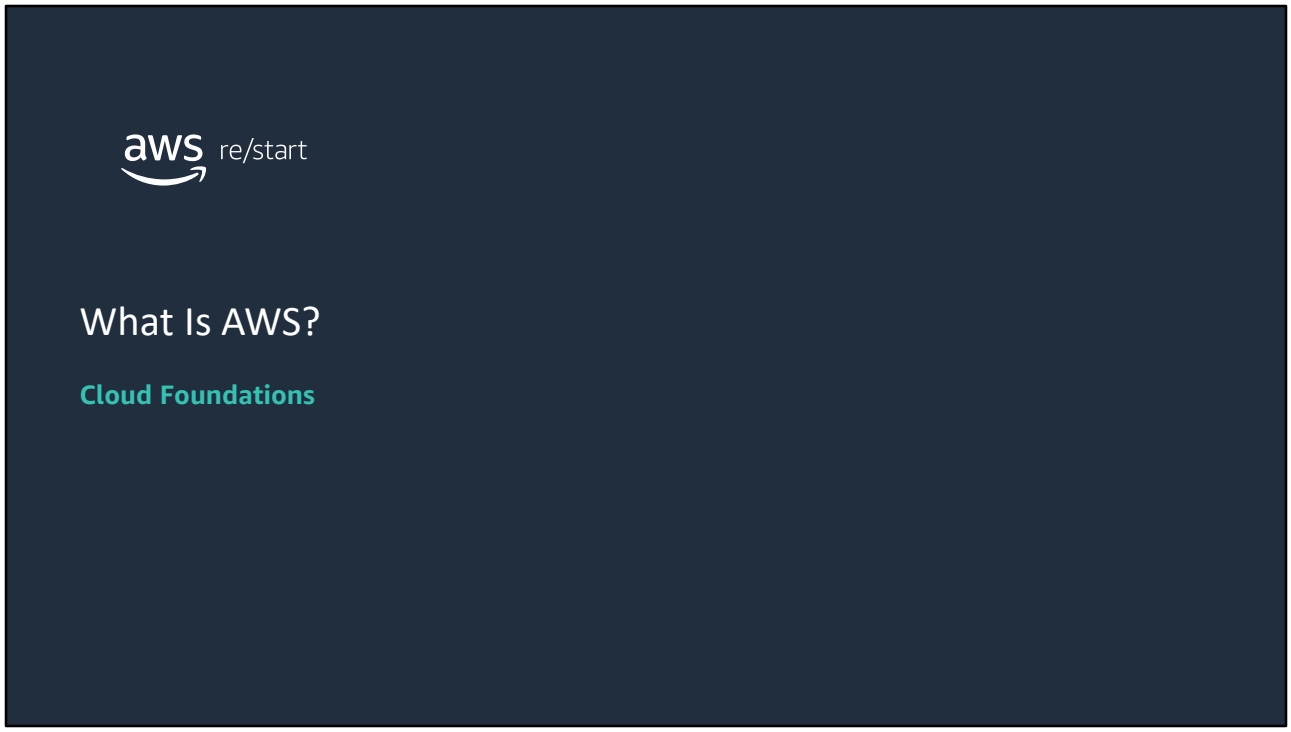

Welcome to What Is AWS?

What you will learn

At the core of the lesson

You will learn how to do the following:

- Explain, in general, what a web service is.
- Explore the main services that Amazon Web Services (AWS) offers.
- Examine ways to access AWS services.
- Navigate the AWS documentation website.

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In this module, you will learn about Amazon Web Services (AWS) and the products and services that are available. You will also learn how to access AWS services and use the AWS documentation.

Web services

Question

Think about your understanding of the models of cloud computing.

What are the three models of cloud computing?

as a service	as a service	as a service

Answer

The following are the three models of cloud computing:

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AWS offers three different models of cloud services: infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). All of these services are on the AWS Cloud.

