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# Amazon Web Services Training Course Brochure

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# Amazon Web Services Training Course Brochure

# DevOps Engineering on Amazon Web Services

**Course Code**  AWS1979
**Duration**  3 days

## Overview

DevOps Engineering on AWS demonstrates how to use the most common DevOps patterns to develop, deploy and maintain applications on AWS. The course covers the core principles of the DevOps methodology and examines a number of use cases applicable to startup, small-medium business, and enterprise development scenarios.

## Audience

This course in intended for:

▶ System Administrators                        ▶ Software Developers

## Learning Objectives

By actively participating in this course, you will learn about the following:

▶ Using the principal concepts and practices behind the DevOps methodology.
▶ Designing and implementing an infrastructure on AWS that supports one or more DevOps development projects.
▶ Using AWS CloudFormation and AWS OpsWorks to deploy the infrastructure necessary to create development, test, and production environments for a software development project.
▶ Setting up Git on AWS and understanding the array of options for enabling a Continuous Integration environment on AWS.
▶ Using the core principles of Continuous Integration and Continuous Deployment.
▶ Implementing several common Continuous Deployment use cases using AWS technologies, including blue/green deployment and A/B testing.
▶ Distinguishing between the array of application deployment technologies available on AWS (including AWS CodeDeploy, AWS OpsWorks, AWS Elastic Beanstalk, and Amazon EC2 Container Service), and decide which technology best fits a given scenario.
▶ Fine tuning the applications you deliver on AWS for high performance and using AWS tools and technologies to monitor your application and environment for potential issues

## Pre-Requisites

▶ Attended our System Operations on AWS course (AWS4503)
▶ Attended our Developing on AWS course (AWS4504)
▶ Working knowledge of one or more high-level programming languages (C#, Java, PHP, Ruby, Python, etc.)
▶ Intermediate knowledge of administering Linux or Windows systems at the command-line level
▶ Working experience with AWS using both the AWS Management Console and the AWS Command Line Interface (AWS CLI)

## Course Contents

**Day 1**
- ▶ What is DevOps?
- ▶ Infrastructure as Code, Part 1: Design and Security
- ▶ Infrastructure as Code, Part 2: CloudFormation and Configuration Management

**Day 2**
- ▶ Continuous Integration in the Cloud
- ▶ Continuous Delivery on AWS
- ▶ Deploying Applications on AWS, Part 1

**Day 3**
- ▶ Deploying Applications on AWS, Part
- ▶ Putting It All Together
- ▶ Performance-Tuning Your Deployments
- ▶ Administering and Automating Your Infrastructure

## Exam Details

Exam vouchers can be ordered for your certification requirement.

# Advanced Architecting on Amazon Web Services

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|---|---|
| **Course Code** | AWS1980 |
| **Duration** | 3 days |

## Overview

Building on concepts introduced in Architecting on AWS (Amazon Web Services), Advanced Architecting on AWS is intended for individuals who are experienced with designing scalable and elastic applications on the AWS platform. Building on concepts introduced in Architecting on AWS, this course covers how to build complex solutions which incorporate data services, governance, and security on AWS. This course introduces specialized AWS services, including AWS Direct Connect and AWS Storage Gateway to support Hybrid architecture. It also covers designing best practices for building scalable, elastic, secure, and highly available applications on AWS.

## Audience

This course is intended for:

▶▶ Seasoned IT professionals who are already familiar with AWS services.

## Learning Objectives

By actively participating in this course, you will learn about the following:

▶▶ Managing multiple AWS accounts for your organization.
▶▶ Connecting on-premises datacenter to AWS cloud.
▶▶ Discussing billing implications of connecting multi-region VPCs.
▶▶ Moving large data from on-premises datacenter to AWS.
▶▶ Designing large datastores for AWS cloud.
▶▶ Understanding different architectural designs for scaling a large website.
▶▶ Protecting your infrastructure from DDoS attack.
▶▶ Securing your data on AWS with encryption.
▶▶ Designing protection of data-at-rest as well as data-in-flight.
▶▶ Enhancing the performance of your solutions.

## Pre-Requisites

▶▶ Attended our Amazon Web Services Technical Essentials course (AWS4501)
▶▶ Attended our Architecting on AWS course (AWS4502)
▶▶ Achieved AWS Certified Solutions Architect - Associate

# Course Contents

**Day 1**
- ▶▶ AWS Account Strategies
- ▶▶ Advanced Network Architecture
- ▶▶ Designing Large Datastores for AWS

**Day 2**
- ▶▶ Web Scale Applications
- ▶▶ Building Resilience
- ▶▶ Comprehensive Cloud Security

**Day 3**
- ▶▶ Encryption and Key Management on AWS
- ▶▶ Security Data on AWS
- ▶▶ Designing for Performance

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# Exam Details

Exam vouchers can be ordered for your certification requirement.

# Amazon Web Services Security Essentials

**Course Code**  AWS3337
**Duration**  1 day

## Overview

AWS Security Essentials covers fundamental AWS cloud security concepts, including AWS access control, data encryption methods, and how network access to your AWS infrastructure can be secured. Based on the AWS Shared Security Model, you learn where you are responsible for implementing security in the AWS Cloud and what security-oriented services are available to you and why and how the security services can help meet the security needs of your organization.  This course enables you to dive deep, ask questions, work through solutions, and get feedback from AWS-accredited instructors with deep technical knowledge. This is a fundamental level course and is a part of the AWS Security learning path.

