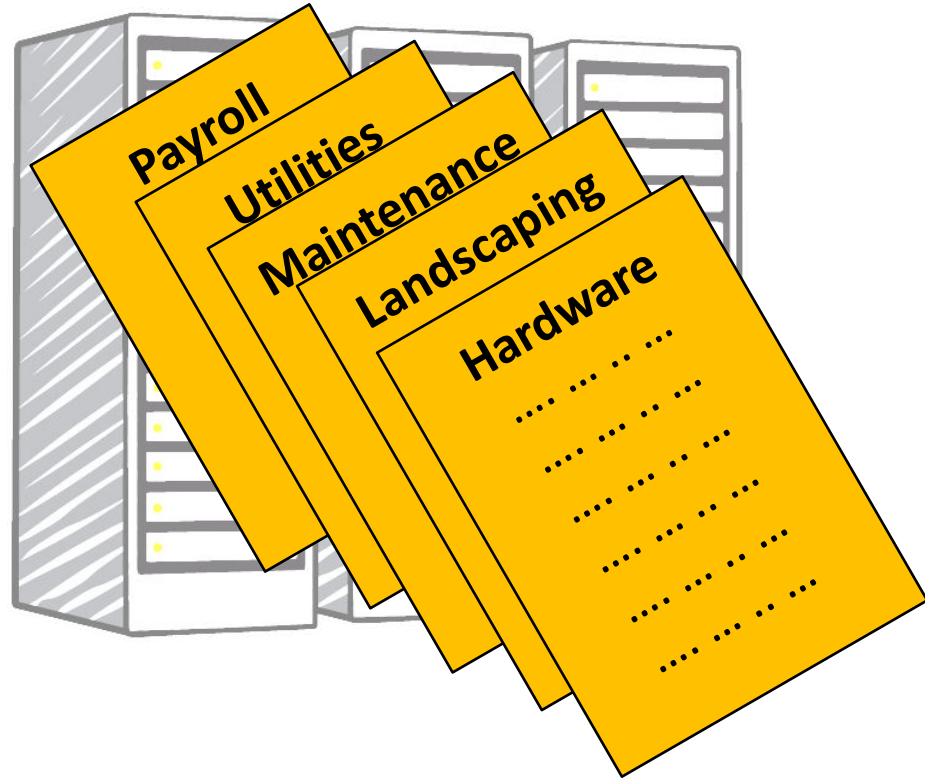


Weeks between wanting resources
and having resources

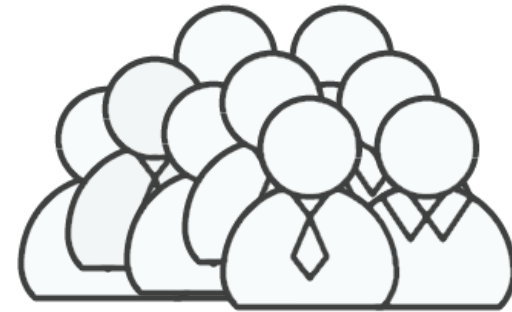
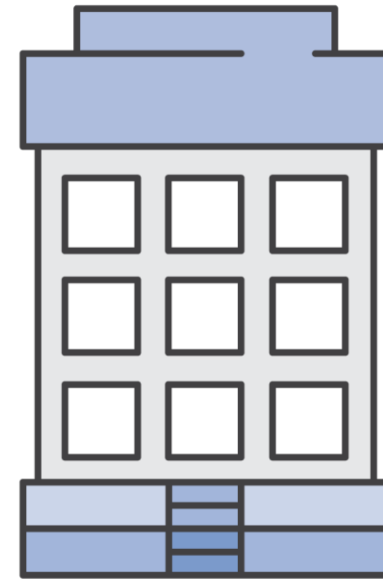
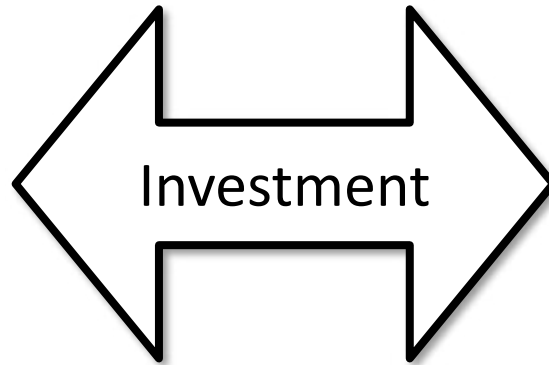