With IaaS, you manage the server, which can be physical or virtual, and the operating system (Microsoft Windows or Linux). In general, the data center provider has no access to your server.

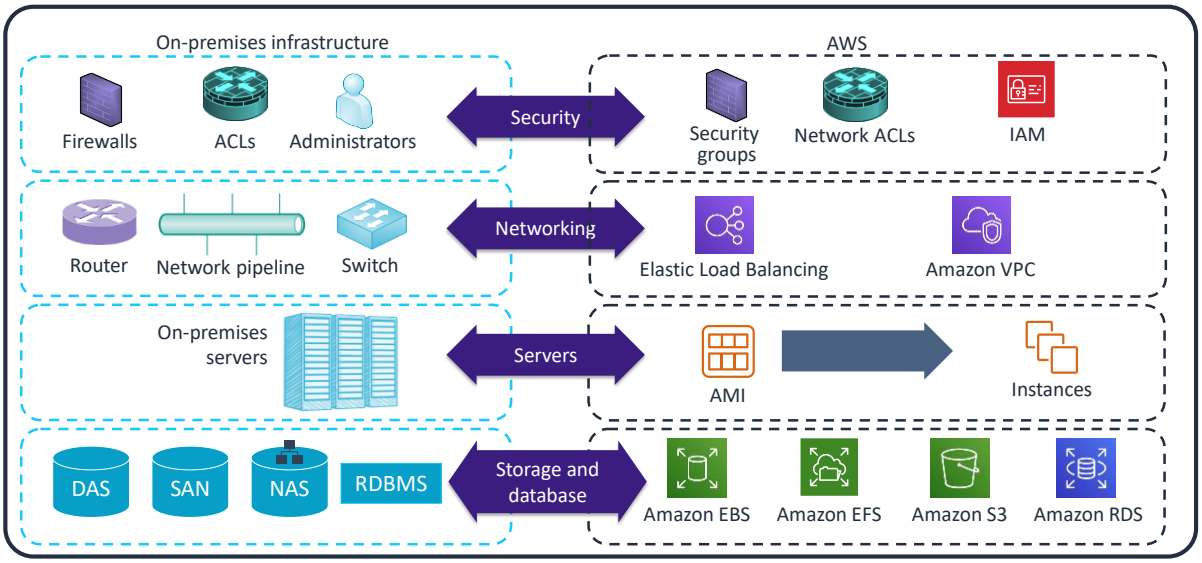
Basic building blocks for cloud IT include the following:

- Networking features
- Compute
- Data storage space

With PaaS, someone else manages the underlying hardware and operating systems. Thus, you can run applications without managing underlying infrastructure (patching, updates, maintenance, hardware, and operating systems). PaaS also provides a framework for developers that they can build on to create customized applications.

With SaaS, you manage your files, and the service provider manages all data centers, servers, networks, storage, maintenance, and patching. Your concern is only the software and how you want to use it. You are provided with a complete product that the service provider runs and manages. Facebook and Dropbox are examples of SaaS. You manage your Facebook contacts and Dropbox files, and the service providers manage the systems.

Comparison: On-premises and AWS infrastructure



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Many AWS services have analogs in the traditional IT space and terminology. This side-by-side comparison shows how AWS products and services relate to a traditional infrastructure. Almost everything that you might want to do with a traditional data center is available with AWS.

Legend:

- Access control lists (ACLs)
- Amazon Elastic Block Store (Amazon EBS)
- Amazon Elastic File Store (Amazon EFS)
- Amazon Machine Image (AMI)
- Amazon Relational Database Service (Amazon RDS)
- Amazon Simple Storage Service (Amazon S3)
- Amazon Virtual Private Cloud (Amazon VPC)
- AWS Identity and Access Management (IAM)
- Direct-attached storage (DAS)
- Network access control lists (network ACLs)
- Network-attached storage (NAS)
- Relational database management system (RDBMS)
- Storage area network (SAN)

What are web services?

A web service is any piece of software that makes itself available over the internet.