## Audience

This course is intended for:

▶▶  IT business-level professionals interested in cloud security practices
▶▶  Security professionals with minimal working knowledge of AWS

## Learning Objectives

By actively participating in this course, you will learn about the following:

▶▶  Identifying security benefits and responsibilities when using the AWS Cloud.
▶▶  Describing the access control and management features of AWS.
▶▶  Understanding the different data encryption methods to secure sensitive data.
▶▶  Describing how to secure network access to your AWS resources.
▶▶  Determining which AWS services can be used for security logging and monitoring.

## Pre-Requisites

▶▶  Working knowledge of IT security practices and infrastructure concepts, familiarity with cloud computing concepts

## Course Contents

**Module 1: Security on AWS**
- Security design principles in the AWS Cloud
- AWS Shared Responsibility Model

**Module 2: Security OF the Cloud**
- AWS Global Infrastructure
- Data Center Security
- Compliance and Governance

**Module 3: Security IN the Cloud – Part 1**
- Identity and Access Management
- Data Protection
- Lab 01 – Introduction to Security Policies

**Module 4: Security IN the Cloud – Part 2**
- Securing your infrastructure
- Monitoring and detective controls
- Lab 02 – Securing VPC Resources with Security Groups

**Module 5: Security IN the Cloud – Part 3**
- DDoS mitigation • Incident response essentials
- Lab 03 – Automating Incident Response with AWS Config and AWS Lambda

**Module 6: Course Wrap Up**
- AWS Well-Architected tool overview

## Exam Details

This fundamental-level course is part of the AWS Training and Certification Security learning path but there is no exam directly related to this course

# Security Engineering on Amazon Web Services

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|---|---|
| **Course Code** | AWS3338 |
| **Duration** | 3 days |

## Overview

Security Operations on AWS demonstrates how to efficiently use AWS security services to stay secure and compliant in the AWS cloud. The course focuses on the AWS-recommended security best practices that you can implement to enhance the security of your data and systems in the cloud. The course highlights the security features of AWS key services including compute, storage, networking, and database services. This course also refers to the common security control objectives and regulatory compliance standards and examines use cases for running regulated workloads on AWS across different verticals, globally. You will also learn how to leverage AWS services and tools for automation and continuous monitoring—taking your security operations to the next level.

## Audience

This course is intended for:

- Security engineers
- Security architects
- Security analysts
- Security auditors
- Individuals who are responsible for governing, auditing, and testing an organization's IT infrastructure, and ensuring conformity of the infrastructure to security, risk, and compliance guidelines

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Assimilating and leveraging the AWS shared security responsibility model.
- Manging user identity and accessing management in the AWS cloud.
- Using AWS security services such as AWS Identity and Access Management, Amazon Virtual Private Cloud, AWS Config, AWS CloudTrail, AWS Key Management Service, AWS CloudHSM, and AWS Trusted Advisor.
- Implementing better security controls for your resources in the AWS cloud.
- Managing and auditing your AWS resources from a security perspective.
- Monitoring and logging access and usage of AWS compute, storage, networking, and database services.
- Assimilating and leveraging the AWS shared compliance responsibility model.
- Identifying AWS services and tools to help automate, monitor, and manage security operations on AWS.
- Performing security incident management in the AWS cloud.

## Pre-Requisites

- Attended our AWS Security Essentials course (AWS3337)
- Experience with governance, risk, and compliance regulations and control objectives
- Working knowledge of IT security practices
- Working knowledge of IT infrastructure concepts

## Course Contents

**Day 1**
- Introduction to Cloud Security
- Security of the AWS Cloud
- Cloud Aware Governance and Compliance
- Identity and Access Management

**Day 2**
- Securing AWS Infrastructure Services
- Securing AWS Container Services
- Securing AWS Abstracted Services
- Using AWS Security Services

**Day 3**
- Data Protection in the AWS Cloud
- Building Compliant Workloads on AWS—Case Study
- Security Incident Management in the Cloud

## Exam Details
Exam vouchers can be ordered for your certification requirement.

# Data Warehousing on Amazon Web Services

**Course Code**    AWS4375

**Duration**    3 days

## Overview

Data Warehousing on AWS introduces you to concepts, strategies, and best practices for designing a cloud-based data warehousing solution using Amazon Redshift, the petabyte-scale data warehouse in AWS. This course demonstrates how to collect, store, and prepare data for the data warehouse by using other AWS services such as Amazon DynamoDB, Amazon EMR, Amazon Kinesis Firehose, and Amazon S3. Additionally, this course demonstrates how to use business intelligence tools to perform analysis on your data.

## Audience

This course is intended for:

- Database architects
- Database administrators
- Database developers
- Data analysts and scientists

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Discussing the core concepts of data warehousing.
- Evaluating the relationship between Amazon Redshift and other big data systems.
- Evaluating use cases for data warehousing workloads and reviewing case studies that demonstrate implementation of AWS data and analytic services as part of a data warehousing solution.
- Choosing an appropriate Amazon Redshift node type and size for your data needs.
- Discussing security features as they pertain to Amazon Redshift, such as encryption, IAM permissions, and database permissions.
- Launching an Amazon Redshift cluster and using the components, features, and functionality to implement a data warehouse in the cloud.
- Using other AWS data and analytic services, such as Amazon DynamoDB, Amazon EMR, Amazon Kinesis Firehose, and Amazon S3, to contribute to the data warehousing solution.
- Evaluating approaches and methodologies for designing data warehouses.
- Identifying data sources and assessing requirements that affect the data warehouse design.
- Designing the data warehouse to make effective use of compression, data distribution, and sort methods.
- Loading and unloading data and performing data maintenance tasks.
- Writing queries and evaluating query plans to optimize query performance.
- Configuring the database to allocate resources such as memory to query queues and defining criteria to route certain types of queries to your configured query queues for improved processing.
- Using features and services, such as Amazon Redshift database audit logging, Amazon CloudTrail, Amazon CloudWatch, and Amazon Simple Notification Service (Amazon SNS), to audit, monitor, and receive event notifications about activities in the data warehouse.
- Preparing for operational tasks, such as resizing Amazon Redshift clusters and using snapshots to back up and restore clusters.
- Using a business intelligence (BI) application to perform data analysis and visualization tasks against your data.

