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UK G-Cloud 13 Framework Agreement Amazon Web Services EMEA SARL, UK Branch (AWS) – Training Services Definition Document

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How to Use the AWS Service Definition Documents

To make it easier for customers to review AWS service content from the hundreds of individual AWS listings on the Digital Marketplace, AWS has grouped the descriptions from its listed services into bundled Service Definition Documents that describe the features of each family of AWS Cloud services. The AWS service families are:

- Cloud Compute Infrastructure Services (Lot 1 & 2)
- VMware Cloud on AWS (Lot 1)
- AWS Marketplace (Lot 2)
- Professional Services (Lot 3)
- Support Services (Lot 3)
- Training Services (Lot 3)
- AWS Managed Services (Lot 3)

This AWS Training Service Definition document describes the training workshops available to Customers on G-Cloud 13. Each training workshop has its own unique Digital Marketplace Service ID listing.

AWS has combined its training workshop descriptions into a consolidated document for ease of review by Customers. To access the different training courses through a Call-Off Contract, the Customer must reference each individual Digital Marketplace Service ID within the Call-Off Contract in order to enable that training course as an option that can be procured under their G-Cloud 13 Call-Off Contract. AWS would recommend that Customers list all AWS Training Services Digital Marketplace Service ID's in its Call-Off Contract to enable the option to access any training course flexibly during the term of the contract.

Once the G-Cloud 13 Call-Off Contract is executed with AWS, the parties would define the specific training course scope requirements (e.g. type and location of workshop, attendee numbers etc.) in one or more subsequent Statements of Work.

For a list of all AWS Digital Marketplace Service ID's, please contact an AWS account representative through aws-gcloud@amazon.com.

AWS Training Offerings – High-level overview

Take in-person and virtual training from instructors who teach your team in-demand cloud skills in a hands-on learning environment.

DOMAIN	LEVEL	COURSE TITLE	DESCRIPTION	DURATION
Cloud Foundations	Fundamental	_AWS Cloud Essentials for Business Leaders_	_Learn the fundamental concepts of cloud computing and how a cloud strategy can help companies meet business objectives. It explores the advantages and possibilities of cloud computing. It also introduces addresses concepts such as security and compliance to help facilitate better discussions with line of business (LOB) professionals and executives._	_0.5 day_
Cloud Foundations	Fundamental	_AWS Cloud Practitioner Essentials_	_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._	_1 day_
Cloud Foundations	Fundamental	_AWS Security Essentials_	_Learn about fundamental AWS Cloud security concepts, including AWS access control, data encryption methods, and how network access to your AWS infrastructure can be secured._	_1 day_
Cloud Foundations	Fundamental	_AWS Technical Essentials_	_Learn 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._	_1 day_
Architect	Intermediate	_Architecting on AWS_	_Learn the fundamentals of building IT infrastructure on AWS, and learn how to optimize the AWS Cloud by understanding AWS services and how they fit into cloud-based solutions. Architecting on AWS is available as an AWS Jam Session (AWS Jam is an additional 1-day gamified event to apply the skills you have learned in the course)_	_3 days / 4 days with AWS Jam_
Architect	Advanced	_Advanced Architecting on AWS_	_Building on Architecting on AWS, learn how to build complex solutions which incorporate data services, governance, and security on AWS. Advanced Architecting on AWS is available as an AWS Jam Session (AWS Jam is an additional 1-day gamified event to apply the skills you have learned in the course)_	_3 days / 4 days with AWS Jam_
Architect	Advanced	_Architecting on AWS - Accelerator_	_This course combines Architecting on AWS and Advanced Architecting on AWS to offer a comprehensive, immersive course in cloud architecture. It covers all aspects of how to architect for the cloud over five days._	_5 days_
Architect	Intermediate	_AWS Well-Architected Best Practices_	_Learn how to use the Well-Architected Review process and the AWS Well-Architected Tool to conduct reviews to identify high risk issues (HRIs)._	_1 day_

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Architect	Advanced	*Advanced AWS Well-Architected Best Practices*	*This course provides a deep dive into Amazon Web Services (AWS) best practices to help you perform effective and efficient AWS Well-Architected Framework Reviews. The course covers the phases of a review, including how to prepare, run, and get guidance after a review has been performed.*	*1 day*
Containers	Intermediate	*Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS)*	*Learn container management and orchestration for Kubernetes using Amazon EKS.*	*3 days*
Cost Management	Intermediate	*AWS Cloud Financial Management for Builders*	*Learn how to implement architectural best practices, explore cost optimization strategies, and design patterns to help you architect cost-efficient solutions on AWS.*	*3 days*
Cost Management	Fundamental	*AWS Cloud for Finance Professionals*	*Gain the foundational knowledge that you need to manage, optimize and plan your cloud spend, and influence your organization's builders to be more accountable and cost-conscious from an expert AWS instructor.*	*2 days*
Data Analytics	Intermediate	*Building Batch Data Analytics Solutions on AWS*	*Learn to build batch data analytics solutions using Amazon EMR, an enterprise-grade Apache Spark and Apache Hadoop managed service. You will learn how Amazon EMR integrates with open-source projects such as Hive, Hue, and HBase, and with AWS services such as AWS Glue and AWS Lake Formation.*	*1 day*
Data Analytics	Intermediate	*Building Data Analytics Solutions using Amazon Redshift*	*Dive deep into the Amazon Redshift service and the current thinking in building and operating data analytics pipelines to turn data into insights.*	*1 day*
Data Analytics	Intermediate	*Building Data Lakes on AWS*	*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 datalake.*	*1 day*
Data Analytics	Intermediate	*Data Warehousing on AWS*	*Learn concepts, strategies, and best practices for designing a cloud-based data warehousing solution using Amazon Redshift.*	*3 days*
Databases	Intermediate	*Planning and Designing Databases on AWS*	*Explore the key features of AWS database services and learn how to choose the appropriate AWS database service to meet your application's needs and requirements.*	*3 days*
Developer	Intermediate	*Developing on AWS*	*Learn how to use the AWS SDK to develop secure and scalable cloud applications. Developing on AWS is available as an AWS Jam Session (AWS Jam is an additional 1-day gamified event to apply the skills you have learned in the course)*	*3 days / 4 days with AWS Jam*
Developer	Advanced	*Advanced Developing on AWS*	*Learn how to take a legacy, on premise monolithic application and refactoring it into a serverless microservices architecture. Advanced Developing on AWS is available as an AWS Jam Session (AWS Jam is an additional 1-day gamified event to apply the skills you have learned in the course)*	*3 days / 4 days with AWS Jam*
DevOps Engineer	Intermediate	*DevOps Engineering on AWS*	*Learn the most common DevOps patterns to develop, deploy, and maintain applications on the AWS platform. DevOps Engineering on AWS is available as an AWS Jam Session (AWS Jam is an additional 1-day gamified event to apply the skills you have learned in the course)*	*3 days / 4 days with AWS Jam*

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Machine Learning	Intermediate	*Deep Learning on AWS*	*Learn cloud-based deep learning solutions on AWS, how deep learning is useful, and its different concepts.*	*1 day*
Machine Learning	Intermediate	*MLOps Engineering on AWS*	*This course stresses the importance of data, model and code to successful ML deployments. It will demonstrate the use of tools, automation, processes and teamwork in addressing the challenges associated with handoffs between data engineers, data scientists, software developers and operations.*	*3 days*
Machine Learning	Intermediate	*Practical Data Science with Amazon SageMaker*	*Learn how to solve a real-world use case with Machine Learning (ML) and produce actionable results using Amazon SageMaker.*	*1 day*
Machine Learning	Intermediate	*The Machine Learning Pipeline on AWS*	*Learn to build, train, evaluate, tune, and deploy an ML model using Amazon SageMaker to solve a business problem in a project-based learning environment.*	*4 days*
Migrate & Transfer	Intermediate	*Migrating to AWS*	*Learn cloud migration strategies with a detailed discussion on each phase of the process.*	*3 days*
Operations	Intermediate	*Systems Operations on AWS*	*Learn how to create automatable and repeatable deployments of networks and systems on the AWS platform. Systems Operations on AWS is available as an AWS Jam Session (AWS Jam is an additional 1-day gamified event to apply the skills you have learned in the course)*	*3 days / 4 days with AWS Jam*
Serverless	Intermediate	*Developing Serverless Solutions on AWS*	*Learn AWS Serverless Frameworks and how to build, secure, deploy, and manage modern serverless applications.*	*3 days*
Security	Intermediate	*AWS Security Best Practices*	*Learn how to implement security best practices. Learn about AWS security and control types and then deep dive on securing network infrastructure, compute security, and logging and alerting.*	*1 day*
Security	Intermediate	*AWS Security Governance at Scale*	*Learn how to automate your cloud governance so that you can retire manual processes through AWS security and governance services and concepts.*	*1 day*
Security	Intermediate	*Security Engineering on AWS*	*Learn how to efficiently use AWS security services to stay secure in the AWS Cloud. Security Engineering on AWS is available as an AWS Jam Session (AWS Jam is an additional 1-day gamified event to apply the skills you have learned in the course)*	*3 days / 4 days with AWS Jam*

AWS Jam

AWS Jam is a gamified event, with teams competing to score points by completing a series of challenges over the course of the day. Participants get to experience a wide range of AWS services in a series of real-world scenarios that represent common operational and troubleshooting tasks. The result is developing, enhancing, and validating team skillsets in the AWS Cloud through real-world problem solving, exploring new services, features, and understanding how they interoperate, and developing confidence and capability through team-building activities in a friendly competitive manner.

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AWS Foundational Courses

The following subsections describe foundational half or one-day courses that introduce users to the benefits and core services of the AWS Cloud.

AWS Cloud Essentials for Business Leaders

Course description

In this course, you will learn the fundamental concepts of cloud computing and how a cloud strategy can help companies meet business objectives. It explores the advantages and possibilities of cloud computing. It also introduces and addresses concepts such as security and compliance to help facilitate better discussions with line of business (LoB) professionals and executives.

Level	Duration	Format	Delivery method
Fundamental	4 hours	Instructor-led training	Classroom, virtual classroom, and private on-site training.

Course objectives

This course is you will learn to:
- Explain the role of information technology (IT) in an organization for business transformation
- Explain the customer value proposition for using the cloud across industries
- Define key characteristics of cloud computing
- Explain the cloud business model
- Identify key security practices of cloud computing
- Frame the cloud business value using the Cloud Value Framework

Intended audience

This course is intended for:
- Line of Business (LoB) owners and executives

Prerequisites

We recommend that attendees of this course have:
- No Prior IT or cloud experience required

AWS Cloud Essentials for Business Leaders course outline

Module 1: Course Introduction

Module 2: Information Technology for Business Transformation
- *Role of IT in an organization for business transformation*
- *Brief history of IT*
- *Legacy approach to IT*
- *What drives customers to move from traditional infrastructure to the cloud*

Module 3: Cloud Computing
- *Define cloud computing*
- *Key Characteristics of cloud technology*
- *The cloud business model*
- *Key security practices within the cloud*

Module 4: Business Value of the Cloud
- *The customer value proposition*
- *Identify who is using cloud computing*
- *Industry trends*
- *Customer examples*

Module 5: The Cloud Value Framework
- *Introduction to the Cloud Value Framework*
- *Cost savings*
- *Staff productivity*
- *Operational resilience*
- *Business agility*

Module 6: Business Value Activity
- *Using a fictional customer case study, we review and apply lessons learned from the course.*

AWS Cloud Practitioner Essentials

Course description

This fundamental-level course is intended for individuals who seek an overall understanding of the AWS Cloud, independent of specific technical roles. You will learn about AWS cloud concepts, AWS services, security, architecture, pricing, and support to build your AWS Cloud knowledge. Throughout the day there are hands-on lab exercises to reinforce some of the core concepts of the class. It also helps you prepare for the AWS Certified Cloud Practitioner exam.