Minutes between wanting
resources and having resources

Stop spending money on running and maintaining data centers



Running data centers



Business and customers

Go global in minutes

The image illustrates the ease of deploying AWS services globally. It features a world map with colored circles representing different AWS regions. Overlaid on the map is a screenshot of the AWS console. The console shows the 'AWS services' page with a search bar and a list of recently visited services. Below this, the 'Build a solution' section is expanded, showing four options: 'Launch a virtual machine' (With EC2, ~2-3 minutes), 'Build a web app' (With Elastic Beanstalk, ~6 minutes), 'Connect an IoT device' (With AWS IoT, ~5 minutes), and 'Start a development project' (With CodeStar, ~5 minutes). To the right of the console, a list of regions is shown, with 'US West (Oregon)' highlighted. Four callout boxes with icons (document, play, and folder) point to specific regions on the map: North America, Europe, Asia, and South America.

Section 2 key takeaways



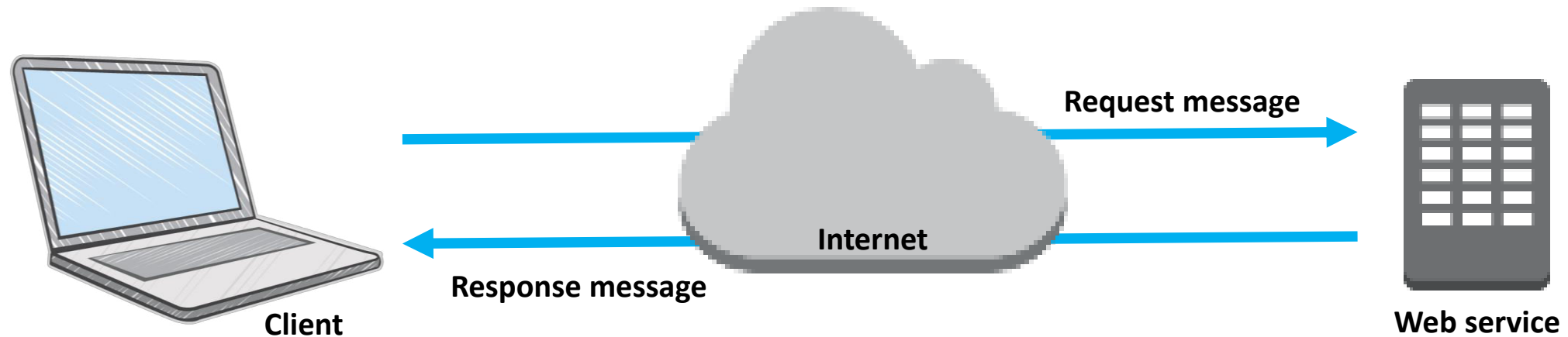
- Trade capital expense for variable expense
- Benefit from massive economies of scale
- Stop guessing capacity
- Increase speed and agility
- Stop spending money on running and maintaining data centers
- Go global in minutes