## Pre-Requisites

▶ Attended our AWS Technical Essentials course (AWS4501) or equivalent experience with AWS
▶ Familiarity with relational databases and database design concepts

## Course Contents

**Day 1**
▶ Course Introduction
▶ Introduction to Data Warehousing
▶ Introduction to Amazon Redshift
▶ Understanding Amazon Redshift Components and Resources
▶ Launching an Amazon Redshift Cluster

**Day 2**
▶ Reviewing Data Warehousing Approaches
▶ Identifying Data Sources and Requirements
▶ Designing the Data Warehouse
▶ Loading Data into the Data Warehouse

**Day 3**
▶ Writing Queries and Tuning Performance
▶ Maintaining the Data Warehouse
▶ Analyzing and Visualizing Data
▶ Course Summary

## Exam Details
Exam vouchers can be ordered for your certification requirement.

# Amazon Web Services Technical Essentials

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|---|---|
| **Course Code** | AWS4501 |
| **Duration** | 1 day |

## Overview

AWS Technical Essentials introduces you to AWS products, services, and common solutions. It provides you with fundamentals to become more proficient in identifying AWS services so that you can make informed decisions about IT solutions based on your business requirements and get started working on AWS.

## Audience

This course is intended for:

- ▶▶ Individuals responsible for articulating the technical benefits of AWS services to customers.
- ▶▶ Individuals interested in learning how to get started with using AWS.
- ▶▶ SysOps administrators, Solution Architects and developers interested in using AWS services.

## Learning Objectives

By actively participating in this course, you will learn about the following:

- ▶▶ Recognizing terminology and concepts as they relate to the AWS platform and navigating the AWS Management Console.
- ▶▶ Understanding the foundational services, including Amazon Elastic Compute Cloud (EC2), Amazon Virtual Private Cloud (VPC), Amazon Simple Storage Service (S3), and Amazon Elastic Block Store (EBS).
- ▶▶ Understanding the security measures AWS provides and key concepts of AWS Identity and Access Management (IAM).
- ▶▶ Understanding AWS database services, including Amazon DynamoDB and Amazon Relational Database Service (RDS).
- ▶▶ Understanding AWS management tools, including Auto Scaling, Amazon CloudWatch, Elastic Load Balancing (ELB), and AWS Trusted Advisor.

## Pre-Requisites

None

## Course Contents

- ▶▶ Introduction and History of AWS
- ▶▶ AWS Foundational Services: EC2, VPC, S3, EBS
- ▶▶ AWS Security, Identity, and Access Management: IAM
- ▶▶ AWS Databases: RDS, DynamoDB
- ▶▶ AWS Management Tools: Auto Scaling, CloudWatch, Elastic Load Balancing, Trusted Advisor

## Exam Details

Exam vouchers can be ordered for your certification requirement.

# Architecting on Amazon Web Services

**Course Code** AWS4502
**Duration** 3 days

## Overview

This course covers the fundamentals of building IT infrastructure on the AWS platform. Students learn how to optimize the AWS Cloud by understanding how AWS services fit into cloud-based solutions. In addition, students explore AWS Cloud best practices and design patterns for architecting optimal IT solutions on AWS, and build a variety of infrastructures in guided, hands-on activities. The course also covers how to create fledgling architectures and build them into robust and adaptive solutions.

The course is delivered using a combination of classroom training and hands-on labs. The hands-on activity allows you to test new skills and apply knowledge to your working environment through a variety of practical exercises.

## Audience

This course is intended for:

- Solutions Architects
- Solution Design Engineers
- Anyone who needs to understand the scope of cloud architectures

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Making architectural decisions based on AWS architectural principles and best practices.
- Leveraging AWS services to make your infrastructure scalable, reliable, and highly available.
- Leveraging AWS Managed Services to enable greater flexibility and resiliency in an infrastructure.
- Making an AWS-based infrastructure more efficient to increase performance and reduce costs.
- Using the Well-Architected Framework to improve architectures with AWS solutions.

## Pre-Requisites

- AWS Cloud Practitioner Essentials
- Working knowledge of distributed systems
- Familiarity with general networking concepts
- Working knowledge of multi-tier architectures
- Familiarity with cloud computing concepts
- Attend our AWS Technical Essentials course (AWS4501)

## Course Contents

- ▶▶ The Well-Architected Framework
- ▶▶ Networking with AWS
- ▶▶ Core AWS concepts, knowledge, and services, including designing your environment and making your environment highly available
- ▶▶ Event-driven scaling
- ▶▶ Automation
- ▶▶ Decoupling
- ▶▶ Serverless designs
- ▶▶ How to grow your architecture from small to extremely large

## Exam Details

Exam vouchers can be ordered for your certification requirement.

# Systems Operations on Amazon Web Services

**Course Code**  AWS4503

**Duration**  3 days

## Overview
System Operations on AWS is designed to teach those in a Systems Administrator or Developer Operations (DevOps) role how to create automatable and repeatable deployments of networks and systems on the AWS platform. The course covers the specific AWS features and tools related to configuration and deployment, as well as common techniques used throughout the industry for configuring and deploying systems.