Level	Modality	Duration
Fundamental	Instructor-led training and hands-on labs	1 day

Course objectives

In this course, you will learn how to:
- Summarize the working definition of AWS
- Differentiate between on-premises, hybrid-cloud and all-in cloud
- Describe the basic global infrastructure of the AWS Cloud
- Explain the six benefits of the AWS Cloud
- Describe and provide an example of the core AWS Services, including compute, network, databases and storage.
- Identify an appropriate solution using AWS Cloud services with various use cases
- Describe the Well-Architected Framework
- Explain the Shared Responsibility model
- Describe the core security services within the AWS Cloud
- Describe the basics of AWS Cloud migration
- Articulate the financial benefits of the AWS Cloud for an organization's cost management
- Define the core billing, account management, and pricing models
- Explain how to use pricing tools to make cost-effective choices for AWS Services

Intended audience

This course is intended for:
- Sales and Marketing
- Legal
- Business Analysts
- Project Managers
- AWS Academy students
- IT professionals

Prerequisites

We recommend that attendees of this course have:
- General IT Business knowledge
- General IT Technical knowledge

AWS Cloud Practitioner Essentials course outline

Module 1: Introduction to Amazon Web Services
- *Summarize the benefits of AWS*
- *Describe the differences on-demand delivery and cloud deployments*
- *Summarize the pay-as-you-go pricing model*

Module 2: Compute in the Cloud
- *Describe the benefits of Amazon Elastic Compute Cloud (Amazon EC2) at a basic level*
- *Identify the different Amazon EC2 Instance types*
- *Differentiate between the various billing options for Amazon EC2*
- *Describe the benefits of Amazon EC2 Auto Scaling*
- *Summarize the benefits of Elastic Load Balancing*
- *Summarize the difference between Amazon Simple Notification Service (Amazon SNS) and Amazon Simple Queue Services (Amazon SQS)*
- *Summarize additional AWS compute options*

Module 3: Global Infrastructure and Reliability
- *Summarize the benefits of the AWS Global Infrastructure*
- *Describe the basic concepts of Availability Zones*
- *Describe the benefits of Amazon CloudFront and Edge Locations*
- *Compare different methods of provisioning AWS services*

Module 4: Networking
- *Describe the basic concepts of networking*
- *Describe the difference between public and private networking resources*
- *Explain a virtual private gateway using a real-life scenario*
- *Explain a virtual private network (VPN) using a real-life scenario*
- *Describe the benefit of AWS Direct Connect*
- *Describe the benefit of hybrid deployments*
- *Describe the layers of security used in an IT Strategy*
- *Describe which services are used to interact with the AWS global network*

Module 5: Storage and Databases
- *Summarize the basic concept of storage and databases*
- *Describe the benefits of Amazon Elastic Block Store (Amazon EBS)*
- *Describe the benefits of Amazon Simple Storage Service (Amazon S3)*
- *Describe the benefits of Amazon Elastic File System (Amazon EFS)*
- *Summarize the various storage solutions*
- *Describe the benefits of Amazon Relational Database Service (Amazon RDS)*
- *Describe the benefits of Amazon DynamoDB*
- *Summarize various database services*

Module 6: Security
- *Explain the benefits of the shared responsibility model*
- *Describe Multi-factor authentication (MFA)*
- *Differentiate between AWS Identity and Access Management (IAM) security levels*
- *Describe security policies at a basic level*
- *Explain the benefits of AWS Organizations*

- *Summarize the benefits of compliance with AWS*
- *Explain the primary AWS security services at a basic level*

Module 7: Monitoring and Analytics
- *Summarize approaches to monitoring your AWS environment*
- *Describe the benefits of Amazon CloudWatch*
- *Describe the benefits of AWS CloudTrail*
- *Describe the benefits of AWS Trusted Advisor*

Module 8: Pricing and Support
- *Understand AWS pricing and support models*
- *Describe the AWS Free Tier*
- *Describe the key benefits of AWS Organizations and consolidated billing*
- *Explain the benefits of AWS Budgets*
- *Explain the benefits of AWS Cost Explorer*
- *Explain the primary benefits of the AWS Pricing Calculator*
- *Distinguish between various AWS Support Plans*
- *Describe the benefits of AWS Marketplace*

Module 9: Migration and Innovation
- *Understand migration and innovation in the AWS Cloud*
- *Summarize the AWS Cloud Adoption Framework (AWS CAF)*
- *Summarize the six key factors of a cloud migration strategy*
- *Describe the benefits of various AWS data migration solutions, such as AWS Snowcone, AWS Snowball and AWS Snowmobile*
- *Summarize the broad scope of innovative solutions that AWS offers*
- *Summarize the five pillars of the AWS Well-Architected Framework*

Module 10: AWS Certified Cloud Practitioner Basics
- *Determine resources for preparing for the AWS Certified Cloud Practitioner examination*
- *Describe benefits of becoming AWS Certified*

AWS Security Essentials

Course description

This course 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.

Level	Duration	Format	Delivery method
Fundamental	1 day	Instructor-led training and hands-on labs	Classroom, virtual classroom, and private on-site training.

Course objectives

This course is designed to teach you how to:
- Identify security benefits and responsibilities when using the AWS Cloud
- Describe the access control and management features of AWS
- Understand the different data encryption methods to secure sensitive data
- Describe how to secure network access to your AWS resources
- Determine which AWS services can be used for security logging and monitoring

Intended audience

This course is intended for:
- IT business-level professionals interested in cloud security practices
- Security professionals with minimal working knowledge of AWS

Prerequisites

We recommend that attendees of this course have:
- Working knowledge of IT Security practices and infrastructure concepts, familiarity with cloud computing concepts

AWS Security Essentials Course outline

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*

AWS Technical Essentials

Course description

AWS Technical Essentials introduces you to essential AWS services and common solutions. The course covers the fundamental AWS concepts related to compute, database, storage, networking, monitoring, and security. You will start working in AWS through hands-on course experiences. The course covers the concepts necessary to increase your understanding of AWS services, so that you can make informed decisions about solutions that meet business requirements. Throughout the course, you will gain information on how to build, compare, and apply highly available, fault tolerant, scalable, and cost-effective cloud solutions.

Level	Delivery method	Duration
Fundamental	Instructor-led training, hands-on labs, and group exercises	1 day

Course objectives

- In this course, you will learn how to:
- Describe terminology and concepts related to AWS Services
- Navigate the AWS Management Console
- Articulate the key concepts of AWS security measures and AWS Identity and Access Management (IAM)
- Distinguish among several AWS compute services, including Amazon Elastic Compute Cloud (Amazon EC2), AWS Lambda, Amazon Elastic Container Service (Amazon ECS), and Amazon Elastic Kubernetes Service (EKS).
- Understand AWS database and storage offerings, including Amazon Relational Database Service (Amazon RDS), Amazon DynamoDB, and Amazon Simple Storage Service (Amazon S3)
- Explore AWS networking services
- Access and configure Amazon CloudWatch monitoring features

Intended audience

- This course is intended for:
- Individuals responsible for articulating the technical benefits of AWS services
- Individuals interested in learning how to get started with using AWS
- SysOps Administrators, Solution Architects and Developers interested in using AWS services

Prerequisites

- We recommend that attendees of this course have:
- IT Experience
- Basic knowledge of common data center architectures and components (servers, networking, databases, applications, and so on)
- No prior cloud computing or AWS Experience required.

AWS Technical Essentials course outline

Module 1: AWS introduction to Amazon Web Services
- *Introduction to AWS Cloud*
- *Security in AWS Cloud*
- *Hosting the employee directory application in AWS*
- *Hands-on Lab: Introduction to AWS Identity and Access Management (IAM)*

Module 2: AWS Compute
- *Compute as a service in AWS*
- *Introduction to Amazon Elastic Compute Cloud*
- *Amazon EC2 Instance lifecycle*
- *AWS Container Service*
- *What is serverless?*
- *Introduction to AWS Lambda*
- *Choose the right compute service*
- *Hands-on Lab: Launch the Employee Directory Application on Amazon EC2*

Module 3: AWS Networking
- *Networking in AWS*
- *Introduction to Amazon Virtual Private Cloud (Amazon VPC)*
- *Amazon VPC Routing*
- *Amazon VPC Security*
- *Hands-on Lab: Create a VPC and Relaunch the Corporate Directory Application in Amazon EC2*

Module 4: AWS Storage
- *AWS Storage types*
- *Amazon EC2 instance storage and Amazon Elastic Block Store (Amazon EBS)*
- *Object Storage with Amazon S3*
- *Choose the right storage service*
- *Hands-on Lab: Create and Amazon S3 Bucket*

Module 5: Databases
- *Explore databases in AWS*
- *Amazon Relational Database Service*
- *Purpose-built databases*
- *Introduction to Amazon DynamoDB*
- *Choose the right AWS database service*
- *Hand-on Lab: Implement and manage Amazon DynamoDB*

Module 6: Monitoring, Optimization, and Serverless
- *Monitoring*
- *Optimization*
- *Alternate serverless employee's directory application architecture*
- *Hand-on Lab: Configure High Availability for your application*

Module 7: Course Summary

Skills Domain: AWS Architect

Architecting on AWS

Course description
This course focuses on the fundamentals of building IT infrastructure on the AWS platform. You will learn how to optimize the AWS Cloud by understanding AWS services and how they fit into cloud-based solutions. Best practices and design patterns are covered to help you architect optimal IT solutions on the AWS Cloud. Build and explore a variety of infrastructures through guided discussions and hands-on activity.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives
This course is designed to teach you how to:
- Make architectural decisions based on AWS architectural principles and best practices
- Leverage AWS services to make your infrastructure scalable, reliable, and highly available
- Leverage AWS Managed Services to enable greater flexibility and resiliency in an infrastructure
- Make an infrastructure based on AWS more efficient to increase performance and reduce costs
- Use the Well-Architected Framework to improve architectures with AWS solutions

Intended audience
This course is intended for:
- Solutions Architects
- Solution Design Engineers
- Anyone who needs to understand the scope of cloud infrastructures

Prerequisites
We recommend that attendees of this course have:
- Taken the *AWS Cloud Practitioner Essentials* classroom or digital training
- Working knowledge of distributed systems and multi-tier architectures
- Familiarity with general networking and cloud computing concepts

Architecting on AWS course outline

Day One

    Module 1: Introduction
- *The Well-Architected Framework*
- *AWS Global Infrastructure*

    Module 2: The simplest architectures
- *Amazon Simple Storage Service (Amazon S3)*

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- *Amazon S3 Glacier*
- *Choosing AWS Regions for your architectures*
- *Hands-on lab: Hosting a Static Website*

Module 3: Adding a compute layer
- *Amazon Elastic Compute Cloud (Amazon EC2)*
- *Amazon Machine Images (AMIs)*
- *Amazon Elastic Block Storage (Amazon EBS)*
- *Amazon Elastic File System (Amazon EFS)*
- *Amazon FSx*

Module 4: Adding a database layer
- *Database layer considerations*
- *Amazon Relational Database Service (Amazon RDS)*
- *Amazon DynamoDB*
- *AWS Database Migration Service (AWS DMS)*
- *Hands-on lab: Deploying a Web Application on AWS*

Module 5: Networking in AWS – Part 1
- *Amazon Virtual Private Cloud (Amazon VPC)*
- *Network security in the cloud*
- *Hands-on lab: Creating a VPC*

Day Two

Module 6: Networking in AWS – Part 2
- *AWS VPN connections*
- *AWS Direct Connect (DX)*
- *VPC peering*
- *AWS Transit Gateway*
- *Load balancing on AWS*
- *Amazon Route 53*

Module 7: AWS Identity and Access Management (IAM)
- *Account users and AWS IAM*
- *Federating users*
- *Amazon Cognito*
- *AWS Organizations*

Module 8: Elasticity, high availability, and monitoring
- *Amazon CloudWatch*
- *AWS CloudTrail*
- *Amazon EC2 Auto Scaling*
- *Scaling your databases*
- *Hands-on lab: Creating a highly available environment*

Module 9: Automation
- *AWS CloudFormation*
- *AWS Systems Manager*
- *AWS OpsWorks*
- *AWS Elastic Beanstalk*

- *Hands-on lab: Automating infrastructure deployment with AWS CloudFormation*

Day Three

Module 10: Caching
- *Caching on AWS with Amazon CloudFront*
- *Session management*
- *Amazon DynamoDB Accelerator (DAX)*
- *Amazon ElastiCache*

Module 11: Building decoupled architectures
- *On-Premise and cloud acquisition/deprecation cycles*
- *Cloud cost management tools including reporting, control and tagging*
- *Examples and analysis of the five pillars of cost optimization*

Module 12: Microservices and serverless architectures
- *Amazon Elastic Container Service (Amazon ECS)*
- *AWS Fargate*
- *AWS Lambda*
- *Amazon API Gateway*
- *AWS Step Functions*
- *Hands-on lab: Implementing a serverless architecture with AWS Managed Services*

Module 13: RTO/RPO and backup recovery setup
- *Disaster planning*
- *Data replication*
- *Recovery strategies*
- *AWS Storage Gateway*

Module 14: Optimization and review
- *Best practices for optimization*
- *Review questions*

Advanced Architecting on AWS

Course description

In this course, each module presents a scenario with an architectural challenge to be solved. You will examine available AWS services and features as solutions to the problem. You will gain insights by participating in problem-based discussions and learning about the AWS services that you could apply to meet the challenges. Over 3 days, the course goes beyond the basics of a cloud infrastructure and covers topics to meet a variety of needs for AWS customers. Course modules focus on managing multiple AWS accounts, hybrid connectivity and devices, networking with a focus on AWS Transit Gateway connectivity, container services, automation tools for continuous integration/continuous delivery (CI/CD), security and distributed denial of service (DDoS) protection, data lakes and data stores, edge services, migration options, and managing costs. The course concludes by presenting you with scenarios and challenging you to identify the best solutions.

