JAMES COOK UNIVERSITY
AUSTRALIA

EE4500

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)

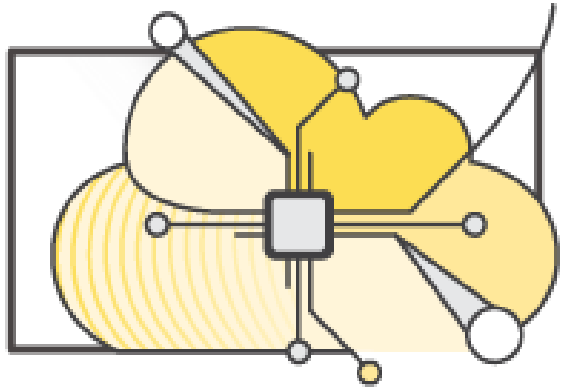
PaaS
(platform as a service)

SaaS
(software as a service)

More control
over IT resources

Less control
over IT resources

Cloud computing deployment models

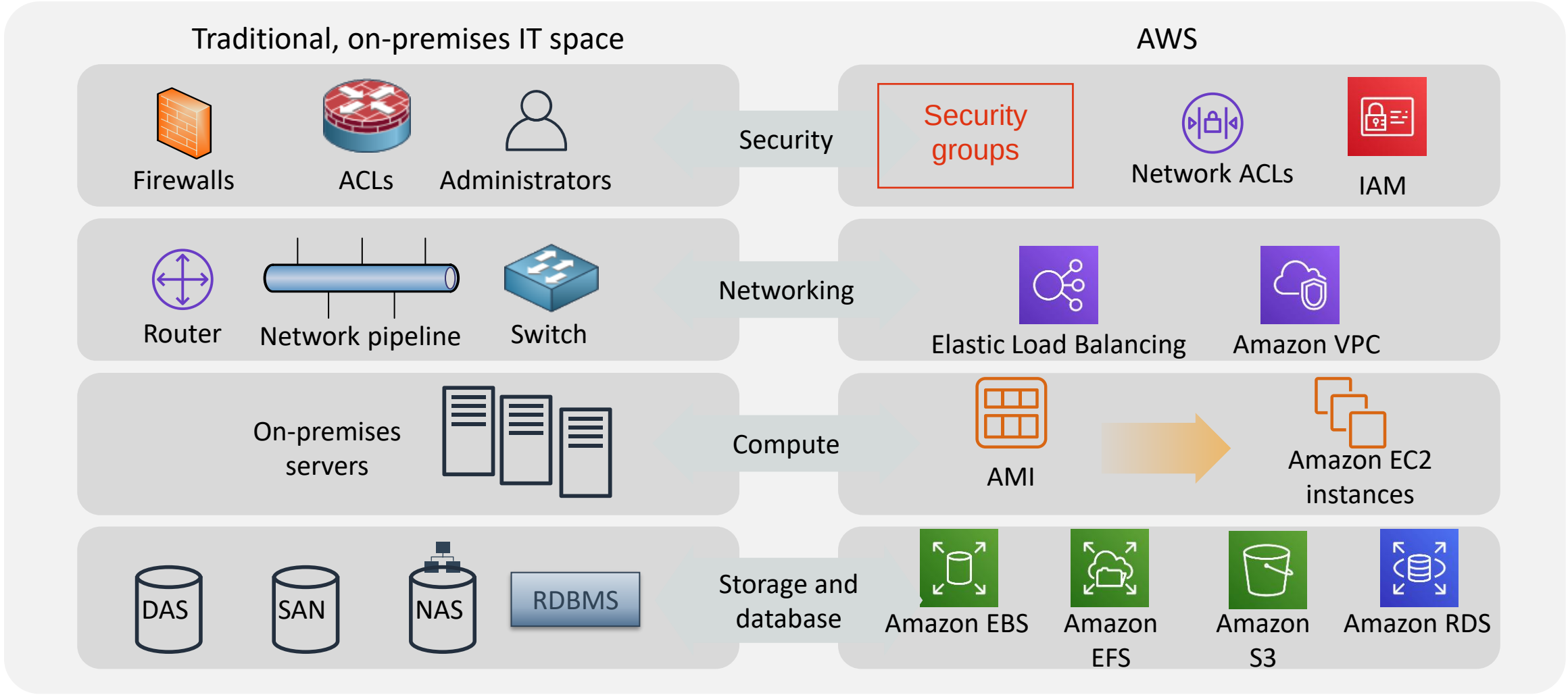


Cloud

Hybrid

On-premises
(private cloud)