## Audience
This course is intended for:

- System Administrators
- Software Developers, especially those in a Developer Operations (DevOps) role

## Learning Objectives
By actively participating in this course, you will learn about the following:

- Using standard AWS infrastructure features such as Amazon Virtual Private Cloud (VPC), Amazon Elastic Compute Cloud (EC2).
- Elastic Load Balancing, and Auto Scaling from the command line.
- Using AWS CloudFormation and other automation technologies to produce stacks of AWS resources that can be deployed in an automated, repeatable fashion.
- Building functioning virtual private networks with Amazon VPC from the ground up using the AWS Management Console.
- Deploying Amazon EC2 instances using command line calls and troubleshooting the most common problems with instances.
- Monitoring the health of Amazon EC2 instances and other AWS services.
- Managing user identity, AWS permissions, and security in the cloud.
- Managing resource consumption in an AWS account using tools such as Amazon CloudWatch, tagging, and Trusted Advisor.
- Selecting and implementing the best strategy for creating reusable Amazon EC2 instances.
- Configuring a set of Amazon EC2 instances that launch behind a load balancer, with the system scaling up and down in response to demand.
- Editing and troubleshooting a basic AWS CloudFormation stack definition.

## Pre-Requisites

- Background in either software development or systems administration
- Some experience with maintaining operating systems at the command line (shell scripting in Linux environments, cmd or PowerShell in Windows)
- Basic knowledge of networking protocols (TCP/IP, HTTP)

## Course Contents

**Day 1**
- System Operations on AWS Overview
- Networking in the Cloud
- Computing in the Cloud

**Day 2**
- Storage and Archiving in the Cloud
- Monitoring in the Cloud
- Managing Resource Consumption in the Cloud

**Day 3**
- Configuration Management in the Cloud
- Creating Scalable Deployments in the Cloud
- Creating Automated and Repeatable Deployments

## Exam Details

Exam vouchers can be ordered for your certification requirement.

# Developing on Amazon Web Services

**Course Code** AWS4504

**Duration** 3 days

## Overview

In this course you will learn how to use the AWS SDK to develop secure and scalable cloud applications, explore how to interact with AWS using code and also learn about key concepts, best practices and troubleshooting tips.

## Audience

This course is intended for intermediate-level software developers.

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Setting up the AWS SDK and developer credentials for Java, C#/.NET, Python and JavaScript.
- Interacting with AWS services and developing solutions by using the AWS SDK.
- Using AWS Identity and Access Management (IAM) for service authentication.
- Using Amazon Simple Storage Service (Amazon S3) and Amazon DynamoDB as data stores.
- Integrating applications and data by using AWS Lambda, Amazon API Gateway, Amazon Simple Queue Service (Amazon SQS), Amazon Simple Notification Service (Amazon SNS) and AWS Step Functions.
- Using Amazon Cognito for user authentication.
- Using Amazon ElastiCache to improve application scalability.
- Using containers in the development process.
- Leveraging the CI/CD pipeline to deploy applications on AWS.

## Pre-Requisites

- In-depth working knowledge of at least one high-level programming language
- Working knowledge of core AWS services and public cloud implementation

## Course Contents

- Introduction to AWS
- Introduction to Developing on AWS
- Introduction to AWS Identity and Access Management
- Developing Storage Solutions with Amazon S3
- Developing Flexible NoSQL Solutions with Amazon DynamoDB
- Developing Solutions with AWS Lambda
- Developing Solutions with Amazon API Gateway
- Developing Solutions with Amazon SQS and Amazon SNS
- Developing Event-Driven Solutions with AWS Step Functions
- Caching Information for Scalability
- Getting Started with Containers
- Developing Secure Solutions
- Deploying Secure Solutions
- Deploying Applications

## Exam Details

Exam vouchers can be ordered for your certification requirement.

# Advanced Developing on Amazon Web Services

**Course Code**   AWS4505
**Duration**      3 days

## Overview

The Advanced Developing on AWS course uses the real-world scenario of taking a legacy, on-premises monolithic application and refactoring it into a serverless microservices architecture. This three-day advanced course covers advanced development topics such as architecting for a cloud-native environment; deconstructing on-premises, legacy applications and repackaging them into cloud-based, cloud-native architectures; and applying the tenets of the Twelve-Factor Application methodology.

## Audience

This course is intended for experienced software developers who are already familiar with AWS services.

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Analyzing a monolithic application architecture to determine logical or programmatic break points where the application can be broken up across different AWS services.
- Applying Twelve-Factor Application manifesto concepts and steps while migrating from a monolithic architecture.
- Recommending the appropriate AWS services to develop a microservices based cloud native application.
- Using the AWS API, CLI, and SDKs to monitor and manage AWS services.
- Migrating a monolithic application to a microservices application using the 6 Rs of migration.
- Explaining the SysOps and DevOps interdependencies necessary to deploy a microservices application in AWS.

## Pre-Requisites

- In-depth knowledge of at least one high-level programming language
- Working knowledge of core AWS services and public cloud implementation
- Attend our Developing on AWS course (AWS4504), and then a minimum of 6 months of application of those concepts in a real world environment.

## Course Contents

- Interfacing with AWS Services
- Deconstructing a monolithic architecture
- Migrating to the cloud
- Creating an infrastructure
- Declare and isolate dependencies
- Storing configuration in the cloud
- Establish a build, release, run model
- Creating the codebase
- Deploying an application
- Evolution of architecture
- Design patterns
- I/O explosion and preventing it
- Microservices

## Exam Details

Exam vouchers can be ordered for your certification requirement.