Level	Delivery method	Duration
Advanced	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

This course is designed to teach you how to:

- Review the AWS Well-Architected Framework to ensure understanding of best cloud design practices by responding to poll questions while following a graphic presentation
- Demonstrate the ability to secure Amazon Simple Storage Service (Amazon S3) virtual private cloud (VPC) endpoint connections in a lab environment
- Identify how to implement centralized permissions management and reduce risk using AWS Organizations organizational units (OUs) and service control policies (SCPs) with AWS Single Sign-On
- Compare the permissions management capabilities of OUs, SCPs, and AWS SSO with and without AWS Control Tower to determine best practices based on use cases
- Discuss AWS hybrid network designs to address traffic increases and streamline remote work while ensuring FIPS140-2 Level 2, or Level 3 security compliance
- Explore the solutions and products available to design a hybrid infrastructure, including access to 5Gnetworks, to optimize service and reduce latency while maintaining high security for critical on-premises applications
- Explore ways to simplify the connection configurations between applications and high-performance workloads across global networks
- Demonstrate the ability to configure a transit gateway in a lab environment
- Identify and discuss container solutions and define container management options
- Build and test a container in a lab environment
- Examine how the AWS Developer tools optimize the CI/CD Pipeline with updates based on near-real-time data
- Identify the anomaly detection and protection services that AWS offers to defend against DDoS attacks
- Identify ways to secure data in transit, at rest, and in use with AWS Key Management Services (AWS KMS) and AWS Secrets Manager

- Determine the best data management solution based on frequency of access, and data query and analysis needs
- Set up a data lake and examine the advantages of this type of storage configuration to crawl and query data in a lab environment
- Identify solutions to optimize edge services to eliminate latency, reduce inefficiencies, and mitigate risks
- Identify the components used to automate the scaling of global applications using geolocation and traffic control
- Deploy and activate an AWS Storage Gateway file gateway and AWS DataSync in a lab environment
- Review AWS cost management tools to optimize costs while ensuring speed and performance
- Review migration tools, services, and processes that AWS provides to implement effective cloud operation models based on use cases and business needs
- Provide evidence of your ability to apply the technical knowledge and experience gained in the course to improve business practices by completing a Capstone Project

Intended audience

This course is intended for:
- Solution Architects
- Anyone who designs solutions for cloud infrastructures

Prerequisites

We recommend that attendees of this course have:
- Knowledge and experience with core AWS Services from Compute, Storage, Networking and AWS Identity and Access Management (IAM) Categories
- Attended **Architecting on AWS** classroom training **OR**
- Achieved the AWS Certified Solutions Architect – Associate certification **OR**
- Have at least 1-year experience operating AWS Workloads

Advanced Architecting on AWS course outline

Day One

Module 1: Reviewing Architecting Concepts
- *Group Exercise: Review **Architecting on AWS** Core best practices*
- *Lab1: Securing Amazon S3 VPC Endpoint Communications*

Module 2: Single to Multiple Accounts
- *AWS Organizations for multi-account access and permissions*
- *AWS SSO to simplify access and authentication across AWS accounts and third-party services*
- *AWS Control Tower*
- *Permissions, access, and authentication*

Module 3: Hybrid Connectivity
- *AWS Client VPC Authentication and control*
- *AWS Site-to-Site VPN*
- *AWS Direct Connect for hybrid public and private connections*

- *Increasing bandwidth and reducing cost*
- *Basic, high and maximum resiliency*
- *Amazon route 53 Resolver DNS Resolution*

Module 4: Specialized Infrastructure
- *AWS Storage Gateway solutions*
- *On-demand VMware Cloud on AWS*
- *Extending cloud infrastructure services with AWS Outposts*
- *AWS Local Zones for latency-sensitive workloads*
- *Your 5G network with and without AWS Wavelength*

Module 5: Connecting Networks
- *Simplifying private subnet connections*
- *VPC isolation with a shared services VPC*
- *Transit Gateway Network Manager and VPC Reachability Analyzer*
- *AWS Resource Access Manager*
- *AWS PrivateLink and endpoint services*
- *Lab 2: Configuring Transit Gateways*

Day Two

Module 6: Containers
- *Container solutions compared to virtual machines*
- *Docker benefits, components, solutions architecture, and versioning*
- *Container hosting on AWS to reduce cost*
- *Managed container service, Amazon Elastic Container Service (Amazon ECS) and Amazon Elastic Kubernetes Service (Amazon EKS)*
- *AWS Fargate*
- *Lab 3: Deploying an Application with Amazon EKS on Fargate*

Module 7: Continuous Integration /Continuous Delivery (CI/CD)
- *CI/CD Solutions and impact*
- *CI/CD automation with AWS CodePipeline*
- *Deployment Models*
- *AWS CloudFormation StackSets to improve deployment management*

Module 8: High Availability and DDoS Protection
- *Common DDoS attacks layers*
- *AWS WAF*
- *AWS WAF web access control lists (ACL's), real-time metrics, logs, security automation*
- *AWS Shield Advanced services and AWS DDoS Response Team (DRT) services*
- *AWS Network Firewall and AWS Firewall Manager to protect accounts at scale*

Module 9: Securing Data
- *What cryptography is, why you would use it and how you would use it*
- *AWS KMS*
- *AWS CloudHSM architecture*
- *FIPS 140-2 Level 2 and Level 3 encryption*
- *Secrets Manager*

Module 10: Large-Scale Data Stores
- *Amazon S3 data storage management including storage class, inventory, metrics, and policies*
- *Data lake vs. Data warehouse: Differences, benefits, and examples*
- *AWS Lake Formation solutions, security, and control*
- *Lab 4: Setting Up a Data Lake with Lake Formation*

Day Three

Module 11: Large-Scale applications
- *What edge services are and why you would use them*
- *Improve performance and mitigate risk with Amazon CloudFront*
- *Lambda@Edge*
- *AWS Global Accelerator: IP Addresses, intelligent traffic distribution and health checks*
- *Lab 5: Migrating an On-Premises NFS Share using AWS DataSync and Storage Gateway*

Module 12: Optimizing Cost
- *On-Premise and cloud acquisition/deprecation cycles*
- *Cloud cost management tools including reporting, control and tagging*
- *Examples and analysis of the five pillars of cost optimization*

Module 13: Migrating Workloads
- *Business drivers and the process for migration*
- *Successful customer practices*
- *The 7 Rs to migrate and modernize*
- *Migration tools and services from AWS*
- *Migrating databases and large data stores*
- *AWS Schema Conversion Tool (AWS SCT)*

Module 14: Capstone Project
- *Online Course Supplement (OCS) to review use cases, investigate data and answer architecting design questions about Transit Gateway, Hybrid Connectivity, Migration and Cost Optimization*

Architecting on AWS – Accelerator

Course description

This course combines *Architecting on AWS* and *Advanced Architecting on AWS* to offer a comprehensive, immersive course in cloud architecture. It covers all aspects of how to architect for the cloud over 5 days. You will learn how to design cloud architectures, starting small and working to large-scale enterprise level designs and everything in between. Starting with the Well Architected Framework, you will be immersed in AWS services like compute, storage, database, networking, security, monitoring, automation, optimization, benefits of de-coupling applications and serverless, building for resilience, and understanding costs. Using hands-on labs, you will apply knowledge from lectures to gain skills

Level	Delivery method	Duration
Advanced	Instructor-led training, hands-on labs, and group exercises	5 days

Course objectives

In this course, you will learn how to:
- Make architectural decisions based on AWS architectural principles and best practices
- Use AWS services to make your infrastructure scalable, reliable, and highly available
- Use AWS Managed Services to enable greater flexibility and resiliency in an infrastructure
- Make an AWS-based infrastructure more efficient to increase performance and reduce costs
- Use the Well-Architected Framework to improve architectures with AWS solutions

Intended audience

This course is intended for:
- Solutions Architects who are new to designing and building cloud architectures
- Data Center Architects who are migrating from on-premises environment to cloud architectures
- Other IT/cloud roles who want to understand how to design and build cloud architectures

Prerequisites

We recommend that attendees of this course have:
- Attended *AWS Technical Essentials* classroom training or have equivalent experience
- Working knowledge of distributed systems
- Familiarity with general networking concepts
- Working knowledge of multi-tier architectures
- Familiarity with cloud computing concepts

Architecting on AWS – Accelerator course outline

Day One
      Module 1: Introduction

- *The real story of AWS*
- *Well-Architected Framework*
- *Six advantages of the cloud*
- *Global infrastructure*

Module 2: The Simplest Architectures
- *Amazon Simple Storage Service (Amazon S3)*
- *Amazon S3 Glacier*
- *Choosing AWS regions for your architecture*
- *Hands-on lab: Static Website*

Module 3: Adding a Compute Layer
- *Amazon Elastic Compute Cloud (Amazon EC2)*
- *Storage solutions for instances*
- *Purchasing options such as dedicated host vs instances*

Module 4: Adding a Database Layer
- *Relational vs non-relational*
- *Managed databases*
- *Amazon Relational Database (Amazon RDS)*
- *Amazon Dynamo DB*
- *Amazon Neptune*
- *Hands-on lab: Deploying a web application on AWS*

Module 5: Networking in AWS Part 1
- *Amazon Virtual Private Cloud (Amazon VPC)*
- *CIDR and subnets*
- *Public vs private subnets*
- *NAT and internet gateway*
- *Security groups*

Day Two

Module 6: Networking in AWS Part 2
- *Virtual Private Gateway*
- *VPN*
- *Direct Connect*
- *VPC peering*
- *Transit Gateway*
- *VPC Endpoints*
- *Elastic Load Balancer*
- *Route 53*
- *Hands-on lab: Creating a VPC*

Module 7: AWS Identity and Access Management (IAM)
- *Account users and AWS IAM*
- *Federating Users*
- *Amazon Cognito*

Module 8: Organizations
- *Organizations*

- *Multiple account management*
- *Tagging strategies*

Module 9: Elasticity, High Availability, and Monitoring
- *Elasticity vs inelasticity*
- *Monitoring with CloudWatch, CloudTrail, and VPC Flow Logs*
- *Auto scaling*
- *Scaling databases*
- *Hands-on lab: Creating a highly available environment*

Module 10: Automation
- *Why automate?*
- *CloudFormation*
- *AWS Quick Starts*
- *AWS Systems Manager*
- *AWS OpsWorks*
- *AWS Elastic Beanstalk*

Day Three

Module 11: Deployment Methods
- *Why use a deployment method?*
- *Blue green and canary deployment*
- *Tools to implement your deployment methods*
- *CI/CD*
- *Hands-on lab: Automating infrastructure deployment*

Module 12: Caching
- *When and why you should cache your data*
- *Caching on AWS with Amazon Cloudfront*
- *Amazon Elasticache (Redis/Memcached)*
- *Amazon DynamoDB Accelerator (DAX)*

Module 13: Security of Your Data
- *Shared responsibility model*
- *Data classification*
- *Encryption*
- *Automatic data security*

Module 14: Building Decoupled Architecture
- *Tight coupling vs loose coupling*
- *Amazon Simple Queue Service (Amazon SQS)*
- *Amazon Simple Notification Service (Amazon SNS)*

Module 15: Optimizations and Review
- *Review questions*
- *Best practices*
- *Activity: Design and architecture - two trues and one lie*

Day Four

Module 16: Microservices

- *What is a microservice?*
- *Containers*
- *ECS*
- *Fargate*
- *EKS*

Module 17: Serverless
- *Why use serverless?*
- *Lambda*
- *API Gateway*
- *AWS Step Functions*
- *Hands-on lab: Implementing a serverless architecture with AWS Managed Services*

Module 18: Building for Resilience
- *Using managed services greatly increases resiliency*
- *Serverless for resiliency*
- *Issues with microservices to be aware of*
- *DDoS*
- *Hands-on lab: Amazon CloudFront content delivery and automating WAF rules*

Module 19: Networking in AWS Part 3
- *Elastic Network Adapter*
- *Maximum transmission units*
- *Global Accelerator*
- *Site to site VPN*
- *Transit Gateway*

Module 20: Understanding Costs
- *Simple monthly calculator*
- *Right sizing your instances*
- *Price sensitive architecture examples*

Day Five

Module 21: Migration Strategies
- *Cloud migration strategies*
- *Planning*
- *Migrating*
- *Optimizing*
- *Hands-on lab: Application deployment using AWS Fargate*

Module 22: RTO/RPO and Backup Recovery Setup
- *Disaster planning*
- *Recovery options*

Module 23: Final Review
- *Architecting advice*
- *Service use case questions*
- *Example test questions*

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AWS Well-Architected Best Practices

Course description

The Well-Architected Framework enables you to make informed decisions about your customers architectures in a cloud-native way and understand the impact of design decisions that are made. By using the Well-Architected Framework, you will understand the risks in your architecture and ways to mitigate them.