It uses a standardized format, either Extensible Markup Language (XML) or JavaScript Object Notation (JSON), for the request and the response of an application programming interface (API) interaction.

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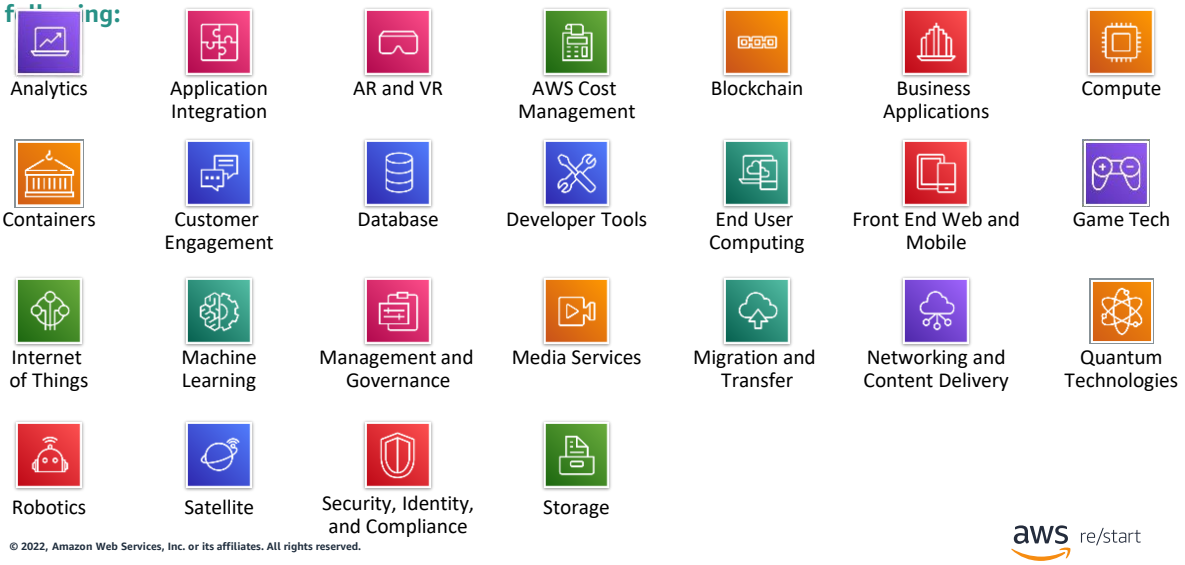
A web service is any piece of software that makes itself available over the internet or on private (intranet) networks. A web service uses a standardized format for the request and the response of an application programming interface (API) interaction. For example, formats such as Extensible Markup Language (XML) or JavaScript Object Notation (JSON) can be used. It's not tied to any one operating system (OS) or programming language. A web service is self-describing through an interface definition file and is discoverable.

AWS services

Definition of AWS

AWS is a secure cloud services provider with many different services that include solutions for the following:



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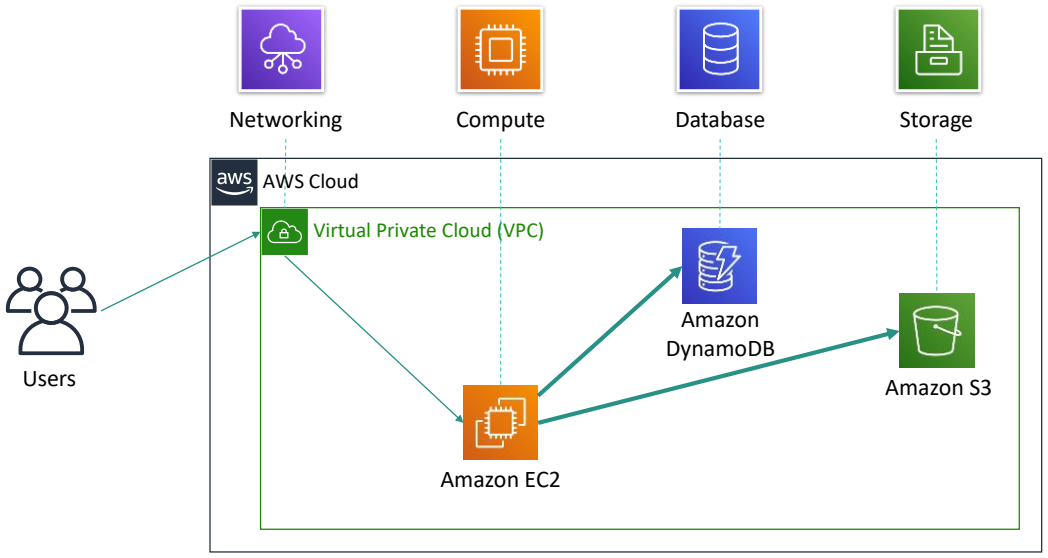
AWS is a secure cloud services provider with many services to help businesses scale and grow. These products are delivered over the internet. As a result, you have on-demand access to the compute, storage, network, database, and other IT resources that you might need for your projects. You also have the tools to manage them.

AWS services are in different categories, and each category contains one or more services. You can select the services that you want from these different categories to build your solutions.

Legend:

- Augmented reality (AR)
- Virtual reality (VR)

Easy solution example



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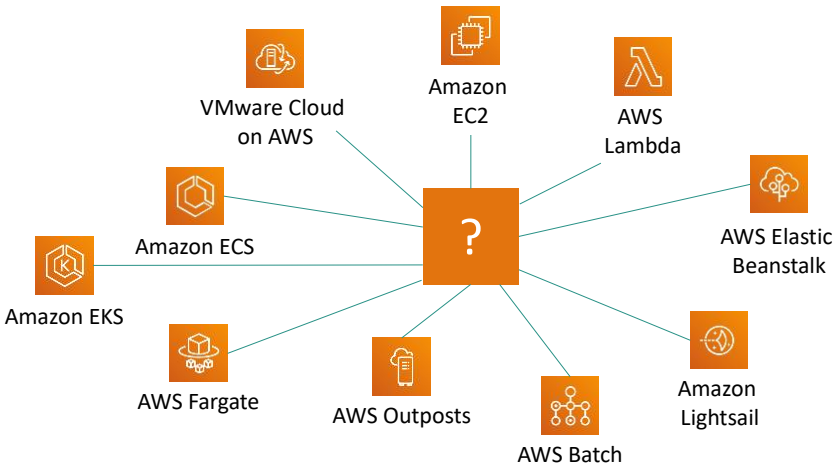
For example, suppose that you're building a database application. Your customers might send data to your Amazon Elastic Compute Cloud (Amazon EC2) instances, which is a service in the Compute category. These EC2 servers batch the data in 1-minute increments. They add an object per customer to Amazon Simple Storage Service (Amazon S3), the AWS storage service that you chose to use. You can then use a nonrelational database—such as Amazon DynamoDB—to power your application. You can use it to build an index to find all the objects from a given customer that were collected over a certain time period. You might decide to run these services inside Amazon Virtual Private Cloud (Amazon VPC), which is a service in the networking category.

This example illustrates that you can select web services from different categories and use them together to build a solution. (In this case, the solution is a database application.) However, the solutions that you build can also be quite complex.

Choosing a service

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



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The service that you choose to use will depend on your business goals and technology requirements. In the previous example, the solution used Amazon EC2 as the compute service. However, Amazon EC2 is only one of many compute services that AWS offers. The following list contains some other AWS Compute offerings that you might choose to use for the example use cases:

- Amazon EC2 at https://aws.amazon.com/ec2/ – You want complete control over your AWS computing resources.
- AWS Lambda at https://aws.amazon.com/lambda/ – You want to run your code and not manage or provision servers.
- AWS Elastic Beanstalk at https://aws.amazon.com/elasticbeanstalk/ – You want a service that deploys, manages, and scales your web applications for you.
- Amazon Lightsail at https://aws.amazon.com/lightsail/ – You need a lightweight cloud platform for an easy web application.
- AWS Batch at https://aws.amazon.com/batch/ – You must run hundreds of thousands of batch workloads.
- AWS Outposts at https://aws.amazon.com/outposts/ – You want to run AWS infrastructure in your on-premises data center.
- Amazon Elastic Container Service (Amazon ECS) at https://aws.amazon.com/ecs/, Amazon Elastic Kubernetes Service (Amazon EKS) at https://aws.amazon.com/eks/, or AWS Fargate at https://aws.amazon.com/fargate/ – You want to implement a containers or microservices architecture.

- VMware Cloud on AWS at https://aws.amazon.com/vmware/ – You have an on-premises server virtualization platform that you want to migrate to AWS.

Similarly, you can choose from various services in the other categories, and the number of offerings continues to grow.

Commonly used services

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

Database services:
- Amazon RDS
- Amazon DynamoDB
- Amazon Redshift
- Amazon Aurora

Security, Identity, and Compliance services:
- 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 and Usage Report
- AWS Budgets
- AWS Cost Explorer

aws re/start

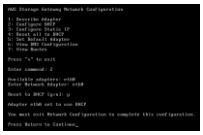
The array of AWS services can be intimidating as you start your journey into the cloud. This course focuses on some of the more common services in specified categories. The service categories include Compute; Storage; Database; Networking and Content Delivery; Security, Identity, and Compliance; Management and Governance; and AWS cost management.

Legend:
- Amazon Elastic Block Store (Amazon EBS)
- Amazon Elastic Compute Cloud (Amazon EC2)
- Amazon Elastic Container Registry (Amazon ECR)
- Amazon Elastic Container Service (Amazon ECS)
- Amazon Elastic File System (Amazon EFS)
- Amazon Elastic Kubernetes Service (Amazon EKS)
- Amazon Relational Database Service (Amazon RDS)
- Amazon Simple Storage Service (Amazon S3)
- Amazon Simple Storage Service Glacier
- Amazon Virtual Private Cloud (Amazon VPC)
- AWS Identity and Access Management (IAM)
- AWS Key Management Service (AWS KMS)

Three ways to interact with AWS

AWS Management Console

- The console includes an easier-to-use graphical interface.
- You can access the console on a mobile app.



AWS Command Line Interface (AWS CLI)

With the AWS CLI, you have access to services by discrete commands or scripts.

AWS Software Development Kits (SDKs)

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

aws re/start

You might wonder how to access the broad array of services that AWS offers. You can create and manage resources on the AWS Cloud in three ways:

- AWS Management Console – The console provides a rich graphical interface to a majority of the features that AWS offers. (Occasionally, new features might not have all of their capabilities included in the console when the feature initially launches.) For mobile access, you can use the AWS Console Mobile App to quickly view AWS resources anytime from anywhere.
- AWS Command Line Interface (AWS CLI) – The AWS CLI provides a suite of utilities that can be launched from a command script in Linux, macOS, or Microsoft Windows.
- AWS Software Development Kits (SDKs) – AWS provides packages that permit access to AWS in various popular programming languages. These packages facilitate the use of AWS in your existing applications. You can also use them to create applications that deploy and monitor complex systems entirely through code.