Similarities between AWS and traditional IT



Section 1 key takeaways

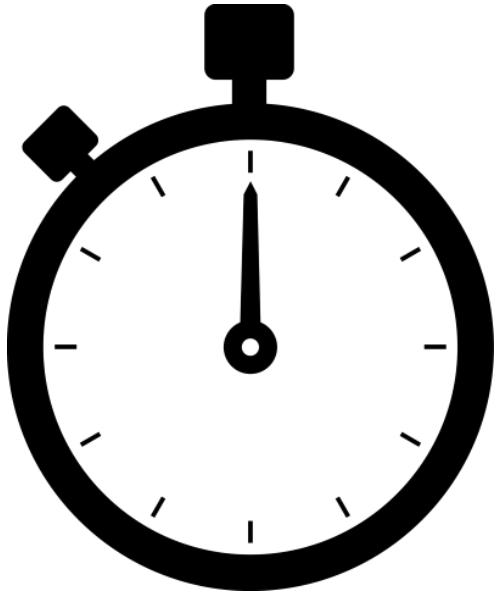
- Cloud computing is the on-demand delivery of IT resources via the internet with pay-as-you-go pricing.
- Cloud computing enables you to think of (and use) your infrastructure as software.
- There are three cloud service models: IaaS, PaaS, and SaaS.
- There are three cloud deployment models: cloud, 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



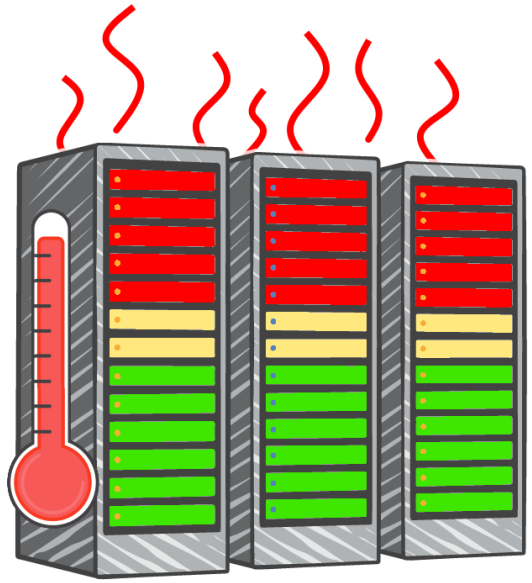
Pay only for the amount you consume

Massive economies of scale

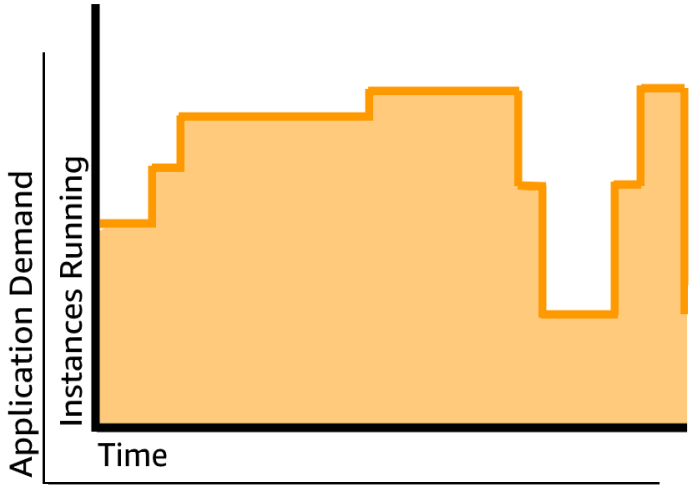
Because of aggregate usage from all customers, AWS can achieve higher economies of scale and pass savings on to customers.