This course is designed to provide a deep dive into the AWS Well-Architected Framework and its 5 pillars. This course also covers the Well-Architected Review process, and using the AWS Well-Architected Tool to complete reviews.

Level	Delivery method	Duration
Intermediate	Instructor-led training, presentations, case studies, hands-on labs, and knowledge checks	1 day

Course objectives

In this course you will learn to:
- Identify the Well-Architected Framework features, design principles, design pillars, and common uses.
- Apply the design principles, key services, and best practices for each pillar of the Well-Architected Framework
- Use the Well-Architected Tool to conduct Well-Architected Reviews

Intended audience

This course is intended for technical professionals:
- Technical professionals involved in architecting, building, and operations AWS solutions.

Prerequisites

We recommend that attendees of this course have:
- Knowledge of core AWS services (course: *AWS Cloud Practitioner Essentials*)
- Knowledge of AWS management interfaces (course: *AWS Technical Essentials*)
- Knowledge of core AWS design and architecture (course: *Architecting on AWS)*

AWS Well-Architected Best Practices course outline

Module 1: Well Architected Introduction
- *History of Well-Architected*
- *Goals of Well-Architected*
- *What is the AWS Well-Architected Framework?*
- *The AWS Well-Architected Tool*

Module 2: Design Principles

- *Operational Excellence*
- *Lab 1: Operational Excellence*
- *Reliability*
- *Lab 2: Reliability*
- *Security*
- *Lab 3: Security*
- *Performance Efficiency*
- *Lab 4: Performance Efficiency*
- *Cost Optimization*
- *Lab 5: Cost Optimization*

Advanced AWS Well-Architected Best Practices

Course description
This interactive course provides a deep dive into Amazon Web Services (AWS) best practices to help you perform effective and efficient AWS Well-Architected Framework Reviews. The course covers the phases of a review, including how to prepare, run, and get guidance after a review has been performed. Attendees should have familiarity with the AWS concepts, terminology, services, and tools that are covered in the intermediate, 200-level AWS Well-Architected Best Practices. This course provides an AWS Well-Architected Framework Review simulation and instructor-led group exercises and discussions regarding prioritizing and solutioning risks. The content focuses on teaching learners how to prepare proposals on high and medium risk issues using the AWS Well-Architected Tool.

Level	Delivery method	Duration
Advanced	Instructor-led training, presentations, demonstrations, group exercise sessions, and knowledge checks	1 day

Course objectives
In this course you will explore:
- Workload definition and key concepts
- The AWS Well-Architected Framework Review phases, process, best practices, and anti-patterns
- High and medium risks
- Prioritizing improvements to the AWS Well-Architected workflow
- Locating and using the AWS Well-Architected Framework white paper, labs, prebuilt solutions in the AWS solutions library, AWS Well-Architected independent software vendors (ISVs), and AWS Well-Architected Partner Program (WAPP)

Intended audience
This course is intended for technical professionals:
- Solutions Architects, Cloud Practitioners, Data Engineers, Data Scientists, Developers.

Prerequisites
We recommend that attendees of this course have attended:
- Architecting on AWS
- AWS Well-Architected Best Practice

Advanced AWS Well-Architected Best Practices course outline

Module 1: Well Architected Framework Reviews
- *Workload definition*
- *Key concepts of a workload*
- *AWS Well-Architected Review phases*

- *AWS Well-Architected Review approach, lessons learned, and use case*
- *AWS Well-Architected Review best practices*
- *AWS Well-Architected Review anti-patterns*

Module 2: Scenario Group Sessions
- *Demonstration of a Review question and answer example*
- *Operational excellence*
  - *Group role-play exercise*
  - *Two questions in this pillar*
- *Security*
  - *Group role-play exercise*
  - *Three questions in this pillar*
- *Reliability*
  - *Group role-play exercise*
  - *Three questions in this pillar*
- *Performance efficiency*
  - *Group role-play exercise*
  - *Three questions in this pillar*
- *Cost optimization*
  - *Group role-play exercise*
  - *Three questions in this pillar*

Module 3: Risk Solutions and Priorities
- *AWS Well-Architected workflow*
- *Defining and solutioning high risk issues (HRIs) and medium risk issues (MRIs)*
- *Identifying significant risks and solutioning group discussion for:*
  - *Operational excellence*
  - *Security*
  - *Reliability*
  - *Performance efficiency*
  - *Cost optimization*
- *Prioritizing improvements*

Module 4: Resources
- *Resource Pages*
- *AWS Well-Architected ISVs*

Module 5: Course Summary
- *Objective recap*
- *Debrief*
- *What's next?*

Skills Domain: Containers

Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS)

Course description

Amazon EKS makes it easy for you to run Kubernetes on AWS without needing to install, operate, and maintain your own Kubernetes control plane. In this course, you will learn container management and orchestration for Kubernetes using Amazon EKS. You will build an Amazon EKS cluster, configure the environment, deploy the cluster, and then add applications to your cluster. You will manage container images using Amazon Elastic Container Registry (ECR) and learn how to automate application deployment. You will deploy applications using CI/CD tools. You will learn how to monitor and scale your environment by using metrics, logging, tracing, and horizontal/vertical scaling. You will learn how to design and manage a large container environment by designing for efficiency, cost, and resiliency. You will configure AWS networking services to support the cluster and learn how to secure your Amazon EKS environment

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

- This course is designed to teach you how to:
- Review and examine containers, Kubernetes and Amazon EKS fundamentals and the impact of containers on workflows
- Build an Amazon EKS cluster by selecting the correct compute resources to support worker nodes
- Secure your environment with AWS Identity and Access Management (IAM) authentication by creating Amazon EKS service role for your cluster
- Deploy an application on the cluster. Publish container images to ECR and secure access via IAM policy
- Automate and deploy applications, examine automation tools and pipelines. Create GitOps pipeline using WeaveFlux
- Collecting monitoring date through metrics, logs, tracing with AWS X-Ray and identity metrics for performance tuning. Review scenarios where bottlenecks require the best scaling approach using horizontal or vertical scaling
- Access the tradeoffs between efficiency, resiliency, and cost and impact for tuning one over the other. Describe and outline a holistic, interactive approach to optimizing your environment. Design for cost, efficiency and resiliency
- Configure the AWS networking services to support the cluster. Describe how EKS/Amazon Virtual Private Cloud (VPC) functions and simplifies inter-node communications. Describe the function of VPC Container Network Interface (CNI). Review the benefits of a service mesh
- Upgrade your Kubernetes, Amazon EKS and third-party tools

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Intended audience

This course is intended for:
- Those who will provide container orchestration management in the AWS cloud including:
- System Administrators
- DevOps Engineers

Prerequisites

We recommend that attendees of this course have:
- Completed *Amazon Elastic Kubernetes Service (EKS)* Primer
- Completed *AWS Cloud Practitioner Essentials* (or equivalent real-world experience)
- Basic Linux administration experience
- Basic network administration experience
- Basic knowledge of containers and microservices

Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS) course outline

Day One

Module 1: Container Fundamentals
- *Best practices for building applications*
- *Container fundamentals*
- *Components of a container*

Module 2: Kubernetes Fundamentals
- *Container Orchestration*
- *Kubernetes objects*
- *Kubernetes internals*
- *Preparing for Lab 1: Deploying Kubernetes Pods*

Module 3: Amazon EKS Fundamentals
- *Introduction to EKS*
- *Amazon EKS control plane*
- *Amazon EKS data plane*
- *Fundamentals of Amazon EKS security*
- *Amazon EKS API*

Module 4: Building and Amazon EKS Cluster
- *Configuring your environment*
- *Creating an Amazon EKS cluster*
- *Demo: Configuring and deploying clusters in the AWS Management Console*
- *Working with eksctl*
- *Preparing for Lab 2: Building and Amazon EKS Cluster*

Day Two

Module 5: Deploying Applications to your Amazon EKS Cluster
- *Configuring Amazon Elastic Container Registry (Amazon ECR)*

- *Demo: Configuring Amazon ECR*
- *Deploying applications with Helm*
- *Demo: Deploying applications with Helm*
- *Continuous deployment in Amazon EKS*
- *GitOps and Amazon EKS*
- *Preparing for Lab 3: Deploying App*

Module 6: Configuring Observability in Amazon EKS
- *Configuring observability in an Amazon EKS Cluster*
- *Collecting metrics*
- *Using metrics for automatic scaling*
- *Managing logs*
- *Application tracing in Amazon EKS*
- *Gaining and applying insight from observability*
- *Preparing for Lab 4: Monitoring Amazon EKS*

Module 7: Balancing Efficiency, Resilience and Cost Optimization in Amazon EKS
- *The high level overviews*
- *Designing for resilience*
- *Designing for cost optimization*
- *Designing for efficiency*

Day Three

Module 8: Managing Networking in Amazon EKS
- *Review: Networking in AWS*
- *Communicating in Amazon EKS*
- *Managing your IP Space*
- *Deploying a service mesh*
- *Preparing for Lab 5: Exploring Amazon EKS Communication*

Module 9: Managing Authentication and Authorization in Amazon EKS
- *Understanding the AWS shared responsibility*
- *Authentication and authorization*
- *Managing IAM and RBAC*
- *Demo: Customizing RBAC Roles*
- *Managing pod permissions using RBAC service accounts*

Module 10: Implementing Secure Workflows
- *Securing cluster endpoints*
- *Improving the security of your workflows*
- *Improving host and network security*
- *Managing secrets*
- *Preparing for Lab 6: Securing Amazon EKS*

Module 11: Managing Upgrades in Amazon EKS
- *Planning for an upgrade*
- *Upgrading your Kubernetes version*
- *Amazon EKS platform versions*

aws training and certification

Skills Domain: Cost Management

AWS Cloud Financial Management for Builders

Course description

This course is for individuals who seek an understanding of how to manage, optimize, and predict costs as you run workloads on AWS. You learn how to implement architectural best practices, explore cost optimization strategies, and design patterns to help you architect cost-efficient solutions on AWS.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

In this course you will learn to:
- Explain the cost of core AWS services
- Determine and predict costs associates with current and future cloud workloads
- Use strategies and best practices to reduce AWS costs
- Use AWS tools to manage, monitor, alert, and optimize your AWS spend
- Apply strategies to monitor service costs and usage
- Implement governance standards, including resource tagging, account structure, provisioning, permissions, and access

Intended audience

This course is intended for:
- Solutions Architects
- Developers
- Cost-optimization leads
- Systems administrators

Prerequisites

We recommend that attendees of this course have:
- Taken the *Architecting on AWS* classroom training

AWS Cloud Financial Management for Builders course outline

Day One
> **Module 1: Introduction to Cloud Financial Management**
> - *Introduction to Cloud Financial Management*

- *Four pillars of Cloud Financial Management*

Module 2: Resource Tagging
- *Tagging resources*
- *Hands-On Lab: Cost optimization: Control Resource Consumption Using Tagging and AWS Config*

Module 3: Pricing and Cost
- *Fundamentals of pricing*
- *AWS Free Tier*
- *Volume discounts*
- *Savings plans and Reserved Instances*
- *Demonstration: AWS Pricing Calculator*

