Course Introduction

AWS Academy Cloud Foundations

Module overview

Topics

- Course objectives and overview

- AWS certification exam information

- AWS Documentation

- What's new at AWS

Activities

- AWS Documentation scavenger hunt

Module objectives

After completing this module, you should be able to:

- Recognize the purpose of the AWS Academy Cloud Foundations course

- Recognize the course structure

- Recognize the AWS certification process

- Navigate the AWS Documentation website

- Explore new technologies at AWS

Section 1: Course objectives and overview

Course Introduction

Course prerequisites

- General Required Knowledge

  - IT technical knowledge

  - IT business knowledge

- Preferred Knowledge

  - Familiarity with cloud computing concepts

  - Working knowledge of distributed systems

  - Familiarity with general networking concepts

  - Working knowledge of multi-tier architectures

Course objectives

After completing this course, you should be able to:

- Define the AWS Cloud.

- Explain the AWS pricing philosophy.

- Identify the global infrastructure components of AWS.

- Describe security and compliance measures of the AWS Cloud including AWS Identity and Access Management (IAM).

- Create an AWS Virtual Private Cloud (Amazon VPC).

- Demonstrate when to use Amazon Elastic Compute Cloud (EC2), AWS Lambda and AWS Elastic Beanstalk.

- Differentiate between Amazon S3, Amazon EBS, Amazon EFS and Amazon S3 Glacier.

- Demonstrate when to use AWS Database services including Amazon Relational Database Service (RDS), Amazon DynamoDB, Amazon Redshift, and Amazon Aurora.

- Explain AWS Cloud architectural principles.

- Explore key concepts related to Elastic Load Balancing (ELB), Amazon CloudWatch, and Auto Scaling.

Course outline

- Module 1: Cloud Concepts Overview

- Module 2: Cloud Economics and Billing

- Module 3: AWS Global Infrastructure Overview

- Module 4: AWS Cloud Security

- Module 5: Networking and Content Delivery

- Module 6: Compute

- Module 7: Storage

- Module 8: Databases

- Module 9: Cloud Architecture

- Module 10: Automatic Scaling and Monitoring

Module 1: Cloud Concepts Overview

Module sections:

- Introduction to cloud computing

- Advantages of cloud computing

- Introduction to Amazon Web Services (AWS)

- Moving to the AWS Cloud – The AWS Cloud Adoption Framework (AWS CAF)

Module 2: Cloud Economics and Billing

Module sections:

- Fundamentals of pricing

- Total Cost of Ownership

- AWS Organizations

- AWS Billing and Cost Management

- Technical support

Module 3: AWS Global Infrastructure Overview

Module sections:

- AWS Global Infrastructure
- AWS services and service category overview

Module 4: AWS Cloud Security

Module sections:

- AWS shared responsibility model

- AWS Identity and Access Management (IAM)

- Securing a new AWS account

- Securing accounts

- Securing data on AWS

- Working to ensure compliance

Module 5: Networking and Content Delivery

Module sections:

- Networking basics

- Amazon VPC

- VPC networking

- VPC security

- Amazon Route 53

- Amazon CloudFront

Module 6: Compute

Module sections:

- Compute services overview

- Amazon EC2

- Amazon EC2 cost optimization

- Container services

- Introduction to AWS Lambda

- Introduction to AWS Elastic Beanstalk

Module 7: Storage

Module sections:

- Amazon Elastic Block Store (Amazon EBS)

- Amazon Simple Storage Service (Amazon S3)

- Amazon Elastic File System (Amazon EFS)

- Amazon Simple Storage Service Glacier

Module 8: Databases

Module sections:

- Amazon Relational Database Service (Amazon RDS)

- Amazon DynamoDB

- Amazon Redshift

- Amazon Aurora

Module 9: Cloud Architecture

Module sections:

- AWS Well-Architected Framework

- Reliability and availability

- AWS Trusted Advisor

Module 10: Automatic Scaling and Monitoring

Module sections:

- Elastic Load Balancing

- Amazon CloudWatch

- Amazon EC2 Auto Scaling

Section 2: AWS certification exam information

Course Introduction

AWS certification exams

*This course helps prepare you for the AWS **Cloud Practitioner** certification exam*