For more information, see the following links:

- AWS Console Mobile Application at https://aws.amazon.com/console/mobile/
- AWS CLI at https://docs.aws.amazon.com/cli/latest/userguide/cli-chap-welcome.html
- Tools to Build on AWS at https://aws.amazon.com/tools/
- Amazon API Gateway at

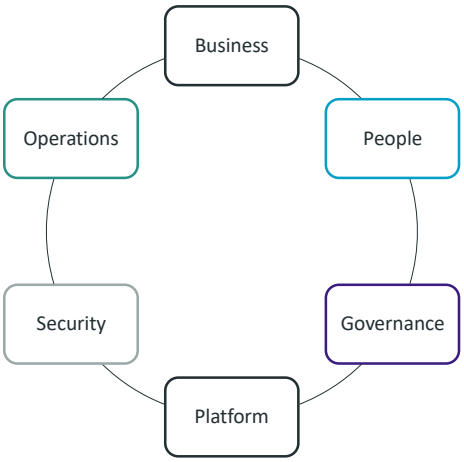
https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html

AWS Cloud Adoption Framework (AWS CAF)

AWS CAF provides the following:

- Guidelines for establishing, developing, and running AWS environments
- Perspectives in planning, creating, managing, and supporting a modern IT service
- Structure for business and IT teams to work together

Six core perspectives



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Each organization's cloud adoption journey is unique. However, for any organization to successfully migrate its IT portfolio to the cloud, three elements—people, process, and technology—must be in alignment. The AWS Cloud Adoption Framework (AWS CAF) helps organizations develop efficient and effective plans for their cloud adoption journey.

The guidance and best practices from the framework help you build a comprehensive approach to cloud computing across your organization and throughout your IT lifecycle. These guidelines help each unit in your organization update skills, adapt existing processes, and introduce new processes. In this way, you can take maximum advantage of the services that cloud computing provides.

The AWS CAF breaks down the complex process of planning a move to the cloud into manageable pieces that are called perspectives. Perspectives represent essential areas of focus that span people, processes, and technology. In general, the business, people, and governance perspectives focus on business capabilities. The platform, security, and operations perspectives focus on technical capabilities.

For more information about the AWS CAF, see *An Overview of the AWS Cloud Adoption Framework* at http://d0.awsstatic.com/whitepapers/aws_cloud_adoption_framework.pdf.

AWS documentation

AWS documentation information

- Find user guides, developer guides, API references, tutorials, and more.
  - For more information, see AWS Documentation.
- Technical papers and guides are also available, including these papers, which are recommended reading for the AWS Cloud Practitioner exam:
  - Overview of Amazon Web Services
  - Overview of Architecting for the Cloud: AWS Best Practices
  - Overview of How AWS Pricing Works
  - Overview of the Total Cost of (Non) Ownership of Web Applications in the Cloud

AWS provides extensive and detailed documentation for each AWS service. Guides and application programming interface (API) references are organized by service category. AWS also offers general resources and tutorials that can be accessed from the AWS documentation pages. General resources include case studies, an A–Z glossary of AWS terms, technical papers, FAQs, information about AWS Training and Certification, and more.

Also, each SDK and toolkit has documentation: the AWS Command Line Interface (AWS CLI), the AWS SDK for Python (Boto), and many others.

AWS technical papers and guides can be filtered by product, category, or industry so that you can find the information that's most relevant to your needs.

Activity: AWS documentation scavenger hunt

- Open the AWS Documentation
- Start from the main page.
- The following slides include five challenge questions for the class.

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In this educator-led activity, you are challenged to access the AWS documentation pages and practice locating specific information.

AWS documentation scavenger hunt: Question 1

- Question #1: What guides and references exist for the Amazon EC2 service?

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What guides and references exist for the Amazon EC2 service?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and see whether you can identify at least six guides or references.

AWS documentation scavenger hunt: Answer 1

- Question #1: What guides and references exist for the Amazon EC2 service?

- Answer
  - User Guides for Linux and Microsoft Windows
  - API Reference
  - AWS CLI Reference
  - Amazon EC2 Instance Connect Reference
  - User Guide for Auto Scaling
  - VM Import/Export User Guide

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What guides and references exist for the Amazon EC2 service?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and see whether you can identify at least six guides or references.

AWS documentation scavenger hunt: Question 2

- Question #2: Can you find the documentation that describes how to create an S3 bucket?

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Can you find the documentation that describes how to create an S3 bucket?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and figure out how to navigate to documentation that provides this information. Be prepared to discuss your findings with the class.