Module 4: Billing, Reporting, and Monitoring
- *Understanding AWS invoices*
- *Reporting and planning*
- *AWS Cost Explorer*
- *AWS Budgets*
- *Demonstration: AWS Billing Console*
- *Demonstration: AWS Cost Explorer*
- *Demonstration: Trusted Advisor*
- *Hands-On Lab: Cost optimization: Deploy Ephemeral Environments Using Amazon EC2 Auto Scaling*

Day Two
    Module 5: Architecting for Cost: Compute
- *Evolution of compute efficiency*
- *Amazon EC2 right-sizing*
- *Purchasing options*
- *Architect for Amazon EC2 Spot Instance*
- *Impact of software licensing*
- *Demonstration: Compute Optimizer*
- *Demonstration: Spot Instance Advisor*
- *Hands-On Lab: Cost optimization: Right Size Amazon EC2 Instances Using Amazon CloudWatch Metrics*

    Module 6: Architecting for Cost: Networking
- *Data transfer costs*
- *Understand data costs for different services*
- *How to triage network costs*
- *Hands-On Lab: Cost optimization: Reduce Data Transfer Costs Using Amazon CloudFront and Endpoints*

Day Three
    Module 7: Architecting for Cost: Storage
- *Amazon EBS cost, pricing, and best practices*
- *Amazon S3 cost, pricing, and best practices*
- *Amazon EFS cost, pricing, and best practices*
- *Hands-On Lab: Cost optimization: Reduce Storage Costs Using Amazon S3 Lifecycle Management*

Module 8: Architecting for Cost: Databases
- *Amazon RDS cost, pricing, and best practices*
- *Amazon Aurora cost, pricing, and best practices*
- *Amazon DynamoDB cost, pricing, and best practices*
- *Amazon ElastiCache cost, pricing, and best practices*
- *Amazon Redshift cost, pricing, and best practices*

Module 9: Cost Governance
- *Setting up AWS Organizations*
- *AWS Systems Manager*
- *Hands-On Lab: Cost optimization: Reduce Compute Costs Using AWS Instance Scheduler*

Module 10: Course Summary
- *Course Review*

AWS Cloud for Finance Professionals

Course description

In this course, you will learn how finance professionals can use Amazon Web Services (AWS) to adopt cloud in a fiscally responsible manner. You will gain foundational knowledge to help you manage, optimize, and plan cloud spend. You will learn how to influence your organization's builders to be more accountable and cost conscious. Finally, you will consider how you can use AWS to innovate in your finance organization.

Level	Duration	Format	Delivery method
Fundamental	2 days	Instructor-led training, includes presentations, activities, demonstrations, videos, assessments, and group exercises	Classroom, virtual classroom, and private on-site training.

Course objectives

In this course you will learn to:
- Define cloud business value
- Estimate costs associated with current and future cloud workloads
- Use tools to report, monitor, allocate, optimize, and plan AWS spend
- Optimize cloud spending and usage through pricing models
- Establish best practices with Cloud Financial Management (CFM) and Cloud Financial Operations (Cloud FinOps)
- Implement financial governance and controls
- Drive finance organization innovation

Intended audience

This course is intended for enterprise finance stakeholders who want to learn how to maximize cloud business value, use CFM best practices, and help finance teams innovate with AWS.

Prerequisites

We recommend that attendees of this course have:
- Cloud Computing and AWS from the digital version of AWS Cloud for Finance Professionals
- AWS Cloud Practitioner Essentials
- AWS Cloud Essentials for Business Leaders

AWS Cloud for Finance Professionals course outline

Module 1: Course Introduction
- *Cloud spending decisions*
- *AWS pricing*
- *Cost drivers*

- *AWS Well-Architected Framework*
- *AWS Cloud Value Framework*
- *Activity 1.1: Cloud value metrics*
- *Cloud Financial Management*
- *Activity 1.2: Cloud Financial Management outcomes*

Module 2: Planning and Forecasting
- *Estimate cloud workload costs*
- *Activity 2.1: Build and refine a cost estimate*
- *Budget and forecast cloud costs*
- *Improve cloud financial predictability*

Module 3: Measurement and Accountability
- *KPIs and unit metrics*
- *Cost visibility and monitoring*
- *Demonstration 3.1: Tools for cost visibility, tools for cost monitoring*
- *Cost allocation and accountability*
- *Cost allocation building blocks*

Module 4: Cost Optimization
- *Usage optimizations*
- *Commitment-based purchase options*
- *Activity 4.1: Cost optimization*

Module 5: Cloud Financial Operations
- *Organizational change for CFM*
- *Organization models for CFM*
- *Activity 5.1: Organizational models*
- *Establish a cost-aware organizational culture*
- *Governance, control, and agility*
- *AWS governance and control building blocks*
- *Automated-based governance using AWS services*

Module 6: Financial Transformation and Innovation
- *Keys to financial innovation*
- *Financial transformation*
- *Activity 6.1: Solutions for financial innovation*

Module 7: Resources and Next Steps

Skills Domain: Data Analytics

Building Batch Data Analytics Solutions on AWS

Course description

In this course, you will learn to build batch data analytics solutions using Amazon EMR, an enterprise-grade Apache Spark and

Apache Hadoop managed service. You will learn how Amazon EMR integrates with open-source projects such as Hive, Hue, and HBase, and with AWS services such as AWS Glue and AWS Lake Formation. The course addresses data collection, ingestion, cataloging, storage, and processing components in the context of Spark and Hadoop. You will learn to use EMR Notebooks to support both analytics and machine learning workloads. You will also learn to apply security, performance, and cost management best practices to the operation of Amazon EMR.

Level	Delivery method	Duration
Intermediate	Instructor-led training, presentations, interactive demos, practice labs, discussions, and class exercises	1 day

Course objectives

This course is designed to teach you how to:
- Compare the features and benefits of data warehouses, data lakes, and modern data architectures
- Design and implement a batch data analytics solution
- Identify and apply appropriate techniques, including compression, to optimize data storage
- Select and deploy appropriate options to ingest, transform, and store data
- Choose the appropriate instance and node types, clusters, auto scaling, and network topology for a particular business use case
- Understand how data storage and processing affect the analysis and visualization mechanisms needed to gain actionable business insights
- Secure data at rest and in transit
- Monitor analytics workloads to identify and remediate problems
- Apply cost management best practices

Intended audience

This course is intended for:
- Data Platform Engineers
- Architects and operators who build and manage data analytics pipelines

Prerequisites

Students with a minimum one-year experience managing open-source data frameworks such as Apache Spark or Apache Hadoop will benefit from this course.

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We suggest recommend the [AWS Hadoop Fundamentals](#) course for those that need a refresher on Apache Hadoop

We recommend that attendees of this course have:
- Completed *AWS Technical Essentials* Course or *Architecting on AWS*
- Completed *Building Data Lakes on AWS*

Building Batch Data Analytics Solutions on AWS course outline

Module A: Overview of Data Analytics and the Data Pipeline
- *Data analytics use cases*
- *Using the data pipeline for analytics*

Module 1: Introduction to Amazon EMR
- *Using Amazon EMR in analytics solutions*
- *Amazon EMR cluster architecture*
- *Interactive Demo 1: Launching an Amazon EMR cluster*
- *Cost management strategies*

Module 2: Data Analytics Pipeline Using Amazon EMR: Ingestion and Storage
- *Storage optimization with Amazon EMR*
- *Data Ingestion techniques*

Module 3: High-Performance Batch Data Analytics Using Apache Spark on Amazon EMR
- *Apache Spark on Amazon EMR use cases*
- *Why Apache Spark on Amazon EMR*
- *Spark concepts*
- *Interactive Demo 2: Interactive analytics using Apache Spark on Amazon EMR*
- *Transformation, processing, and analytics*
- *Using notebooks with Amazon EMR*
- *Practice Lab 1: Low-latency data analytics using Apache Spark on Amazon EMR*

Module 4: Processing and Analyzing Batch Data with Amazon EMR and Hive
- *Using Amazon EMR with Hive to process batch data*
- *Transformation, processing, and analytics*
- *Practice Lab 2: Batch data processing using Amazon EMR with Hive*
- *Introduction to HBase on Amazon EMR*

Module 5: Serverless Data Processing
- *Serverless data processing, transformation, and analytics*
- *Using AWS Glue with Amazon EMR workloads*
- *Practice Lab 3: Orchestrate data processing in Spark using AWS Step Functions*

Module 6: Security and Monitoring of Amazon EMR Clusters
- *Securing EMR clusters*
- *Interactive Demo 3: Encrypting data at rest in Amazon EMR*
- *Monitoring and troubleshooting EMR clusters*

- *Demo: Reviewing Apache Spark cluster history*
- *Monitoring and troubleshooting Amazon EMR clusters*

Module 7: Designing Batch Data Analytics Solutions
- *Batch Data Analytics use cases*
- *Activity: Designing a batch data analytics workflow*

Module B: Developing Modern Data Architectures on AWS
- *Modern Data Architectures*

Building Data Analytics Solutions using Amazon Redshift

Course description

In this course, you will build a data analytics solution using Amazon Redshift, a cloud data warehouse service. The course focuses on the data collection, ingestion, cataloging, storage, and processing components of the analytics pipeline. You will learn to integrate Amazon Redshift with a data lake to support both analytics and machine learning workloads. You will also learn to apply security, performance, and cost management best practices to the operation of Amazon Redshift.

Level	Delivery method	Duration
Intermediate	Instructor-led training, presentations, interactive demos, practice labs, discussions, and class exercises	1 day

Course objectives

This course is designed to teach you how to:
- Compare the features and benefits of data warehouses, data lakes, and modern data architectures
- Design and implement a data warehouse analytics solution
- Identify and apply appropriate techniques, including compression, to optimize data storage
- Select and deploy appropriate options to ingest, transform, and store data
- Choose the appropriate instance and node types, clusters, auto scaling, and network topology for a particular business use case
- Understand how data storage and processing affect the analysis and visualization mechanisms needed to gain actionable business insights
- Secure data at rest and in transit
- Monitor analytics workloads to identify and remediate problems
- Apply cost management best practices

Intended audience

This course is intended for:
- Data Warehouse Engineers
- Data Platform Engineers
- Data Architects
- Data Operators

Prerequisites

We recommend that attendees of this course have:
- Completed *AWS Technical Essentials* Course or *Architecting on AWS*
- Completed *Building Data Lakes on AWS*

Building Data Analytics Solutions using Amazon Redshift course outline

Module A: Overview of Data Analytics and the Data Pipeline
- *Data analytics use cases*
- *Using the data pipeline for analytics*

Module 1: Using Amazon Redshift in the Data Analytics Pipeline
- *Why Amazon Redshift for data warehousing?*
- *Overview of Amazon Redshift*

Module 2: Introduction to Amazon Redshift
- *Amazon Redshift architecture*
- *Interactive Demo 1: Touring the Amazon Redshift console*
- *Amazon Redshift features*
- *Practice Lab 1: Load and query data in an Amazon Redshift cluster*

Module 3: Ingestion and Storage
- *Ingestion*
- *Interactive Demo 2: Connecting your Amazon Redshift cluster using a Jupyter notebook with Data API*
- *Data distribution and storage*
- *Interactive Demo 3: Analyzing semi-structured data using the SUPER data type*
- *Querying data in Amazon Redshift*
- *Practice Lab 2: Data analytics using Amazon Redshift Spectrum*

Module 4: Processing and Optimizing Data
- *Data transformation*
- *Advanced querying*
- *Practice Lab 3: Data transformation and querying in Amazon Redshift*
- *Resource management*
- *Interactive Demo 4: Applying mixed workload management on Amazon Redshift*
- *Automation and optimization*
- *Interactive demo 5: Amazon Redshift cluster resizing from the dc2.large to ra3.xlplus cluster*

Module 5: Security and Monitoring of Amazon Redshift Clusters
- *Securing the Amazon Redshift cluster*
- *Monitoring and troubleshooting Amazon Redshift clusters*

Module 6: Designing Data Warehouse Analytics Solutions
- *Data warehouse use case review*
- *Activity: Designing a data warehouse analytics workflow*

Module B: Developing Modern Data Architectures on AWS
- *Modern Data Architectures*

Building Data Lakes on AWS

Course description

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 of 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.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises.	1 day

Course objectives

In this course, you will learn to:
- 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 permissions
- Ingest, store and transform data in a data lake
- Query, Analyze and visualize data within a data lake

Intended audience

This course is intended for:
- Data platform engineers
- Solutions Architecture
- IT professionals