# Big Data on Amazon Web Services

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|---|---|
| **Course Code** | AWS4509 |
| **Duration** | 3 days |

## Overview

Big Data on AWS introduces you to cloud-based big data solutions such as Amazon EMR, Amazon Redshift, Amazon Kinesis and the rest of the AWS big data platform. In this course, we show you how to use Amazon EMR to process data using the broad ecosystem of Hadoop tools like Hive and Hue. We also teach you how to create big data environments, work with Amazon DynamoDB, Amazon Redshift, Amazon Quicksight, Amazon Athena and Amazon Kinesis, and leverage best practices to design big data environments for security and cost-effectiveness.

## Audience

This course is intended for:
- Individuals responsible for designing and implementing big data solutions, namely Solutions Architects
- Data Scientists and Data Analysts interested in learning about the services and architecture patterns behind big data solutions on AWS

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Fit AWS solutions inside of a big data ecosystem
- Leverage Apache Hadoop in the context of Amazon EMR
- Identify the components of an Amazon EMR cluster
- Launch and configure an Amazon EMR cluster
- Leverage common programming frameworks available for Amazon EMR including Hive, Pig, and Streaming
- Leverage Hue to improve the ease-of-use of Amazon EMR
- Use in-memory analytics with Spark on Amazon EMR
- Choose appropriate AWS data storage options
- Identify the benefits of using Amazon Kinesis for near real-time big data processing
- Leverage Amazon Redshift to efficiently store and analyze data
- Comprehend and manage costs and security for a big data solution
- Secure a Big Data solution
- Identify options for ingesting, transferring, and compressing data
- Leverage Amazon Athena for ad-hoc query analytics
- Use visualization software to depict data and queries using Amazon QuickSight
- Orchestrate big data workflows using AWS Data Pipeline

## Pre-Requisites

We recommend that attendees of this course have the following prerequisites:

- Basic familiarity with big data technologies, including Apache Hadoop, MapReduce, HDFS, and SQL/NoSQL querying
- Students should complete the free Big Data Technology Fundamentals web-based training or have equivalent experience
- Working knowledge of core AWS services and public cloud implementation
- Students should complete the AWS Technical Essentials course or have equivalent experience
- Basic understanding of data warehousing, relational database systems, and database design

## Course Contents

**Day 1**
- Overview of Big Data
- Big Data Ingestion and Transfer
- Big Data Streaming and Amazon Kinesis

Lab 1: Using Amazon Kinesis to Stream and Analyze Apache Server Log Data

- Big Data Storage Solutions
- Big Data Processing and Analytics

Lab 2: Using Amazon Athena to Query Log Data From Amazon S3

**Day 2**
- Apache Hadoop and Amazon EMR

Lab 3: Storing and Querying Data on Amazon DynamoDB

- Using Amazon EMR
- Hadoop Programming Frameworks

Lab 4: Processing Server Logs With Hive on Amazon EMR

- Web Interfaces on Amazon EMR

Lab 5: Running Pig Scripts in Hue on Amazon EMR

- Apache Spark on Amazon EMR

Lab 6: Processing NY Taxi data using Spark on Amazon EMR

**Day 3**
- Amazon Redshift and Big Data
- Visualizing and Orchestrating Big Data

Lab 7: Using TIBCO Spotfire to Visualize Data

- Managing Big Data Costs
- Securing Your Amazon Deployments
- Big Data Design Patterns

## Exam Details
There is no exam relating directly to this course.

# Planning & Designing Databases on Amazon Web Services

| | |
|---|---|
| **Course Code** | AWS4510 |
| **Duration** | 3 days |

## Overview

In this course, you will learn about the process of planning and designing both relational and nonrelational AWS databases. It will teach you how to use workload requirements to define database design considerations and also explore the features and capabilities of the eight AWS database services. By the end of the course, you will be able to determine which AWS database service is right for your workloads and design the database to meet your requirements.

## Audience

This course is intended for

- Data engineers
- Solutions architects
- Developers
- IT professionals

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Apply database concepts, database management, and data modelling techniques
- Evaluate hosting databases on Amazon EC2 instances
- Evaluate relational AWS database services and their features (Amazon RDS, Amazon Aurora, and Amazon Redshift)
- Evaluate nonrelational AWS database services and their features (Amazon DocumentDB, Amazon DynamoDB, Amazon ElastiCache, Amazon Neptune, and Amazon QLDB)
- Examine how the design criteria apply to each service
- Apply management principles based on the unique features of each service

## Pre-Requisites

We recommend that attendees of this course have:
- Familiarity with AWS Database Services, equivalent to AWS Database Offerings digital training
- Understanding of database design concepts, and/or data modelling for relational or nonrelational databases
- Familiarity with cloud computing concepts
- Familiarity with general networking and encryption concepts
- Understanding of the three V's of data (volume, velocity, and variety)
- Familiarity with basic data analytics concepts, equivalent to Data Analytics Fundamentals digital training
- Understanding of general architecting best practices and the AWS Well-Architected Framework, equivalent to Architecting on AWS classroom training

# Course Contents

**Day One**

### Module 1: Database concepts and general guidelines
- Databases in the cloud
- Database design principles
- Transactional compliance

### Module 2: Database planning and design
- Workload requirements
- Design considerations

### Module 3: Databases on Amazon EC2
- Amazon EC2 for hosting databases

### Module 4: Purpose-built databases on Amazon EC2 and Amazon RDS
- The journey to AWS
- Data modelling basics

### Module 5: Amazon RDS
- Amazon RDS overview
- Amazon RDS distinguishing features
- Amazon RDS design considerations

Hands-on Lab: working with Amazon RDS databases

### Module 6: Amazon Aurora
- Amazon Aurora overview
- Amazon Aurora distinguishing features
- Amazon Aurora design considerations

