Developing on AWS

Date and duration
Training code : AWS03EN Duration : 3 days Nombre d'heures : 21 heures
Training with certification
AWS Certified Developer Associate
Body

Cloud application development on AWS delivers unprecedented agility and scalability. This approach enables developers to leverage a wide range of AWS services to build robust and high-performing solutions. From managing storage and databases to integrating artificial intelligence, **AWS provides the tools needed to innovate and meet business requirement**s.
This intensive training will equip you with the practical skills to **master developing on AWS.** You will dive deep into AWS SDKs and the AWS CLI, and learn how to use them to interact with AWS services. Through **building a complete application**, you will discover how to configure permissions, integrate business logic, manage user access, and deploy your application to the cloud.
By the end of this **three-day program,** you will be able to design, develop, and deploy secure and scalable cloud applications on AWS. You will gain mastery of development best practices, microservices architectures, and DevOps principles to optimize your projects. This expertise will enable you to **meet the demands of modern cloud environments** and accelerate innovation within your organization.

As a premium Authorized Training Partner (ATP) recognized by Amazon Web Services, Oo2 offers qualifying and certifying training programs that meet AWS's rigorous quality standards.

Objectifs

By the end of the Developing on AWS training, you will be able to:

- Build a simple end-to-end cloud application using the AWS Software Development Kits (AWS SDKs), the AWS Command Line Interface (AWS CLI), and IDEs
- Configure AWS Identity and Access Management (IAM) permissions to manage a development environment
- Apply multiple programming models in your applications to access AWS services
- Use AWS SDKs to perform CRUD operations on Amazon S3 and Amazon DynamoDB resources
- Create AWS Lambda functions with additional service integrations for your web applications
- Understand the benefits of microservices and serverless architectures for application design
- Develop API Gateway components and integrate them with other AWS services

- Explain how Amazon Cognito controls user access to AWS resources
- Build a web application using Amazon Cognito to provide and control user access
- Apply DevOps methodologies to reduce risks associated with traditional application releases and identify AWS services that help implement DevOps practices
- Use the AWS Serverless Application Model (AWS SAM) to deploy an application
- Analyze your application's behavior using Amazon X-Ray
- Effectively prepare for the AWS Certified Developer – Associate exam

Points forts

- **Certified AWS Expert Instructors**: Learn from AWS-recognized and certified trainers with deep knowledge of cloud services and development best practices.
- **Interactive Hands-On Learning**: Master AWS development tools and techniques through real-world demonstrations and practical exercises. You will be prepared to tackle real-world challenges in cloud application development.
- **Key Skills Acquisition:** The training content is carefully designed to help you gain essential skills in designing, developing, deploying, and managing applications on the AWS platform.

Certification

This training provides intensive preparation for the AWS Certified Developer – Associate exam. At the end of the course, you will receive a voucher code to schedule your exam.

AWS DVA-C02 Exam Details:

- Format: Multiple-choice, 65 questions
- Duration: 130 minutes
- Delivery: Pearson VUE testing centers or AWS online proctoring platform
- Languages available: English, Japanese, Korean, Portuguese, Spanish, and Chinese
- Passing score: Minimum of 720 points

Upon passing the exam, you will earn the AWS Certified Developer – Associate certification and receive a digital badge.
Important to know: *The AWS Developer – Associate certification is valid for three years and requires recertification. Learn more about AWS certification renewal.*

Modalités d'évaluation

Practical Work

Pré-requis

Recommended Prerequisites for Attending this AWS Training:

- Completion of a training on the fundamentals of containerization
- Completion of a training on the core concepts and functionality of Amazon EKS
- Completion of the AWS Cloud Practitioner Essentials course, or equivalent professional experience
- Practical programming experience with Python, .NET, or Java

Public

This training is intended for the following audiences:

- Experienced software developers seeking to deepen their skills by leveraging AWS services to build cloud applications
- Cloud solutions architects responsible for designing and deploying application architectures on the AWS platform
- IT professionals looking to strengthen their expertise in AWS development and optimize the use of cloud services

Programme

Module 1: Introduction to the Course

- Overview of the course structure
- Distribution of official course materials
- Detailed explanation of the program
- Introductions and participant presentations

Module 2: Designing a Web Application on AWS

- Analyzing the reference application architecture
- Exploring essential AWS services
- Learning about storage, management, and hosting methods

Module 3: Getting Started with AWS Development

- Understanding programmatic access to AWS services
- Overview of programming models and their benefits (AWS SDKs, AWS CLI)
- Exploring the purpose and features of AWS Cloud9

Module 4: Configuring Development Permissions

- Overview of AWS Identity and Access Management (IAM) features and components
- Methods for testing IAM permissions
- Configuring IDEs and SDKs for a development environment
- Accessing AWS services via SDKs and AWS Cloud9