Prerequisites

We recommend that attendees of this course have:
- Completed the *AWS Technical Essentials* Classroom Class
- One year of experience building data analytics pipelines or have completed the *Data Analytics Fundamentals* digital course

Building Data Lakes on AWS Course Outline

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 Find Matches*
- *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*

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Data Warehousing on AWS

Course description

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 AWS services such as Amazon DynamoDB, Amazon EMR, Amazon Kinesis, and Amazon S3. Additionally, this course demonstrates how to use Amazon QuickSight to perform analysis on your data.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs and group exercises	3 days

Course objectives

This course is designed to teach you how to:
- Discuss the core concepts of data warehousing, and the intersection between data warehousing and big data solutions
- Launch an Amazon Redshift cluster and use the components, features, and functionality to implement a data warehouse in the cloud
- Use other AWS data and analytic services, such as Amazon DynamoDB, Amazon EMR, Amazon Kinesis, and Amazon S3, to contribute to the data warehousing solution
- Architect the data warehouse
- Identify performance issues, optimize queries, and tune the database for better performance
- Use Amazon Redshift Spectrum to analyze data directly from an Amazon S3 bucket
- Use Amazon QuickSight to perform data analysis and visualization tasks against the data warehouse

Intended audience

This course is intended for:
- Database Architects
- Database Administrators
- Database Developers
- Data Analysts
- Data Scientists

Prerequisites

We recommend that attendees of this course have:
- Taken *AWS Technical Essentials* Course (Or Equivalent AWS Experience)
- Familiarity with relational databases and database design concepts

Data Warehousing on AWS course outline

Day One

Module 1: Introduction to Data Warehousing
- *Relational databases*
- *Data warehousing concepts*
- *The intersection of data warehousing and big data*
- *Overview of data management in AWS*
- *Hands-on lab 1: Introduction to Amazon Redshift*

Module 2: Introduction to Amazon Redshift
- *Conceptual overview*
- *Real-world use cases*
- *Hands-on lab 2: Launching an Amazon Redshift cluster*

Module 3: Launching clusters
- *Building the cluster*
- *Connecting to the cluster*
- *Controlling access*
- *Database security*
- *Load data*
- *Hands-on lab 3: Optimizing database schemas*

Day Two

Module 4: Designing the database schema
- *Schemas and data types*
- *Columnar compression*
- *Data distribution styles*
- *Data sorting methods*

Module 5: Identifying data sources
- *Data sources overview*
- *Amazon S3*
- *Amazon DynamoDB*
- *Amazon EMR*
- *Amazon Kinesis Data Firehose*
- *AWS Lambda Database Loader for Amazon Redshift*
- *Hands-on lab 4: Loading real-time data into an Amazon Redshift database*

Module 6: Loading data
- *Preparing Data*
- *Loading data using COPY*
- *Maintaining tables*
- *Concurrent write operations*
- *Troubleshooting load issues*
- *Hands-on lab 5: Loading data with the COPY command*

Day Three

Module 7: Writing queries and tuning for performance
- *Amazon Redshift SQL*
- *User-Defined Functions (UDFs)*
- *Factors that affect query performance*
- *The EXPLAIN command and query plans*
- *Workload Management (WLM)*
- *Hands-on lab 6: Configuring workload management*

Module 8: Amazon Redshift Spectrum
- *Amazon Redshift Spectrum*
- *Configuring data for Amazon Redshift Spectrum*
- *Amazon Redshift Spectrum Queries*
- *Hands-on lab 7: Using Amazon Redshift Spectrum*

Module 9: Maintaining clusters
- *Audit logging*
- *Performance monitoring*
- *Events and notifications*
- *Lab 8: Auditing and monitoring clusters*
- *Resizing clusters*
- *Backing up and restoring clusters*
- *Resource tagging and limits and constraints*
- *Hands-on lab 9: Backing up, restoring and resizing clusters*

Module 10: Analyzing and visualizing data
- *Power of visualizations*
- *Building dashboards*
- *Amazon QuickSight editions and features*

Skills Domain: Databases

Planning and Designing Databases on AWS

Course description

You will learn about the process of planning and designing both relational and non-relational databases. You will learn the design considerations for hosting databases on Amazon Elastic Compute Cloud (Amazon EC2). You will learn about our relational database services including Amazon Relational Database Service (Amazon RDS), Amazon Aurora, and Amazon Redshift. You will also learn about our non-relational database services including Amazon DocumentDB, Amazon DynamoDB, Amazon ElastiCache, Amazon Neptune, and Amazon QLDB. By the end of this course, you will be familiar with the planning and design requirements of all 8 of these AWS databases services, their pros and cons, and how to know which AWS databases service is right for your workloads

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, demonstrations, and group exercises	3 days

Course objectives

This course is designed to teach you how to:
- Apply database concepts, database management, and data modeling techniques
- Evaluate hosting databases on Amazon EC2 instances
- Evaluate relational AWS database services and their features (Amazon RDS, Amazon Aurora, and Amazon Redshift)
- Evaluate non-relational 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

Intended audience

This course is intended for:
- Data Engineers who are new to designing cloud databases or non-relational databases
- Solutions Architects who are designing services or architectures that are integrated with databases
- Developers that are building cloud database-enabled applications

Prerequisites

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 modeling for relational or non-relational 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

Planning and Designing Databases course outline

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
- *The journey to AWS*
- *Data modeling basics*

Module 5: Databases on Amazon RDS
- *Amazon RDS databases*
- *Amazon RDS distinguishing features*
- *Amazon RDS design considerations*
- *Hands-on Lab 1: working with Amazon RDS databases*

Module 6: Databases on Amazon Aurora
- *Amazon Aurora databases*
- *Amazon Aurora distinguishing features*
- *Amazon Aurora design considerations*

Day Two

Module 6: Amazon Aurora *(continued)*
- *Hands-on Lab 2: Working with Amazon Aurora databases*

Module 7: Amazon DocumentDB (with MongoDB compatibility)
- *Amazon DocumentDB*
- *Amazon DocumentDB design considerations*
- *Hands-on Lab 3: working with Amazon DocumentDB databases*

Module 8: Amazon DynamoDB Tables

- *Amazon DynamoDB*
- *Amazon DynamoDB data modeling*
- *Amazon DynamoDB distinguishing features*
- *Amazon DynamoDB design considerations*
- *Hands-on Lab 4: working with Amazon DynamoDB Tables*

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 Quantum Ledger Database (Amazon QLDB)*
- *Amazon QLDB Design Considerations*

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

Module 12: Data warehousing in Amazon Redshift
- *Amazon Redshift*
- *Amazon Redshift distinguishing features*
- *Amazon Redshift data modeling*
- *Amazon Redshift design considerations*
- *Hands-on Lab 5: working with Amazon Redshift Clusters*

Module 13: Course Overview

Skills Domain: Developer

Developing on AWS

Course description

In this course, you learn how to use the AWS SDK to develop secure and scalable cloud applications using multiple AWS services such as Amazon DynamoDB, Amazon Simple Storage Service, and AWS Lambda. You explore how to interact with AWS using code and learn about key concepts, best practices, and troubleshooting tips.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and demonstrations	3 days

Course objectives

This course is designed to teach you how to:
- Set up the AWS SDK and developer credentials for Java, C#/.NET and Python
- Interact with AWS services and develop solutions by using the AWS SDK
- Use AWS Identity and Access Management (IAM) for service authentication
- Use Amazon Simple Storage Service (Amazon S3) and Amazon DynamoDB as data stores
- Integrate 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
- Use Amazon Cognito for user authentication
- Use Amazon ElastiCache to improve application scalability
- Leverage the CI/CD pipeline to deploy applications on AWS

Intended audience

This course is intended for:
- Intermediate software developers

Prerequisites

We recommend that attendees of this course have:
- In-depth knowledge of at least one high-level programming language
- Working knowledge of core AWS services and public cloud implementation

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Developing on AWS course outline

Day One

Module 1: Introduction to AWS
- *Introduction to AWS*
- *Cloud scenarios*
- *Infrastructure overview*
- *Introduction to AWS foundation services*

Module 2: Introduction to Developing on AWS
- *Getting started developing on AWS*
- *Introduction to developer tools*
- *Introduction to management tools*

Module 3: Introduction to AWS Identity and Access Management
- *Shared responsibility model*
- *Introduction to IAM*
- *User authentication and authorization*

Module 4: Introduction to the Lab Environment
- *Introduction to the lab environment*
- *Choose your dev instance*
- *Connect to your dev instance*
- *Hands-on lab 1: Getting started and working with IAM*

Module 5: Developing storage solutions with Amazon Simple Storage Service (Amazon S3)
- *Overview of AWS storage options*
- *Amazon S3 key concepts*
- *Best practices*
- *Troubleshooting*
- *Scenario: Building a complete application*
- *Hands-on lab 2: Developing storage solutions with Amazon S3*

Day Two

Module 6: Developing flexible NoSQL solutions with Amazon DynamoDB
- *Introduction to AWS Database Options*
- *Introduction to Amazon DynamoDB*
- *Developing with Amazon DynamoDB*
- *Best practices*
- *Troubleshooting*
- *Scenario: Building an end-to end app*
- *Hands-on lab 3: Developing flexible NoSQL solutions with Amazon DynamoDB*

Module 7: Developing Event-Driven solutions with AWS Lambda
- *What is serverless computing?*
- *Introduction to AWS Lambda*
- *Use cases*

- *Best practice*
- *Scenario: Build and end-to-end app*

Module 8: Developing solutions with Amazon API Gateway
- *Introduction to Amazon API Gateway*
- *Developing with Amazon API Gateway*
- *Best practices*
- *Introduction to AWS Serverless Application Model (SAM)*
- *Scenario: Build an end-to-end app*
- *Hands-on lab 4: Developing Event-Driven Solutions with AWS Lambda*

Module 9: Developing solutions with AWS Step Functions
- *Understanding the need for AWS Step Functions*
- *Introduction to AWS Step Functions*
- *Use cases*

Day Three

Module 10: Developing solutions with Amazon Simple Queue Service and Amazon Simple Notification Service
- *Why use a queuing service?*
- *Developing with Amazon Simple Queue Service*
- *Developing with Amazon Simple Notification Service*
- *Developing with Amazon MQ*
- *Hands-on Lab 5: Developing messaging solutions with Amazon SQS and Amazon SNS*

Module 11: Caching information with Amazon ElastiCache
- *Caching overview*
- *Caching with Amazon ElastiCache*
- *Caching strategies*

Module 12: Developing Secure Applications
- *Securing your applications*
- *Authenticating your applications to AWS*
- *Authenticating your customers*
- *Scenario: Build and end-to-end app*

Module 13: Deploying Applications
- *Introduction to DevOps*
- *Introduction to deployment and testing strategies*
- *Deploying applications with AWS Elastic Beanstalk*
- *Scenario: Build and end-to-end app*
- *Hands-on lab 6: Building an end-to-end app*

Module 14: Course Wrap-up
- *Course Overview*
- *AWS Training Courses*
- *Certifications*
- *Course Feedback*

Advanced Developing on AWS

Course description

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

Level	Delivery method	Duration
Advanced	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

In this course, you will learn how to:
- Analyze a monolithic application architecture to determine logical or programmatic break points where the application can be broken up across different AWS services
- Apply Twelve-Factor Application manifesto concepts and steps while migrating from a monolithic architecture
- Recommend the appropriate AWS services to develop a microservices based cloud-native application
- Use the AWS API, CLI, and SDKs to monitor and manage AWS services
- Migrate a monolithic application to a microservices application using the 6 Rs of migration
- Explain the SysOps and DevOps interdependencies necessary to deploy a microservices application in AWS

Intended audience

This course is intended for:
- Experienced software developers who are already familiar with AWS services

Prerequisites

We recommend that attendees of this course have:
- In-depth knowledge of at least one high-level programming language
- Working knowledge of core AWS services and public cloud implementation
- Completion of the *Developing on AWS* classroom training, and then a minimum of 6 months of application of those concepts in a real-world environment

Advanced Developing on AWS course outline

Day One
> **Module 1: The cloud journey**
> - *Common off-cloud architecture*
> - *Introduction to Cloud Air*