Available AWS Certifications

aws certified
Updated May 2019

Professional
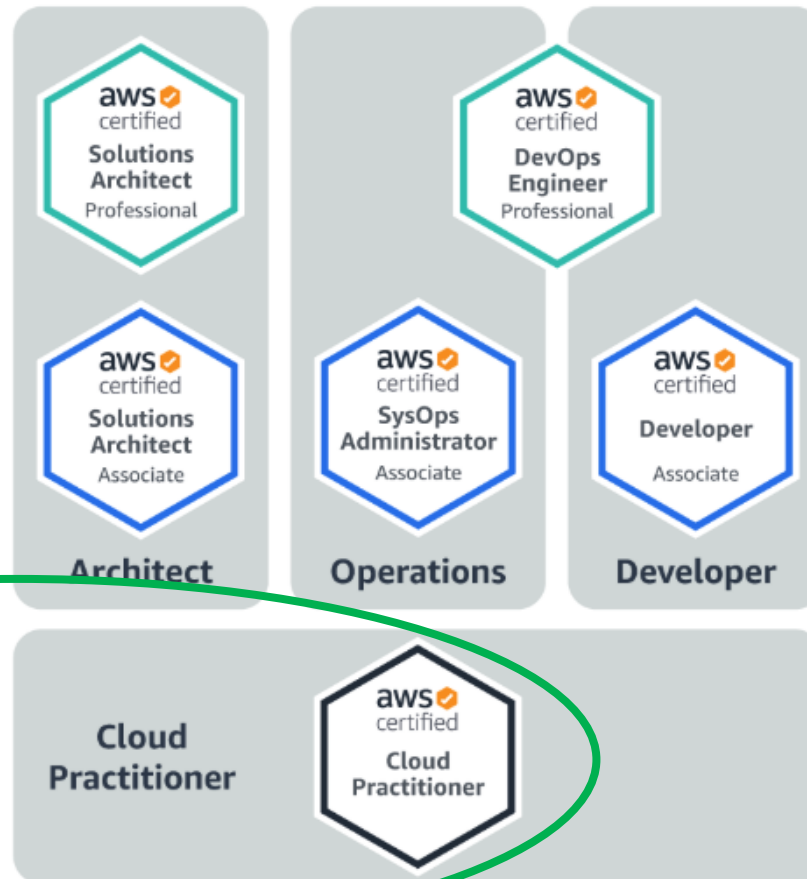**Two years** of comprehensive experience designing, operating, and troubleshooting solutions using the AWS Cloud

aws certified Solutions Architect Professional

aws certified DevOps Engineer Professional

Associate
One year of experience solving problems and implementing solutions using the AWS Cloud

aws certified Solutions Architect Associate

aws certified SysOps Administrator Associate

aws certified Developer Associate

Architect   **Operations**   **Developer**

Foundational
Six months of fundamental AWS Cloud and industry knowledge

Cloud Practitioner

aws certified Cloud Practitioner

Specialty
Technical AWS Cloud experience in the Specialty domain as specified in the **exam guide**

aws certified Advanced Networking Specialty

aws certified Big Data Specialty

aws certified Security Specialty

aws certified Machine Learning Specialty

aws certified Alexa Skill Builder Specialty

AWS Certified Cloud Practitioner exam

- Details about the exam—including how to register for it—are at
  https://aws.amazon.com/certification/certified-cloud-practitioner/

  - Download and carefully read the AWS Certified Cloud Practitioner Exam Guide at
    https://d1.awsstatic.com/training-and-certification/Docs - Cloud Practitioner/AWS_Certified_Cloud_Practitioner-Exam_Guide_EN_v1.6.pdf

  - Download the sample exam questions at https://d1.awsstatic.com/training-and-certification/Docs - Cloud Practitioner/AWS Certified Cloud Practioner_Sample Questions_v1.1_FINAL.PDF

- See the recommended path to attain the certification at https://aws.amazon.com/training/path-cloudpractitioner/

  - AWS Academy Cloud Foundations covers much of the same material found in the Cloud Practitioner Essentials course, but in greater depth.

  - There is additional free digital training available at https://www.aws.training/.

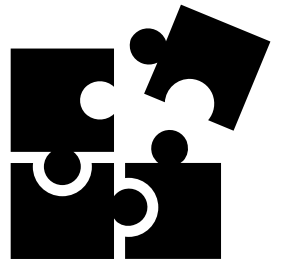# Section 3: AWS Documentation

Course Introduction

AWS Documentation

- Find user guides, developer guides, API references, tutorials, and more at https://docs.aws.amazon.com/

- **Whitepapers** are also available at https://aws.amazon.com/whitepapers/, including these which are recommended reading for the AWS Cloud Practitioner exam:

  - Overview of Amazon Web Services: https://d0.awsstatic.com/whitepapers/aws-overview.pdf

  - Architecting for the Cloud: AWS Best Practices: https://d1.awsstatic.com/whitepapers/AWS_Cloud_Best_Practices.pdf

  - How AWS Pricing Works: https://d0.awsstatic.com/whitepapers/aws_pricing_overview.pdf

  - The Total Cost of (Non) Ownership of Web Applications in the Cloud: https://media.amazonwebservices.com/AWS_TCO_Web_Applications.pdf

Activity - AWS Documentation Scavenger Hunt

- Navigate the AWS Documentation website
- Start from the main page at https://docs.aws.amazon.com
- Five challenge questions for the class appear in the following slides

AWS Documentation Scavenger Hunt – Question 1

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

AWS Documentation Scavenger Hunt – Question 1 Answer

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

- Answer https://docs.aws.amazon.com/ec2/?id=docs_gateway:

  - User Guides for Linux and Windows

  - API Reference

  - AWS CLI Reference

  - EC2 Instance Connect Reference

  - User Guide for Auto Scaling

  - VM Import/Export User Guide

AWS Documentation Scavenger Hunt – Question 2

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

AWS Documentation Scavenger Hunt – Question 2 Answer

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

- Answer https://docs.aws.amazon.com/AmazonS3/latest/gsg/CreatingABucket.html:

  - From https://docs.aws.amazon.com/ click **S3**

  - Click the **Getting Started Guide**

  - Click **Create a Bucket**

AWS Documentation Scavenger Hunt – Question 3

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

AWS Documentation Scavenger Hunt – Question 3 Answer

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

- Answer
  https://docs.aws.amazon.com/cloud9/?id=docs_gateway:

  - AWS Cloud9 is a cloud-based integrated development environment (IDE) that you use to write, run, and debug code.

AWS Documentation Scavenger Hunt – Question 4

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

AWS Documentation Scavenger Hunt – Question 4 Answer

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

- Answer https://docs.aws.amazon.com/lambda/latest/dg/gettingstarted-tools.html:

  - From the main AWS Documentation page, click the **AWS Lambda** link

  - Click the **API Reference** link

  - Click **Getting Started** > **Tools** to find a table that lists the following languages: **Node.js**, **Java**, **C#**, **Python**, **Ruby**, **Go**, and **PowerShell**

AWS Documentation Scavenger Hunt – Question 5

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

AWS Documentation Scavenger Hunt – Question 5 Answer

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

- Answer https://aws.amazon.com/getting-started/tutorials/run-serverless-code/:

  - From the main AWS Documentation page, click **Tutorials and Projects**

  - In the **Websites & Web Apps** area, click the tutorial.

  - The tutorial has you use **AWS Lambda** and **Amazon CloudWatch**.

What's new at AWS

Course Introduction

What is Amazon CodeWhisperer?

AI-powered code generator for IDEs and code editors

CodeWhisperer

- AI coding companion:
  - Generates code suggestions based on comments and existing code
  - Offers real-time support for code authoring directly within your integrated development environment (IDE)

- AI security scanner:
  - Helps identify hard-to-find vulnerabilities
  - References multiple standards and best practices

Content processed by CodeWhisperer Professional is not stored or used for service improvement.

Code generation

- Code suggestions

- Code completion

- Code generation from comments

- Alternate code suggestions

- Option to accept or reject

- Reference tracking for code that resembles open-source training data

```
1  import boto3
```

```
1  import boto3
2  # create an s3 bucket named cw95323
```

```
< 1/3 >  Accept   tab   Accept Word  ⌘  →  ...

2  # create an s3 bucket named cw95323
   s3 = boto3.resource('s3')
   s3.create_bucket(Bucket='cw59323')
   # upload a file to the bucket
```

Security scan

```
1  import boto3
2
3  def upload_file(bucket_name, file_path):
4      s3 = boto3.client('s3')
5      with open(file_path, 'rb') as file:
6          s3.upload_fileobj(file, bucket_name, file_path)
7      print("File uploaded.")
8
9  bucket_name = input("Enter bucket name: ")
10 file_path = input("Enter file path to upload: ")
11 upload_file(bucket_name, file_path)
```

PROBLEMS

⚠️ CWE-22 – Path traversal: Constructing path names with unsanitized user input can lead to...

Benefits of Amazon CodeWhisperer

Value to developers

- Increase velocity.

- Spend less time writing code.

- Receive help directly within your IDE.

- Find security vulnerabilities in your code.

Value to organizations

- Use at all experience levels.

- Support open-source attribution.

- Reduce the risk of security vulnerabilities.

- Increase code quality and developer productivity.

Module wrap-up

Course Introduction

Module summary

In summary, in this module, you learned how to:

- Recognize the purpose of the AWS Academy Cloud Foundations course
- Recognize the course structure
- Recognize the AWS certification process
- Navigate the AWS Documentation website
- Explore new technologies at AWS

Additional resources

- AWS Certification: https://aws.amazon.com/certification/

- AWS Certified Cloud Practitioner: https://aws.amazon.com/certification/certified-cloud-practitioner/

- AWS Documentation: https://docs.aws.amazon.com/

- "Getting started" in the *CodeWhisperer User Guide*: https://docs.aws.amazon.com/codewhisperer/latest/userguide/getting-started.html

- CodeWhisperer Resources: https://aws.amazon.com/codewhisperer/resources/

- Dive deep with the "Amazon CodeWhisperer – Getting Started" course on AWS Skill Builder: https://explore.skillbuilder.aws/learn/course/external/view/elearning/16405/amazon-codewhisperer-getting-started

- Learn how to build an event-driven serverless app: https://catalog.us-east-1.prod.workshops.aws/workshops/a33a5d69-1417-4d5f-acc9-ae5c7fba665b/en-US/

Thank you

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