**Day Two**

### Module 6: Amazon Aurora (continued)
- Hands-on Lab: working with Amazon Aurora databases

### Module 7: Amazon DocumentDB (with MongoDB compatibility)
- Amazon DocumentDB overview
- Amazon DocumentDB design considerations
- Amazon DocumentDB distinguishing features

Hands-on Lab: working with Amazon DocumentDB databases

### Module 8: Amazon DynamoDB
- Amazon DynamoDB overview
- Amazon DynamoDB data modelling
- Amazon DynamoDB distinguishing features
- Amazon DynamoDB design considerations

Hands-on Lab: working with Amazon DynamoDB

**Day Three**

**Module 9: Databases in Amazon Neptune**
- ➤ Amazon Neptune overview
- ➤ Amazon Neptune design considerations

**Module 10: Databases in Amazon Quantum Ledger Database (Amazon QLDB)**
- ➤ Amazon QLDB overview
- ➤ Amazon QLDB Design Considerations

**Module 11: Databases in Amazon ElastiCache**
- ➤ Amazon ElastiCache overview
- ➤ Amazon ElastiCache for Memcached
- ➤ Amazon ElastiCache for Redis

**Module 12: Data warehousing in Amazon Redshift**
- ➤ Amazon Redshift overview
- ➤ Amazon Redshift distinguishing features
- ➤ Amazon Redshift data modelling
- ➤ Amazon Redshift design considerations

Hands-on Lab: working with Amazon Redshift Clusters

**Module 13: Course Overview**

## Exam Details
There is no exam directly relating to this course.

# Developing Serverless Solutions on Amazon Web Services

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|---|---|
| **Course Code** | AWS4512 |
| **Duration** | 3 days |

## Overview

This course gives developers exposure to and practice with best practices for building serverless applications using AWS Lambda and other services in the AWS serverless platform. You will use AWS frameworks to deploy a serverless application in hands-on labs that progress from simpler to more complex topics. You will use AWS documentation throughout the course to develop authentic methods for learning and problem-solving beyond the classroom.

## Audience

This course is intended for Developers who have some familiarity with serverless and experience with development in the AWS Cloud.

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Apply event-driven best practices to a serverless application design using appropriate AWS services
- Identify the challenges and trade-offs of transitioning to serverless development, and make recommendations that suit your development organization and environment
- Build serverless applications using patterns that connect AWS managed services together, and account for service characteristics, including service quotas, available integrations, invocation model, error handling, and event source payload
- Compare and contrast available options for writing infrastructure as code, including AWS CloudFormation, AWS Amplify, AWS Serverless Application Model (AWS SAM), and AWS Cloud Development Kit (AWS CDK)
- Apply best practices to writing Lambda functions inclusive of error handling, logging, environment re-use, using layers, statelessness, idempotency, and configuring concurrency and memory
- Apply best practices for building observability and monitoring into your serverless application
- Apply security best practices to serverless applications
- Identify key scaling considerations in a serverless application, and match each consideration to the methods, tools, or best practices to manage it
- Use AWS SAM, AWS CDK, and AWS developer tools to configure a CI/CD workflow, and automate deployment of a serverless application
- Create and actively maintain a list of serverless resources that will assist in your ongoing serverless development and engagement with the serverless community

## Pre-Requisites

We recommend that attendees of this course have:
- Familiarity with the basics of AWS Cloud architecture
- An understanding of developing applications on AWS equivalent to completing the Developing on AWS classroom training
- Knowledge equivalent to completing the following serverless digital trainings: AWS Lambda Foundations and Amazon API Gateway for Serverless Applications

# Course Contents

**Day 1**

### Introduction
➥ Introduction to the application you will build
➥ Access to course resources (Student Guide, Lab Guide, and Online Course Supplement)

### Module 1: Thinking Serverless
➥ Best practices for building modern serverless applications
➥ Event-driven design
➥ AWS services that support event-driven serverless applications

### Module 2: API-Driven Development and Synchronous Event Sources
➥ Characteristics of standard request/response API-based web applications
➥ How Amazon API Gateway fits into serverless applications
➥ Try-it-out exercise: Set up an HTTP API endpoint integrated with a Lambda function
➥ High-level comparison of API types (REST/HTTP, WebSocket, GraphQL)

### Module 3: Introduction to Authentication, Authorization, and Access Control
➥ Authentication vs. Authorization
➥ Options for authenticating to APIs using API Gateway
➥ Amazon Cognito in serverless applications
➥ Amazon Cognito user pools vs. federated identities

### Module 4: Serverless Deployment Frameworks
➥ Overview of imperative vs. declarative programming for infrastructure as code
➥ Comparison of CloudFormation, AWS CDK, Amplify, and AWS SAM frameworks
➥ Features of AWS SAM and the AWS SAM CLI for local emulation and testing

### Module 5: Using Amazon EventBridge and Amazon SNS to Decouple Components
➥ Development considerations when using asynchronous event sources
➥ Features and use cases of Amazon EventBridge
➥ Try-it-out exercise: Build a custom EventBridge bus and rule
➥ Comparison of use cases for Amazon Simple Notification Service (Amazon SNS) vs. EventBridge
➥ Try-it-out exercise: Configure an Amazon SNS topic with filtering

### Module 6: Event-Driven Development Using Queues and Streams
➥ Development considerations when using polling event sources to trigger Lambda functions
➥ Distinctions between queues and streams as event sources for Lambda
➥ Selecting appropriate configurations when using Amazon Simple Queue Service (Amazon SQS) or Amazon Kinesis Data Streams as an event source for Lambda
➥ Try-it-out exercise: Configure an Amazon SQS queue with a dead-letter queue as a Lambda event source