Stop guessing capacity

Overestimated server capacity



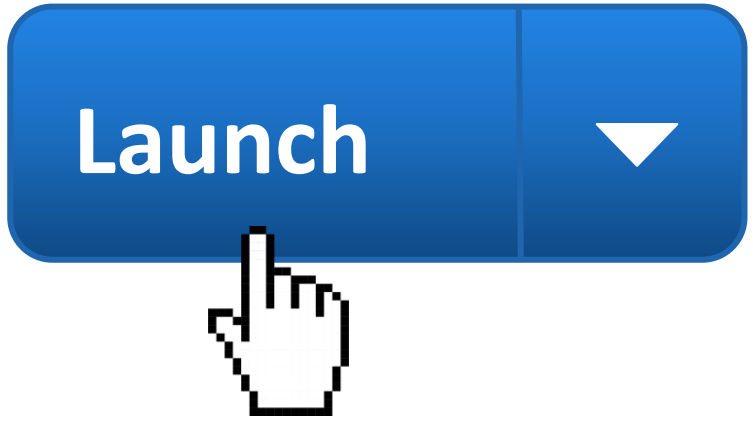
Underestimated server capacity



Scaling on demand

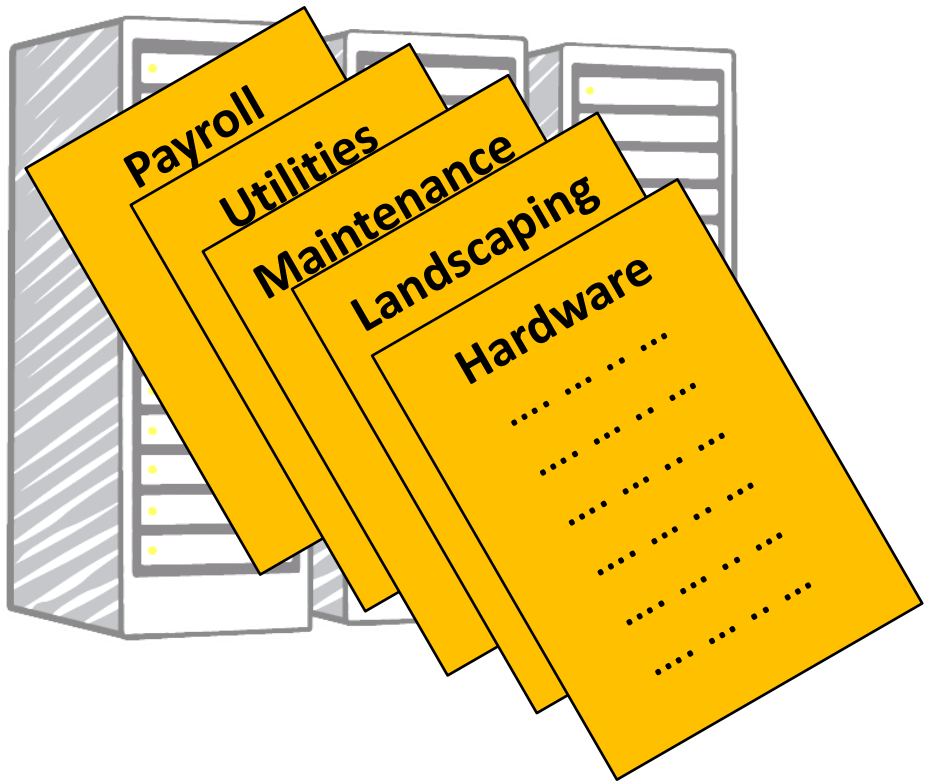
Increase speed and agility

Weeks between wanting resources and having resources