- *Monolithic architecture*
- *Migration to the cloud*
- *Guardrails*
- *The six R's of migration*
- *The Twelve-Factor Application Methodology*
- *Architectural styles and patterns*
- *Overview of AWS Services*
- *Interfacing with AWS Services*
- *Authentication*
- *Infrastructure as code and Elastic Beanstalk*
- *Demonstration: Walk through creating base infrastructure with AWS CloudFormation in the AWS console*
- *Hands-on lab 1: Deploy your monolith application using AWS Elastic Beanstalk*

Module 2: Gaining Agility
- *DevOps*
- *CI/CD*
- *Application configuration*
- *Secrets management*
- *CI/CD Services in AWS*
- *Demonstration: Demo AWS Secrets Manager*

Day Two
Module 3: Monolith to Microservices
- *Microservices*
- *Serverless*
- *A look at Cloud Air*
- *Microservices using Lambda and API Gateway*
- *SAM*
- *Strangling the Monolith*
- *Hands-on lab: Using AWS Lambda to develop microservices*

Module 4: Polyglot Persistence & Distributed Complexity
- *Polyglot persistence*
- *DynamoDB best practices*
- *Distributed complexity*
- *Steps functions*

Day Three
Module 5: Resilience and Scale
- *Decentralized data stores*
- *Amazon SQS*
- *Amazon SNS*
- *Amazon Kinesis Streams*
- *AWS IoT Message Broker*
- *Serverless event bus*
- *Event sourcing and CQRS*
- *Designing for resilience in the cloud*

- *Hands-on lab: Exploring the AWS messaging options*

Module 6: Security and Observability
- *Serverless Compute with AWS Lambda*
- *Authentication with Amazon Cognito*
- *Debugging and traceability*
- *Hands-on lab: Developing microservices on AWS*
- *Hands-on lab: Automating deployments with CloudFormation*

Skills Domain: DevOps Engineer

DevOps Engineering on AWS

Course Description

DevOps Engineering on AWS teaches you how to use the combination of DevOps cultural philosophies, practices, and tools to increase your organization's ability to develop, deliver, and maintain applications and services at high velocity on AWS. This course covers Continuous Integration (CI), Continuous Delivery (CD), infrastructure as code, microservices, monitoring and logging, and communication and collaboration. Hands-on labs give you experience building and deploying AWS CloudFormation templates and CI/CD pipelines that build and deploy applications on Amazon Elastic Compute Cloud (Amazon EC2), serverless applications, and container-based applications. Labs for multi-pipeline workflows and pipelines that deploy to multiple environments are also included.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

In this course, you will learn to:
- Use DevOps best practices to develop, deliver, and maintain applications and services at high velocity on AWS
- List the advantages, roles and responsibilities of small autonomous DevOps teams
- Design and implement an infrastructure on AWS that supports DevOps development projects
- Leverage AWS Cloud9 to write, run and debug your code
- Deploy various environments with AWS CloudFormation
- Host secure, highly scalable, and private Git repositories with AWS CodeCommit
- Integrate Git repositories into CI/CD pipelines
- Automate build, test, and packaging code with AWS CodeBuild
- Securely store and leverage Docker images and integrate them into your CI/CD pipelines
- Build CI/CD pipelines to deploy applications on Amazon EC2, serverless applications, and container-based applications
- Implement common deployment strategies such as "all at once," "rolling," and "blue/green"
- Integrate testing and security into CI/CD pipelines
- Monitor applications and environments using AWS tools and technologies

Intended audience

This course is intended for:
- DevOps engineers
- DevOps architects
- Operations engineers
- System administrators
- Developers

Prerequisites

We recommend that attendees of this course have:

- Previous attendance at the Systems Operations on AWS or Developing on AWS courses
- Working knowledge of one or more high-level programing languages, such as C#, Java, PHP, Ruby, Python
- Intermediate knowledge of administering Linux or Windows systems at the command-line level
- Two or more years of experience provisioning, operating, and managing AWS environments

DevOps Engineering on AWS course outline

Day One

Module 1: Introduction to DevOps
- *What is DevOps?*
- *The Amazon journey to DevOps*
- *Foundations for DevOps*

Module 2: Infrastructure automation
- *Introduction to Infrastructure Automation*
- *Diving into the AWS CloudFormation template*
- *Modifying an AWS CloudFormation template*
- *Demonstration: AWS CloudFormation template structure, parameters, stacks, updates, importing resources, and drift detection*

Module 3: AWS toolkits
- *Configuring the AWS CLI*
- *AWS Software Development Kits (AWS SDKs)*
- *AWS SAM CLI*
- *AWS Cloud Development Kit (AWS CDK)*
- *AWS Cloud9*
- *Demonstration: AWS CLI and AWS CDK*
- *Hands-on lab 1: Using AWS CloudFormation to provision and manage a basic infrastructure*

Module 4: Continuous integration and continuous delivery (CI/CD) with development tools
- *CI/CD Pipeline and Dev Tools*
- *Demonstration: CI/CD pipeline displaying some actions from AWS CodeCommit, AWS CodeBuild, AWS CodeDeploy and AWS CodePipeline*
- *Hands-on lab 2: Deploying an application to an EC2 fleet using AWS CodeDeploy*

Day Two

Module 5: Introduction to Microservices
- *Introduction to Microservices*

Module 6: DevOps and containers
- *Deploying applications with Docker*
- *Amazon Elastic Container Service and AWS Fargate*
- *Amazon Elastic Container Registry and Amazon Elastic Kubernetes service*
- *Demonstration: CI/CD pipeline deployment in a containerized application*

Module 7: DevOps and serverless computing
- *AWS Lambda and AWS Fargate*
- *AWS Serverless Application Repository and AWS SAM*
- *AWS Step Functions*
- *Demonstration: AWS Lambda and characteristics*
- *Demonstration: AWS SAM quick start in AWS Cloud9*
- *Hands-on lab 3: Deploying a serverless application using AWS Serverless Application Model (AWS SAM) and a CI/CD Pipeline*

Module 8: Deployment strategies
- *Continuous Deployment*
- *Deployments with AWS Services*

Module 9: Automated testing
- *Introduction to testing*
- *Tests: Unit, integration, fault tolerance, load, and synthetic*
- *Product and service integrations*

Day Three

Module 10: Security automation
- *Introduction to DevSecOps*
- *Security of the Pipeline*
- *Security in the Pipeline*
- *Threat Detection Tools*
- *Demonstration: AWS Security Hub, Amazon GuardDuty, AWS Config, and Amazon Inspector*

Module 11: Configuration management
- *Introduction to the configuration management process*
- *AWS services and tooling for configuration management*
- *Hands-on lab 4: Performing blue/green deployments with CI/CD pipelines and Amazon Elastic Container Service (Amazon ECS)*

Module 12: Observability
- *Introduction to observability*
- *AWS tools to assist with observability*
- *Hands-on lab 5: Using AWS DevOps tools for CI/CD pipeline automations*

Module 13: Reference architecture (Optional module)
- *Reference architectures*

Module 14: Course summary
- *Components of DevOps practice*
- *CI/CD pipeline review*
- *AWS Certification*

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Skills Domain: Machine Learning

Deep Learning on AWS

Course description

In this course, you'll learn about AWS's deep learning solutions, including scenarios where deep learning makes sense and how deep learning works. You'll learn how to run deep learning models on the cloud using Amazon SageMaker and the MXNet framework. You'll also learn to deploy your deep learning models using services like AWS Lambda while designing intelligent systems on AWS.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	1 day

Course objectives

This course is designed to teach you how to:
- Define machine learning (ML) and deep learning
- Identify the concepts in a deep learning ecosystem
- Use Amazon SageMaker and the MXNet programming framework for deep learning workloads
- Fit AWS solutions for deep learning deployments

Intended audience

This course is intended for:
- Developers who are responsible for developing deep learning applications
- Developers who want to understand the concepts behind deep learning and how to implement a deep learning solution on AWS Cloud

Prerequisites

We recommend that attendees of this course have:
- A basic understanding ML processes
- Knowledge of AWS core services like Amazon EC2 and knowledge of AWS SDK
- A scripting language like Python

Deep Learning on AWS course outline

Day One
> **Module 1: Machine learning overview**
> - *A brief history of AI, ML, and DL*

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- *The business importance of ML*
- *Common challenges in ML*
- *Different types of ML problems and tasks*
- *AI on AWS*

Module 2: Introduction to deep learning
- *Introduction to DL*
- *The DL concepts*
- *A summary of how to train DL models on AWS*
- *Introduction to Amazon SageMaker*
- *Hands-on lab 1: Spinning up an Amazon SageMaker notebook instance and running a multi-layer perceptron neural network model*

Module 3: Introduction to Apache MXNet
- *The motivation for and benefits of using MXNet and Gluon*
- *Important terms and APIs used in MXNet*
- *Convolutional neural networks (CNN) architecture*
- *Hands-on lab 2: Training a CNN on a CIFAR-10 dataset*

Module 4: ML and DL architectures on AWS
- *AWS services for deploying DL models (AWS Lambda, AWS IoT Greengrass, Amazon ECS, AWS Elastic Beanstalk)*
- *Introduction to AWS AI services that are based on DL (Amazon Polly, Amazon Lex, Amazon Rekognition)*
- *Hands-on lab 3: Deploying a trained model for prediction on AWS Lambda*

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MLOps Engineering on AWS

Course description

The course stresses the importance of data, model and code to successful ML deployments. It will demonstrate the use of tools, automation, processes and teamwork in addressing the challenges associated with handoffs between data engineers, data scientists, software developers and operations. The course will also discuss the tools and processes to monitor and act when the model prediction in production starts to drift from agreed-upon key performance indicators.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises.	3 days

Course objectives

In this course, you will learn to:
- Describe machine learning operations
- Understand the key differences between DevOps and MLOps
- Describe the machine learning workflow
- Discuss the importance of communications in MLOps
- Explain end-to-end options for automation of ML workflows
- List key Amazon SageMaker features for MLOps automation
- Build an automated ML Process that builds, trains, tests and deploys models
- Build an automated ML Process that retrains the model based on change(s) to the model code
- Identify elements and important steps in the deployment process
- Describe items that might be included in a model package and their use in training and inference
- Recognize Amazon SageMaker options for selecting models for deployment, including support for ML Frameworks and built-in algorithms or bring-your-models
- Differentiate scaling in Machine Learning from scaling in other applications
- Determine when to use different approaches to inference
- Discuss deployment strategies, benefits, challenges and typical use cases
- Describe the challenges when deploying machine learning to edge devices
- Recognize important Amazon SageMaker features that are relevant to deployment and inference
- Describe why monitoring is important
- Detect data drifts in the underlying input data
- Demonstrate how to monitor model resource consumption and latency
- Discuss how to integrate human-in-the-loop reviews of model results in production

Intended audience

This course is intended for:
- DevOps engineers
- ML Engineers
- Developers/operations with responsibility for operationalizing ML Models

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Prerequisites

Required:
- Completed the *AWS Technical Essentials* Classroom/Digital Class
- *DevOps Engineering on AWS* course or equivalent experience
- Practical Data Science with Amazon SageMaker course or equivalent

Recommended:
- *The Elements of Data Science* (Digital Course) or equivalent experience
- Machine Learning Terminology and Process (Digital Course)

MLOps Engineering on AWS Course outline

Day One

Module 1: Introduction to MLOps
- *Machine Learning Operations*
- *Goals of MLOps*
- *Communication*
- *From DevOps to MLOps*
- *ML Workflow*
- *Scope*
- *MLOps view of ML Workflow*
- *MLOps cases*

Module 2: MLOps Development
- *Intro to build, train and evaluate machine learning models*
- *MLOps security*
- *Automating*
- *Apache AirFlow*
- *Kubernetes integration to MLOps*
- *Amazon SageMaker for MLOps*
- *Lab 1: Bring your own algorithm to an MLOp pipeline*
- *Demonstration: Amazon SageMaker*
- *Intro to build, train and evaluate machine learning models*
- *Lab 2: Code and Serve your ML model and AWS CodeBuild*
- *Activity: MLOps Action Plan Workbook*

Day Two

Module 3: MLOps Deployment
- *Introduction to deployment operations*
- *Model packaging*
- *Inference*
- *Lab 3: Deploy your model to production*
- *SageMaker production variants*
- *Deployment Strategies*
- *Deploying to the edge*
- *Lab 4: Conduct A/B testing*
- *Activity: MLOps Action Plan Workbook*

Day Three

Module 4: Model Monitoring and Operations
- *Lab 5: Troubleshoot your pipeline*
- *The importance of monitoring*
- *Monitoring by design*
- *Lab 6: Monitor your ML model*
- *Human-in-the-loop*
- *Amazon SageMaker Model Monitor*
- *Demonstration: Amazon SageMaker pipelines, Model Monitor, model registry and feature store*
- *Solving the problem(s)*
- *Activity: MLOps Action Plan Workbook*