### Hands-On Labs Day 1
➥ Hands-On Lab 1: Deploying a Simple Serverless Application
➥ Hands-On Lab 2: Message Fan-Out with Amazon EventBridge

**Day 2**

### Module 7: Writing Good Lambda Functions
- ▶▶ How the Lambda lifecycle influences your function code
- ▶▶ Best practices for your Lambda functions
- ▶▶ Configuring a function
- ▶▶ Function code, versions and aliases
- ▶▶ Try-it-out exercise: Configure and test a Lambda function
- ▶▶ Lambda error handling
- ▶▶ Handling partial failures with queues and streams

### Module 8: Step Functions for Orchestration
- ▶▶ AWS Step Functions in serverless architectures
- ▶▶ Try-it-out exercise: Step Functions states
- ▶▶ The callback pattern
- ▶▶ Standard vs. Express Workflows
- ▶▶ Step Functions direct integrations
- ▶▶ Try-it-out exercise: Troubleshooting a Standard Step Functions workflow

### Module 9: Observability and Monitoring
- ▶▶ The three pillars of observability
- ▶▶ Amazon CloudWatch Logs and Logs Insights
- ▶▶ Writing effective log files
- ▶▶ Try-it-out exercise: Interpreting logs
- ▶▶ Using AWS X-Ray for observability
- ▶▶ Try-it-out exercise: Enable X-Ray and interpret X-Ray traces
- ▶▶ CloudWatch metrics and embedded metrics format
- ▶▶ Try-it-out exercise: Metrics and alarms
- ▶▶ Try-it-out exercise: ServiceLens

### Hands-On Labs Day 2
- ▶▶ Hands-On Lab 3: Workflow Orchestration Using AWS Step Functions
- ▶▶ Hands-On Lab 4: Observability and Monitoring

**Day 3**

### Module 10: Serverless Application Security
- ▶▶ Security best practices for serverless applications
- ▶▶ Applying security at all layers
- ▶▶ API Gateway and application security
- ▶▶ Lambda and application security
- ▶▶ Protecting data in your serverless data stores
- ▶▶ Auditing and traceability

### Module 11: Handling Scale in Serverless Applications
- ▶▶ Scaling considerations for serverless applications
- ▶▶ Using API Gateway to manage scale
- ▶▶ Lambda concurrency scaling
- ▶▶ How different event sources scale with Lambda

### Module 12: Automating the Deployment Pipeline
- ▶▶ The importance of CI/CD in serverless applications
- ▶▶ Tools in a serverless pipeline
- ▶▶ AWS SAM features for serverless deployments
- ▶▶ Best practices for automation
- ▶▶ Course wrap-up

**Hands-On Labs Day 3**

▶▶ Hands-On Lab 5: Securing Serverless Applications

▶▶ Hands-On Lab 6: Serverless CI/CD on AWS

## Exam Details

There is no exam directly relating to this course.

# Migrating to Amazon Web Services

| | |
|---|---|
| **Course Code** | AWS4532 |
| **Duration** | 2 days |

## Overview

Migrating to AWS discusses how to plan and successfully migrate existing workloads to the AWS cloud. The course focuses on various cloud migration strategies with a detailed discussion on each phase of the migration process, including portfolio discovery, application migration planning and design, migration execution, and post-migration validation and application optimization. This course includes hands-on labs, group activities, and case studies to help reinforce the concepts learned.

## Audience

This course is intended for:

▶▶ IT professionals involved in projects related to migrating existing workloads to the AWS cloud
▶▶ Individuals who are part of an organization's cloud Center of Excellence (CoE)

## Learning Objectives

By actively participating in this course, you will learn about the following:

▶▶ Explaining the various cloud migration strategies.
▶▶ Assessing cloud migration readiness.
▶▶ Discovering your portfolio and planning for migration.
▶▶ Planning and designing your application migration strategy.
▶▶ Performing and validating application migration to the cloud.
▶▶ Optimizing your applications and operations after migrating to the cloud.

## Pre-Requisites

▶▶ Attended our AWS Cloud Practitioner Essentials (AWS4534) and Architecting on AWS (AWS4502) courses
▶▶ Certifications achieved (optional): AWS Certified Solutions Architect – Associate
▶▶ Familiarity with enterprise IT infrastructure (hardware and software)

## Course Contents

**Day 1**
- Migrating to AWS – An Overview
- Discovery, Analysis, and Planning
- Migration Planning and Design

**Day 2**
- Migration, Integration, and Validation
- Optimizing Applications and Operating in the AWS Cloud

## Exam Details
No exam required.

# Amazon Web Services Cloud Practitioner Essentials

| | |
|---|---|
| **Course Code** | AWS4534 |
| **Duration** | 1 day |

## Overview

The fundamental-level full day course is intended for individuals who seek an overall understanding of the AWS Cloud, independent of specific technical roles. It provides a detailed overview of cloud concepts, AWS services, security, architecture, pricing, and support. It includes lab exercises reinforcing some of the core concepts of the lecture. This course also helps you prepare for the AWS Certified Cloud Practitioner exam.

## Audience

This course is intended for:

- Sales
- Legal
- Marketing
- Business analysts

- Project managers
- AWS Academy students
- Other IT-related professionals

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Defining what the cloud is and how it works.
- Differentiating between cloud computing and deployment models.
- Describing the AWS Cloud value proposition.
- Describing the basic global infrastructure of the cloud.
- Comparing the different methods of interacting with AWS.
- Describing and differentiating between AWS service domains.
- Given a scenario, identifying an appropriate solution using AWS Cloud services.
- Describing the Well-Architected Framework.
- Describing basic AWS Cloud architectural principles.
- Explaining the Shared Responsibility model.
- Describing security services with the AWS cloud.
- Defining the billing, account management, and pricing models for the AWS platform.
- Identifying future services and developments built on the cloud.