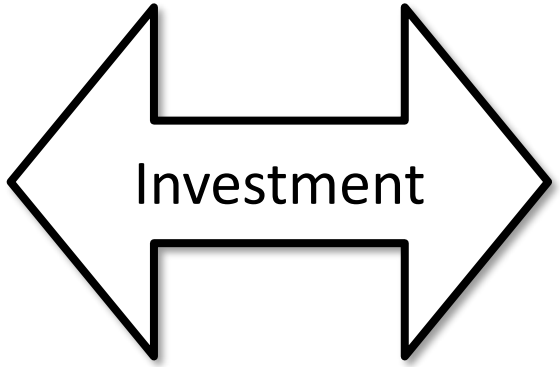


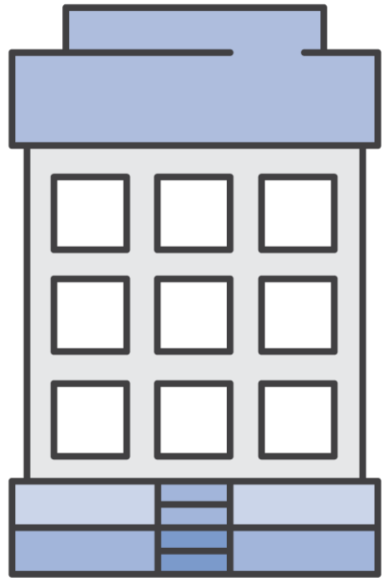
Minutes between wanting resources and having resources

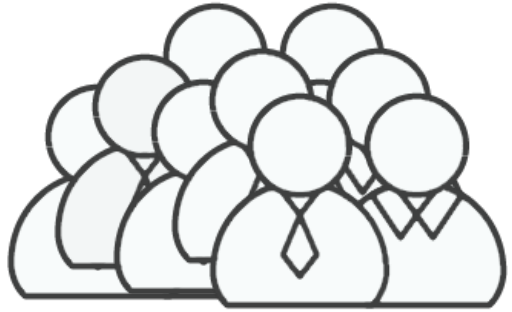
Stop spending money on running and maintaining data centers