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

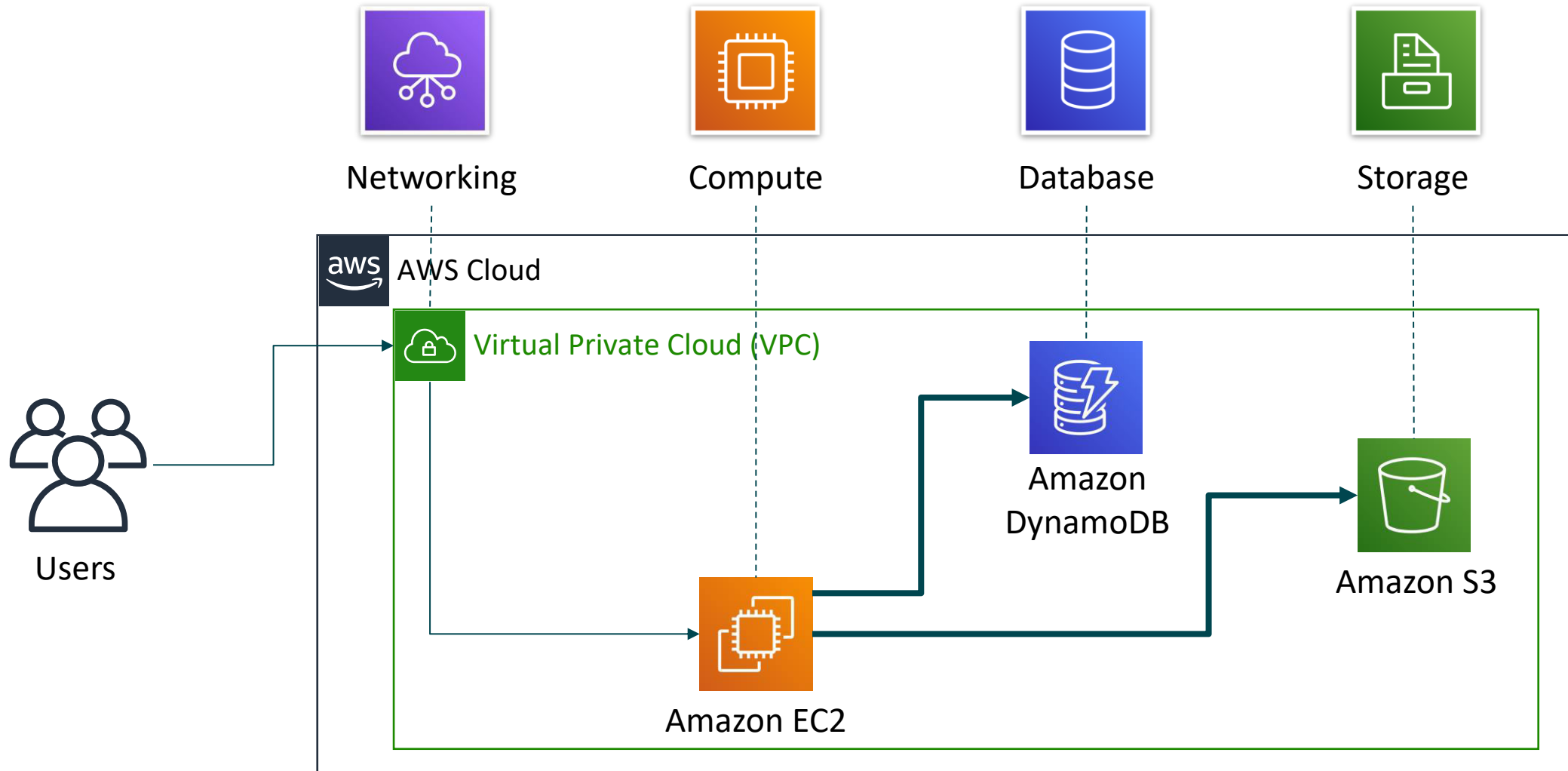


Security, Identity, and
Compliance



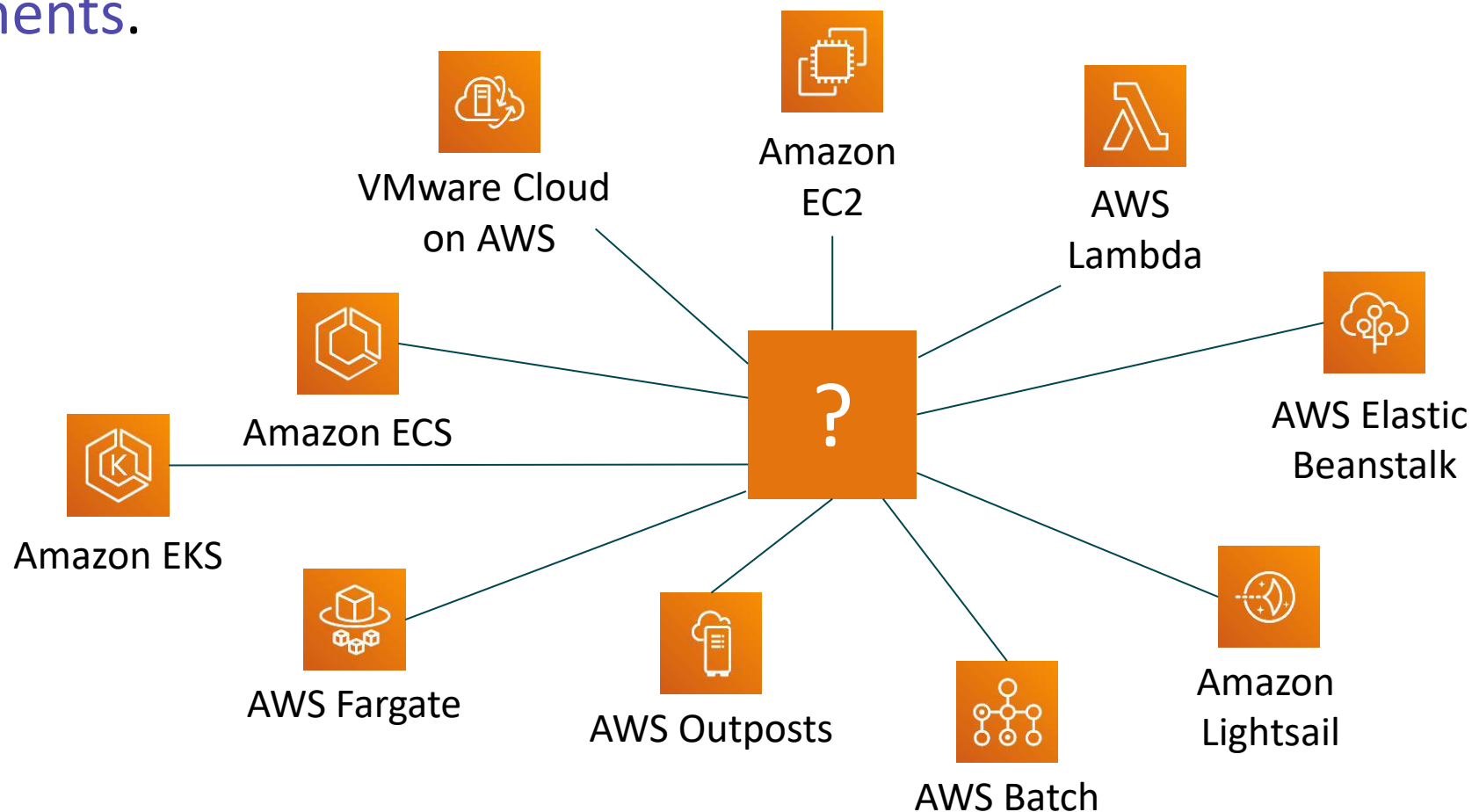
Storage

Simple solution example



Choosing a service

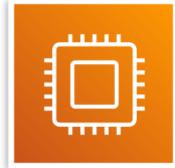
The service you select depends on your business goals and technology requirements.



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



Database services –

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



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



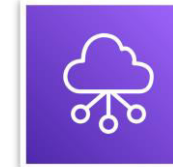
Security, Identity, and Compliance services –

- 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

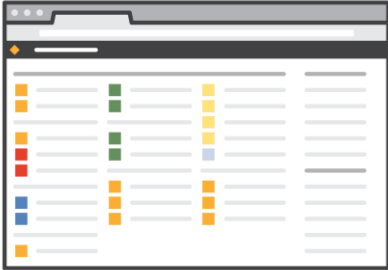


AWS Cost Management services –

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



Three ways to interact with AWS



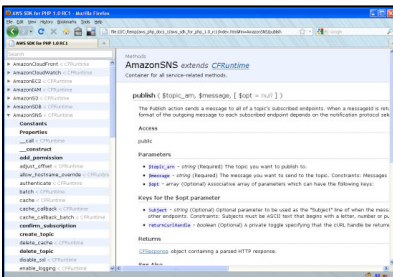
AWS Management Console

Easy-to-use graphical interface



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)

 BUSINESS	 PLATFORM
 PEOPLE	 SECURITY
 GOVERNANCE	 OPERATIONS

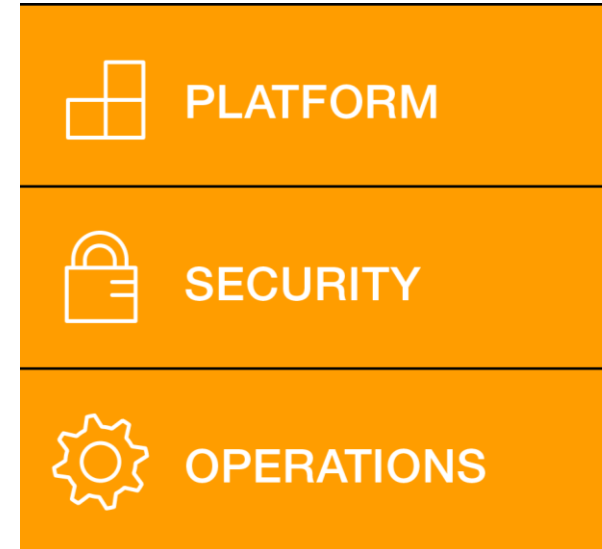
AWS CAF perspectives

- **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	
IT finance	
IT strategy	
Benefits realization	
Business risk management	







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	
Resource management	
Incentive management	
Career management	
Training management	
Organizational change management	






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	
Portfolio management	
Program and project management	
Business performance measurement	
License management	






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	
Compute provisioning	
Network provisioning	
Storage provisioning	
Database provisioning	
Systems and solution architecture	
Application development	







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	
Identity and access management	
Detective control	
Infrastructure security	
Data protection	
Incident response	

Security perspective capabilities



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



CISO, IT security managers,
and IT security analysts

Operations perspective

 OPERATIONS	
Service monitoring	
Application performance monitoring	
Resource inventory management	
Release management/ change management	
Reporting and analytics	
Business continuity/ Disaster recovery	
IT service catalog	

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

Operations perspective capabilities

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

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