Labs: Setting up the Development Environment

- Connect to the development environment
- Verify IDE and AWS CLI installation and configuration with the application profile
- Validate required permissions for executing AWS CLI commands
- Assign an IAM policy to a role to allow deletion of an Amazon S3 bucket

Module 5: Developing with Amazon S3

- Core concepts of Amazon S3
- Data security options in Amazon S3
- Defining SDK dependencies for code integration
- Connecting to Amazon S3
- Managing request and response objects

Module 6: Managing Amazon S3 Storage Operations

- Executing bucket and object operations
- Managing large and multiple objects

- Creating and configuring an Amazon S3 bucket for static website hosting
- Granting temporary access to objects
- Performing S3 operations with SDKs

Labs: Developing Solutions with Amazon S3

- Programmatically interact with Amazon S3 using AWS SDKs and the AWS CLI
- Create a bucket with waiters and validate service exception codes
- Build requests to upload an object to S3 with metadata
- Build requests to download an object, process data, and upload the modified object
- Configure a bucket for website hosting and synchronize source files via the AWS CLI
- Add IAM bucket policies to allow public access to the S3 website

Module 7: Developing with Amazon DynamoDB

- Key DynamoDB components
- How to connect to DynamoDB
- Constructing a request object
- Reading a response object
- Common troubleshooting exceptions

Module 8: Managing DynamoDB Database Operations

- Writing programs to interact with DynamoDB (AWS SDKs)
- Performing CRUD operations on tables, indexes, and data
- Best practices for DynamoDB access in application development
- Caching options for performance improvement
- Performing DynamoDB operations using the SDK

Labs: Developing Solutions with Amazon DynamoDB

- Programmatic interaction with DynamoDB using low-level, document, and high-level APIs
- Retrieve items from a table using key attributes, filters, expressions, and pagination
- Populate a table by loading JSON objects from a file
- Query items in a table with key attributes, filters, expressions, and pagination
- Update items by adding new attributes and modifying data conditionally
- Access DynamoDB data using PartiQL and object persistence models when applicable

Module 9: Developing with AWS Lambda

- Building Lambda functions with SDKs
- Configuring triggers and permissions
- Testing, deploying, and monitoring Lambda functions

Labs: Developing Solutions with AWS Lambda Functions

- Programmatically create and interact with AWS Lambda functions using SDKs and the AWS CLI
- Configure Lambda functions to use environment variables and integrate with other services
- Generate Amazon S3 pre-signed URLs with SDKs and validate bucket object access
- Deploy Lambda functions with .zip archives via the IDE and test them
- Invoke Lambda functions using the AWS Console and AWS CLI

Module 10: Managing APIs with Amazon API Gateway

- Key API Gateway components
- Building API Gateway resources and integrating them with AWS services
- Configuring API request and response calls

- Testing API resources and deploying endpoints
- Creating API Gateway resources

Labs: Developing Solutions with Amazon API Gateway

- Create RESTful API Gateway resources and configure CORS for the application
- Integrate API methods with Lambda functions to process application data
- Configure mapping templates to transform data passed to methods
- Create request templates to validate data formats according to application rules
- Deploy the API Gateway to an environment and validate results with the API endpoint

Module 11: Designing a Modern Application

- Challenges of traditional architectures
- Microservices architecture and its benefits
- Approaches to microservices application design
- Decoupling monolithic applications
- Orchestrating Lambda functions with AWS Step Functions

Module 12: Securing User Access

- Evolution of security protocols
- Exploring authentication with Amazon Cognito
- Managing user access and authorization for serverless APIs
- Amazon Cognito best practices
- Integrating Amazon Cognito and analyzing JWT tokens

Labs: Building an Application from Scratch

- Create a user pool and an app client for a web application
- Add users and verify login with the Amazon Cognito CLI
- Configure API Gateway methods to use Amazon Cognito as an authorizer
- Validate JWT authentication token generation during API calls
- Rapidly develop API Gateway resources using Swagger import strategies
- Configure the web app interface to use Amazon Cognito and API Gateway settings and validate full functionality

Module 13: Deploying the Application

- Identifying risks of traditional software development
- Understanding DevOps methodology
- Configuring an AWS SAM template for serverless deployment
- Application deployment strategies
- Deploying a serverless application with AWS SAM

Module 14: Observing the Application

- Distinguishing between monitoring and observability
- Evaluating the need for observability and its key components
- Understanding the role of Amazon CloudWatch in observability
- Using CloudWatch Application Insights
- Using AWS X-Ray for debugging

Labs: Observing the Application with AWS X-Ray

- Instrument application code to use AWS X-Ray features
- Enable logging through the application deployment package

- Analyze the key components of an AWS SAM template and deploy the application
- Create AWS X-Ray service maps to observe end-to-end processing behavior
- Troubleshoot and debug application issues using AWS X-Ray traces and annotations

Module 15: Course Conclusion

- Review of key learning points
- Overview of additional AWS training and certifications
- Feedback session