Running data centers

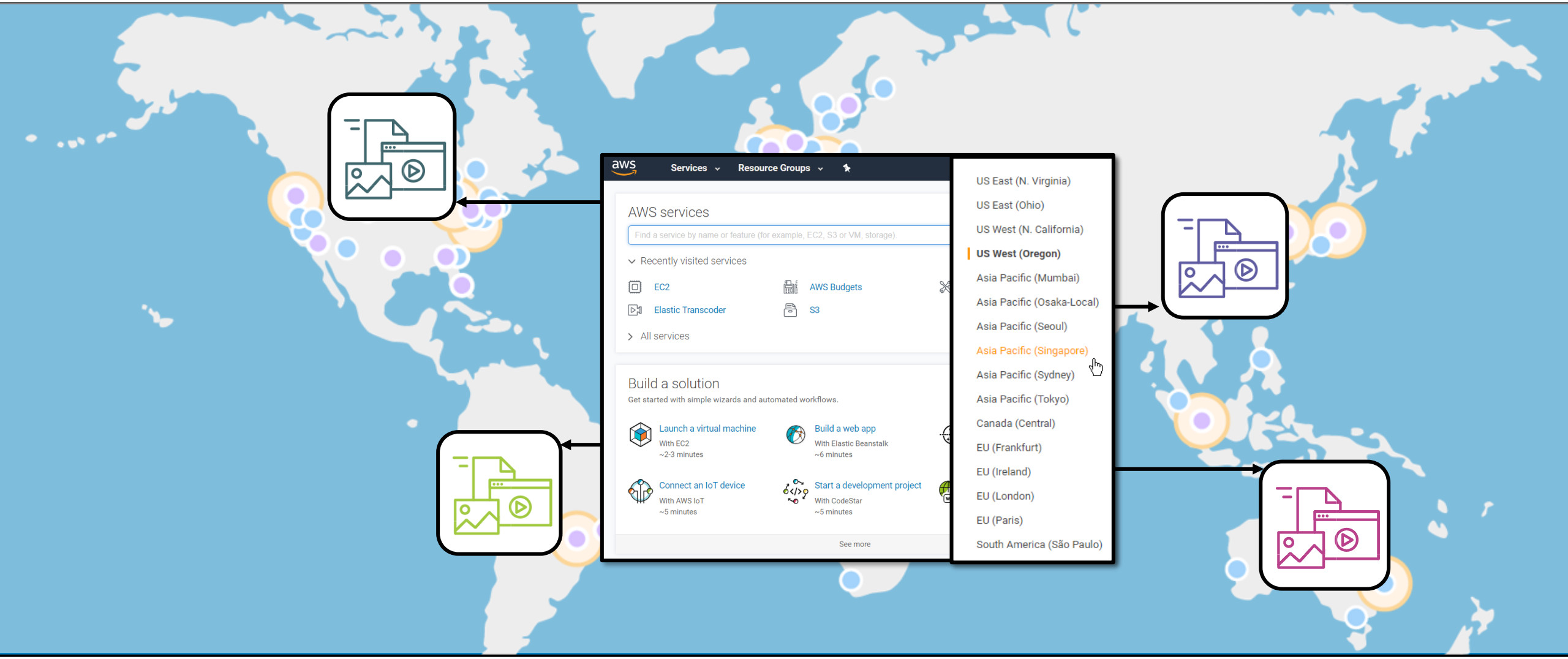






Business and customers

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

Alternate view

Advantages

1. Trade capital expense for variable expense
2. Benefit from massive economies of scale
3. Stop guessing capacity
4. Increase speed and agility
5. Stop spending money on running and maintaining data centers
6. Go global in minutes

Disadvantages

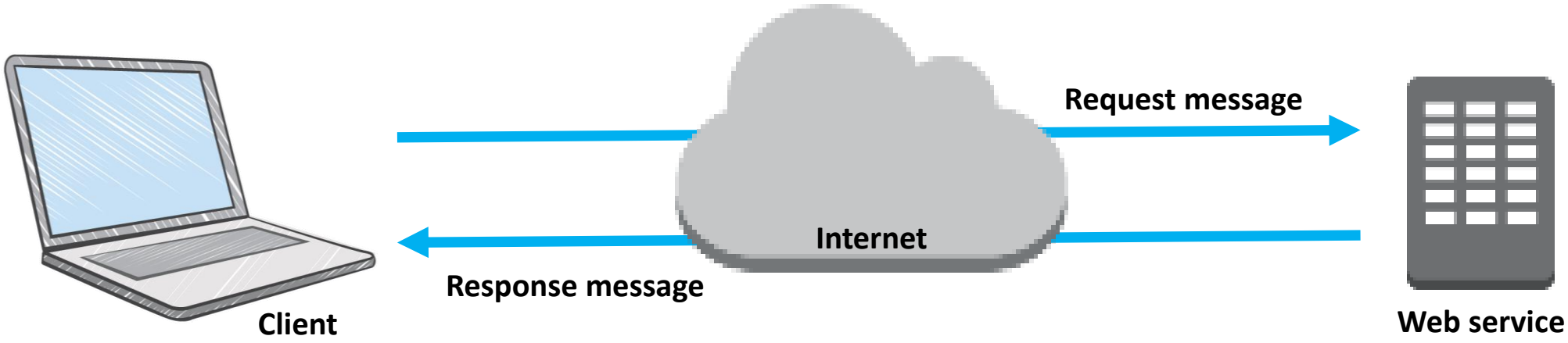
1. Security and Privacy Concerns
2. Downtime and Reliability Issues
3. Limited Control and Flexibility
4. Latency and Performance
5. Cost Management
6. Vendor Lock-In
7. Unknown unknowns