AWS documentation scavenger hunt: Answer 2

- Question #2: Can you find the documentation that describes how to create an S3 bucket?
- Answer
  - From AWS Documentation, choose S3.
  - Choose User Guide (HTML)
  - Choose Getting Started Guide.
  - Choose Create a Bucket.

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Can you find the documentation that describes how to create an S3 bucket?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and figure out how to navigate to documentation that provides this information. Be prepared to discuss your findings with the class.

AWS documentation scavenger hunt: Question 3

- Question #3: Can you find a one-sentence summary of the AWS Cloud9 service?

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Can you find a one-sentence summary of the AWS Cloud9 service?

Starting at the *AWS Documentation* page at https://docs.aws.amazon.com/, look for a page that provides the summary. Be prepared to share your findings.

AWS documentation scavenger hunt: Answer 3

- Question #3: Can you find a one-sentence summary of the AWS Cloud9 service?
- Answer
  - AWS Cloud9 is a cloud-based integrated development environment (IDE) that you use to write, run, and debug code.

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Can you find a one-sentence summary of the AWS Cloud9 service?

Starting at the *AWS Documentation* page at https://docs.aws.amazon.com/, look for a page that provides the summary. Be prepared to share your findings.

AWS documentation scavenger hunt: Question 4

- Question #4: Which programming languages does the service API for AWS Lambda support?

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Which programming languages does the service API for AWS Lambda service?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and figure out how to navigate to documentation that provides this information. Be prepared to discuss your findings with the class.

AWS documentation scavenger hunt: Answer 4

- Question #4: Which programming languages does the service API for AWS Lambda support?
- Answer
  - From the main AWS Documentation page, choose the AWS Lambda link.
  - Choose the API Reference link.
  - Choose Getting Started > Tools to find a table that lists the following languages: Node.js, Java, C#, Python, Ruby, Go, and PowerShell.

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Which programming languages does the service API for AWS Lambda service?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and figure out how to navigate to documentation that provides this information. Be prepared to discuss your findings with the class.

AWS documentation scavenger hunt: Question 5

- Question #5: Find the tutorial that describes how to run a serverless Hello World application, and then scroll through the documented steps. Which two AWS services does the tutorial direct you to use?

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Find the tutorial that describes how to run a serverless Hello World application, and then scroll through the documented steps. What two AWS services does the tutorial direct you to use?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and figure out how to navigate to documentation that provides this information. Be prepared to discuss your findings with the class.

AWS documentation scavenger hunt: Answer 5

- Question #5: Find the tutorial that describes how to run a serverless Hello World application, and then scroll through the documented steps. Which two AWS services does the tutorial direct you to use?

- Answer
  - From the main AWS Documentation page, choose Tutorials and Projects.
  - In the Websites & Web Apps area, choose the tutorial.
  - The tutorial directs you to use Lambda and Amazon CloudWatch.

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Find the tutorial that describes how to run a serverless Hello World application, and then scroll through the documented steps. What two AWS services does the tutorial direct you to use?

Open the *AWS Documentation* page at https://docs.aws.amazon.com/, and figure out how to navigate to documentation that provides this information. Be prepared to discuss your findings with the class.

Key takeaways

- AWS is a cloud services provider. AWS offers a broad set of global cloud-based products—which are also known as *services*—that are designed to work together.
- AWS offers many service categories, and each category has many services to choose from.
- Choose a service that is based on your business goals and technology requirements.
- You can interact with AWS services in three different ways.
- Use the AWS documentation as your main resource for help.

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The following are some key takeaways from this module:

- AWS is a cloud services provider. AWS offers a broad set of global cloud-based products—which are called *services*—that are designed to work together.
- Many categories of AWS services are available, and each category has many services to choose from.
- Choose a service based on your business goals and technology requirements.
- You can interact with AWS services in three different was.
- Use the AWS documentation as your main resource for help.

Thank you

Thank you for completing this module.