## Pre-Requisites

- General IT technical knowledge
- General IT business knowledge

## Course Contents

- ▶▶ Introduction to the AWS Cloud
- ▶▶ Getting Started in the Cloud
- ▶▶ Building in the Cloud
- ▶▶ Security
- ▶▶ Pricing Models and Cloud Application Support
- ▶▶ Architecture

## Exam Details

Exam vouchers can be ordered for your certification requirement.

# Deep Learning on AWS

**Course Code**  AWS7375
**Duration**  1 day

## Overview

Deep Learning on AWS is a one-day course that introduces you to cloud-based Deep Learning (DL) solutions on Amazon Web Services (AWS). The training will detail how deep learning is useful and explain its different concepts. This course also teaches you how to run your models on the cloud using Amazon SageMaker, Amazon Elastic Compute Cloud (Amazon EC2)-based Deep Learning Amazon Machine Image (AMI) and MXNet framework. In addition, you will gain a better understanding of deploying your deep learning models using AWS services like AWS Lambda and Amazon EC2 Container Service (Amazon ECS) while designing intelligent systems on AWS, based on Deep Learning.

## Audience

This course is designed for

- Developers responsible for developing Deep Learning applications
- Developers who want to understand concepts behind Deep Learning and how to implement a Deep Learning solution on AWS

## Learning Objectives

By actively participating in this course, you will learn about the following:

- Define machine learning and deep learning.
- Identify the concepts in a deep learning ecosystem.
- Leverage Amazon SageMaker and MXNet programming framework for deep learning workloads
- Fit AWS solutions for deep learning deployments.

## Pre-Requisites

- Basic understanding of machine learning processes
- Basic understanding of AWS core services like Amazon EC2 and knowledge of AWS SDK
- Basic knowledge of a scripting language e.g. Python

# Course Contents

**Introduction to Machine Learning**

**Introduction to Deep Learning**

Lab 1: Setting up a Deep Learning AMI instance and running a multi-layer perceptron neural network model

**Introduction to MXNet on AWS**

Lab 2: Running a Convolutional Neural Network (CNN) model to predicting images using CIFAR 10 dataset

**Deploying Smart Applications on AWS**

Lab 3: Deploying a Deep Learning model for predicting images using AWS Lambda

# Exam Details
There is no exam directly relating to this course.

# Building Data Lakes on Amazon Web Services

| | |
|---|---|
| **Course Code** | AW7377 |
| **Duration** | 1 day |

## Overview

In this course, you will learn how to build an operational data lake that supports analysis of both structured and unstructured data. You will learn the components and functionality of the services involved in creating a data lake. You will use AWS Lake Formation to build a data lake, AWS Glue to build a data catalog, and Amazon Athena to analyze data. The course lectures and labs further your learning with the exploration of several common data lake architectures.

## Audience

This course is intended for Data platform engineers, Solutions architects, & IT professionals.

## Learning Objectives

By actively participating in this course, you will learn about the following:

- ▶▶ Apply data lake methodologies in planning and designing a data lake
- ▶▶ Articulate the components and services required for building an AWS data lake
- ▶▶ Secure a data lake with appropriate permission
- ▶▶ Ingest, store, and transform data in a data lake
- ▶▶ Query, analyze, and visualize data within a data lake

## Pre-Requisites

We recommend that attendees of this course have:

- ▶▶ One year of experience building data analytics pipelines or have completed the Data Analytics Fundamentals digital course

Recommended prerequisites:

- ▶▶ AWS4501 – AWS Technical Essentials

## Course Contents

**Module 1: Introduction to data lakes**
- ▶▶ Describe the value of data lakes
- ▶▶ Compare data lakes and data warehouses
- ▶▶ Describe the components of a data lake
- ▶▶ Recognize common architectures built on data lakes

**Module 2: Data ingestion, cataloging, and preparation**
- ▶▶ Describe the relationship between data lake storage and data ingestion
- ▶▶ Describe AWS Glue crawlers and how they are used to create a data catalog
- ▶▶ Identify data formatting, partitioning, and compression for efficient storage and query

Lab 1: Set up a simple data lake

**Module 3: Data processing and analytics**
- ▶▶ Recognize how data processing applies to a data lake
- ▶▶ Use AWS Glue to process data within a data lake
- ▶▶ Describe how to use Amazon Athena to analyze data in a data lake

**Module 4: Building a data lake with AWS Lake Formation**
- ▶▶ Describe the features and benefits of AWS Lake Formation
- ▶▶ Use AWS Lake Formation to create a data lake
- ▶▶ Understand the AWS Lake Formation security model

Lab 2: Build a data lake using AWS Lake Formation

**Module 5: Additional Lake Formation configurations**
- ▶▶ Automate AWS Lake Formation using blueprints and workflows
- ▶▶ Apply security and access controls to AWS Lake Formation
- ▶▶ Match records with AWS Lake Formation FindMatches
- ▶▶ Visualize data with Amazon QuickSight

Lab 3: Automate data lake creation using AWS Lake Formation blueprints
Lab 4: Data visualization using Amazon QuickSight

**Module 6: Architecture and course review**
- ▶▶ Post course knowledge check
- ▶▶ Architecture review
- ▶▶ Course review

## Exam Details
There is no exam directly relating to this course