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

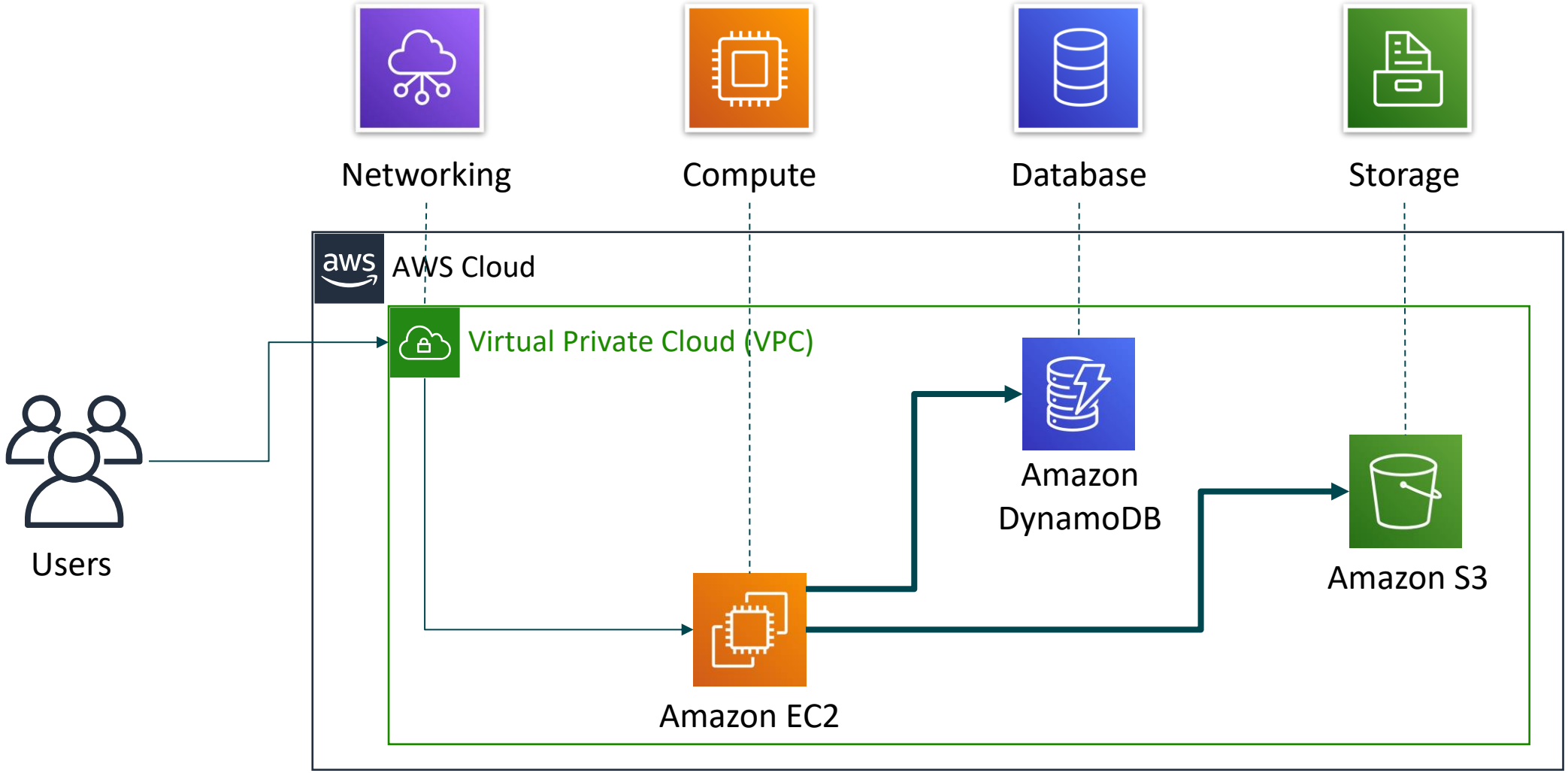

Robotics


Satellite


Security, Identity, and Compliance

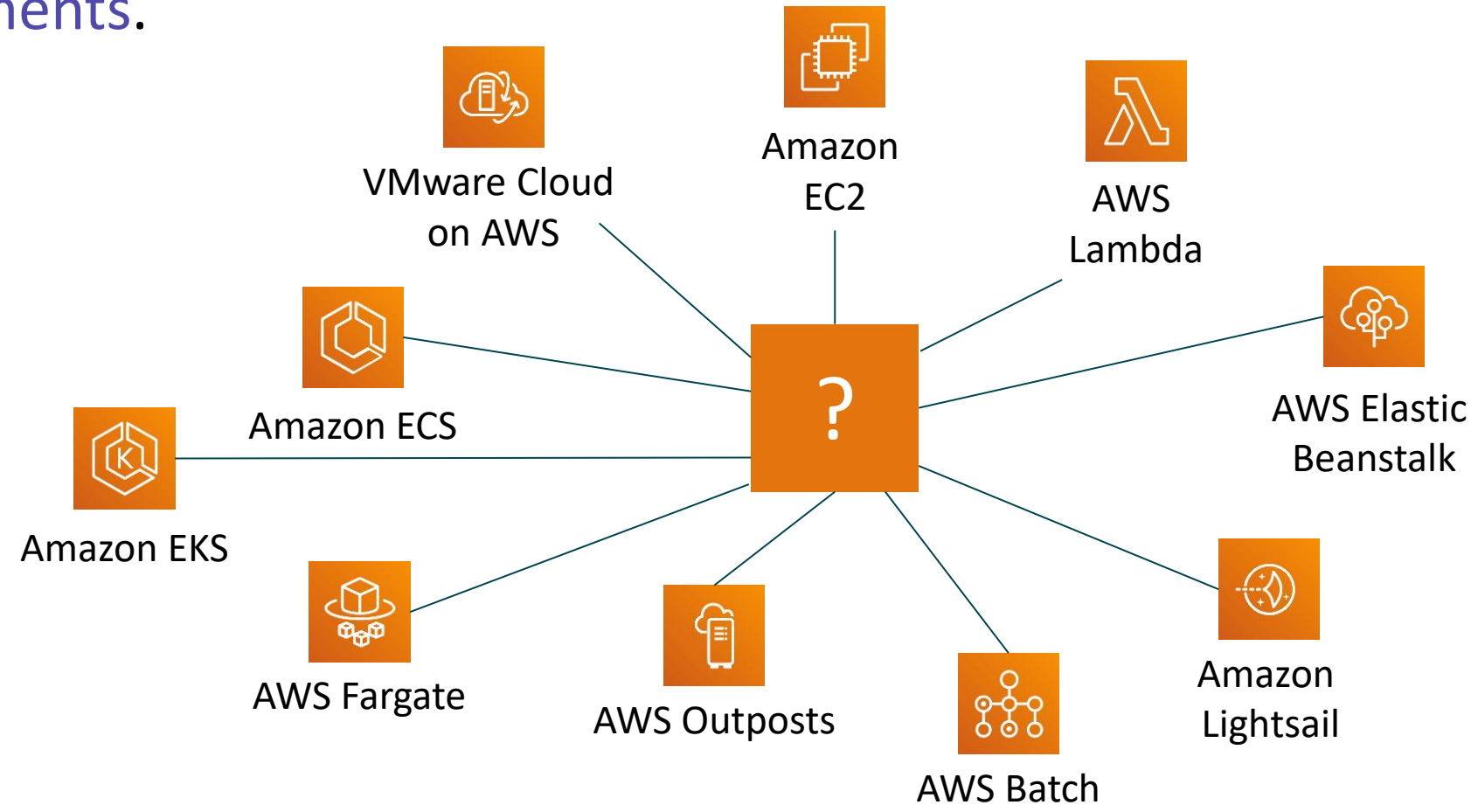

Storage

Simple solution example



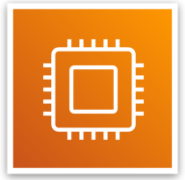
Choosing a service

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

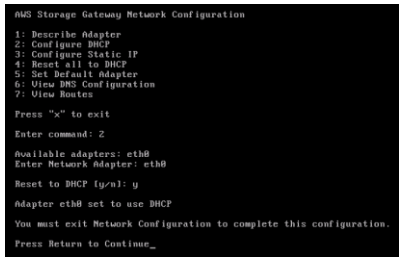
AWS Cost Management services –

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

Three ways to interact with AWS

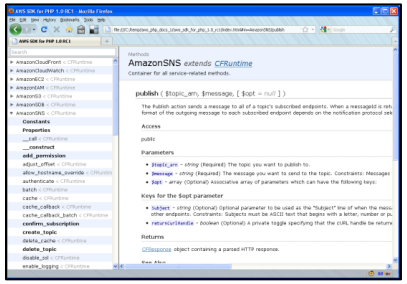
AWS Management Console

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.

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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