Module 5: Wrap-Up
- *Course review*
- *Activity: MLOps Action Plan Workbook*
- *Wrap-up*

Practical Data Science with Amazon SageMaker

Course description

You will learn how to solve a real-world use case with Machine Learning (ML) and produce actionable results using Amazon SageMaker. This course walks through the stages of a typical data science process for Machine Learning from analyzing and visualizing a dataset to preparing the data, and feature engineering. Individuals will also learn practical aspects of model building, training, tuning, and deployment with Amazon SageMaker. Real life use case includes customer retention analysis to inform customer loyalty programs.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	1 day

Course objectives

In this course, you will learn how to:
- Prepare a dataset for training
- Train and evaluate a Machine Learning model
- Automatically tune a Machine Learning model
- Prepare a Machine Learning model for production
- Think critically about Machine Learning model results

Intended audience

This course is intended for:
- Developers
- Data Scientists

Prerequisites

- Familiarity with Python programming language
- Basic understanding of Machine Learning

Practical Data Science with Amazon SageMaker course outline

Module 1: Introduction to machine learning
- *Types of ML*
- *Job Roles in ML*
- *Steps in the ML pipeline*

Module 2: Introduction to data prep and SageMaker
- *Training and test dataset defined*
- *Introduction to SageMaker*

- *Demonstration: SageMaker console*
- *Demonstration: Launching a Jupyter notebook*

Module 3: Problem formulation and dataset preparation
- *Business challenge: Customer churn*
- *Review customer churn dataset*

Module 4: Data analysis and visualization
- *Demonstration: Loading and visualizing your dataset*
- *Exercise 1: Relating features to target variables*
- *Exercise 2: Relationships between attributes*
- *Demonstration: Cleaning the data*

Module 5: Training and evaluating a model
- *Types of algorithms*
- *XGBoost and SageMaker*
- *Demonstration: Training the data*
- *Exercise 3: Finishing the estimator definition*
- *Exercise 4: Setting hyper parameters*
- *Exercise 5: Deploying the model*
- *Demonstration: hyper parameter tuning with SageMaker*
- *Demonstration: Evaluating model performance*

Module 6: Automatically tune a model
- *Automatic hyper parameter tuning with SageMaker*
- *Exercises 6-9: Tuning jobs*

Module 7: Deployment / production readiness
- *Deploying a model to an endpoint*
- *A/B deployment for testing*
- *Auto Scaling*
- *Demonstration: Configure and test auto scaling*
- *Demonstration: Check hyper parameter tuning job*
- *Demonstration: AWS Auto Scaling*
- *Exercise 10-11: Set up AWS Auto Scaling*

Module 8: Relative cost of errors
- *Cost of various error types*
- *Demo: Binary classification cutoff*

Module 9: Amazon SageMaker architecture and features
- *Accessing Amazon SageMaker notebooks in a VPC*
- *Amazon SageMaker batch transforms*
- *Amazon SageMaker Ground Truth*
  Amazon SageMaker Neo

The Machine Learning Pipeline on AWS

Course description

This course explores how to use the machine learning (ML) pipeline to solve a real business problem in a project-based learning environment. Students will learn about each phase of the pipeline from instructor presentations and demonstrations and then apply that knowledge to complete a project solving one of three business problems: fraud detection, recommendation engines, or flight delays. By the end of the course, students will have successfully built, trained, evaluated, tuned, and deployed an ML model using Amazon SageMaker that solves their selected business problem. Learners with little to no machine learning experience or knowledge will benefit from this course.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, demonstrations, and group exercises	4 days

Course objectives

In this course, you will learn to:
- Select and justify the appropriate ML approach for a given business problem
- Use the ML pipeline to solve a specific business problem
- Train, evaluate, deploy, and tune an ML model using Amazon SageMaker
- Describe some of the best practices for designing scalable, cost-optimized, and secure ML pipelines in AWS
- Apply machine learning to a real-life business problem after the course is complete

Intended audience

This course is intended for:
- Developers
- Solutions Architects
- Data Engineers
- Anyone with little to no experience with ML and wants to learn about the ML pipeline using Amazon SageMaker

Prerequisites

We recommend that attendees of this course have:
- Basic knowledge of Python programming language
- Basic understanding of AWS Cloud infrastructure (Amazon S3 and Amazon CloudWatch)
- Basic experience working in a Jupyter notebook environment

The Machine Learning Pipeline on AWS course outline

Day One

Module 1: Introduction to Machine Learning and the ML Pipeline
- *Overview of machine learning, including use cases, types of machine learning, and key concepts*

- *Overview of the ML pipeline*
- *Introduction to course projects and approach*

Module 2: Introduction to Amazon SageMaker
- *Introduction to Amazon SageMaker*
- *Demo: Amazon SageMaker and Jupyter notebooks*
- *Hands-on: Amazon SageMaker and Jupyter notebooks*

Module 3: Problem Formulation
- *Overview of problem formulation and deciding if ML is the right solution*
- *Converting a business problem into an ML problem*
- *Demo: Amazon SageMaker Ground Truth*
- *Hands-on: Amazon SageMaker Ground Truth*
- *Practice problem formulation*
- *Formulate problems for projects*

Day Two

Checkpoint 1 and Answer Review

Module 4: Preprocessing
- *Overview of data collection and integration, and techniques for data preprocessing and visualization*
- *Practice preprocessing*
- *Preprocess project data*
- *Class discussion about projects*

Day Three

Checkpoint 2 and Answer Review

Module 5: Model Training
- *Choosing the right algorithm*
- *Formatting and splitting your data for training*
- *Loss functions and gradient descent for improving your model*
- *Demo: Create a training job in Amazon SageMaker*

Module 6: Model Evaluation
- *How to evaluate classification models*
- *How to evaluate regression models*
- *Practice model training and evaluation*
- *Train and evaluate project models*
- *Initial project presentations*

Day Four

Checkpoint 3 and Answer Review

Module 7: Feature Engineering and Model Tuning
- *Feature extraction, selection, creation and transformation*
- *Hyperparameter tuning*
- *Demo: SageMaker hyperparameter optimization*
- *Practice feature engineering and model tuning*
- *Apply feature engineering and model tuning to projects*
- *Final project presentations*

Module 8: Deployment

- *How to deploy, inference and monitor your model on Amazon SageMaker*
- *Deploying ML at the edge*
- *Demo: Creating and Amazon SageMaker endpoint*
- *Post-assessment*
- *Course Wrap-up*

Skills Domain: Migrate and Transfer

Migrating to AWS

Course description

This course is for individuals who seek an understanding of how to plan and migrate existing workloads to the AWS Cloud. You will learn about various cloud migration strategies and how to apply each step of the migration process, including portfolio discovery, application migration planning and design, conducting a migration, and post-migration validation and application optimization. Hands-on labs reinforce learning, and each lab is designed to provide you with the understanding and foundation necessary to complete migration tasks in your organization

Delivery method		Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

This course is designed to teach you how to:
- Recognize the common business and technical drivers for migrating to the cloud
- Summarize the three phases of a migration and associated objectives, tasks, and stakeholders for each
- Describe AWS architecture, tools, and migration best practices
- Distinguish between the various cloud migration strategies and when each is most appropriate
- Determine an organizations application migration readiness
- Discover a portfolio and gather data necessary for migration
- Plan and design and application migration strategy
- Perform and validate application migration to the cloud
- Optimize applications and operations after migrating to the cloud

Intended audience

This course is intended for:
- Solutions Architects and Engineers who perform cloud migrations
- IT Project Managers who are involved in projects related to migrating existing workloads to the AWS Cloud

Prerequisites

We recommend that attendees of this course have:
- Taken AWS Technical Essentials or Architecting on AWS classroom training
- Achieved AWS Certified Solutions Architect – Associate certification
- Familiarity with enterprise IT infrastructure (hardware and software)

aws training and certification

Migrating to AWS course outline

Day One

Module 1: Migrating to AWS – Overview
- *Migration process "Mental Model"*
- *Cloud Migration Strategies*
- *Comparing Cloud Migration Strategies*
- *Cloud Center of Excellence (CoE)*
- *Cloud Migration Readiness Assessment*
- *AWS Cloud Migration Process*
- *Group activity: Creating a high-level migration plan*

Module 2: Discovery and analysis
- *Migration Process Roadmap*
- *AWS Migration Methodology*
- *AWS Application Discovery Service*
- *Portfolio Analysis*
- *Hands-on lab 1: Performing discovery*

Module 3: Migration planning and design (part I)
- *AWS Migration Hub*
- *Pricing and Availability*
- *Process*
- *Group activity: Creating a detailed migration plan*

Day Two

Module 3: Migration planning and design (continued)
- *Application migration ordering*
- *Application prioritization criteria*
- *Defining success criteria*
- *Migration methodology*
- *Designing for migration*

Module 4: Migration, integration, and validation
- *Migration considerations*
- *Data migration*
- *AWS Snow Services*
- *AWS Data Migration Service (DMS)*
- *Server migration and demonstration*
- *Hands-on lab 2: Migrating databases to AWS EC2*
- *Hands-on lab 3: Migrating databases to Amazon Aurora*

Module 5: Operations and optimization
- *On premises vs. cloud*
- *IT operations*
- *Optimizing in the AWS Cloud*
- *Case study: Optimizing an application*

Skills Domain: Operations

Systems Operations on AWS

Course description

This course teaches systems operators and anyone performing system operations functions how to install, configure, automate, monitor, secure, maintain and troubleshoot the services, networks, and systems on AWS necessary to support business applications. The course also covers specific AWS features, tools, and best practices related to these functions

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

This course is designed to teach you how to:

- Recognize the AWS services that support the different phases of Operational Excellence, a Well-Architected Framework Pillar
- Manage access to AWS resources use AWS accounts and Organizations and AWS Identity and Access Management (AWS IAM)
- Maintain an inventory of in-use AWS resources using AWS services such as AWS Systems Manager, AWS CloudTrail and AWS Config
- Develop a resource deployment strategy utilizing metadata tags, Amazon Machine Images and Control Tower to deploy and maintain and AWS Cloud environment
- Automate resource deployment using AWS services such as AWS CloudFormation and AWS Service Catalog
- Use AWS Services to manage AWS resources through SysOps lifecycle processes such as deployments and patches
- Configure a highly available cloud environment that leverages AWS services such as Amazon Route 53 and Elastic Load Balancing to route traffic for optimal latency and performance
- Configure AWS Auto Scaling and Amazon Elastic Compute Cloud auto scaling to scale your cloud environment based on demand
- Use Amazon CloudWatch and associated features such as alarms, dashboards, and widgets to monitor your cloud environment
- Manage permissions and track activity in your cloud environment using AWS services such as AWS CloudTrail and AWS Config
- Deploy your resources to an Amazon Virtual Private Cloud (Amazon VPC), establish necessary connectivity to your Amazon VPC, and protect your resources from disruptions of service.
- State the purpose, benefits, and appropriate use cases for mountable storage in your AWS cloud environment
- Explain the operational characteristics of object storage in the AWS cloud, including Amazon Simple Storage Service (Amazon S3) and Amazon S3 Glacier
- Build a comprehensive costing model to help gather, optimize, and predict your cloud costs using services such as AWS Cost Explorer and the AWS Cost & Usage Report

Intended audience

This course is intended for:

aws training and certification

- Systems administrators and operators who are operating in the AWS Cloud
- Informational technology workers who want to increase their systems operations knowledge

Prerequisites

We recommend that attendees of this course have:
- Successfully completed the **AWS Technical Essentials** classroom training
- A background in either software development or systems administration
- Proficiency in maintaining operating systems at the command line, such as shell scripting in Linux environments or cmd/PowerShell in Windows
- Basic knowledge of networking protocols (TCP/IP, HTTP)

Systems Operations on AWS course outline

Day One

Module 1: Understanding systems operations on AWS
- *Systems operations in the Cloud*
- *AWS Well-Architected Framework*
- *AWS Well-Architected Tool*

Module 2a: Access Management
- *Access Management*
- *Resources, accounts and AWS Organizations*

Module 2b: Systems Discovery
- *Methods to interact with AWS services*
- *Introduction to monitoring services*
- *Tools for automating resource discovery*
- *Inventory with AWS Systems Manager and AWS Config*
- *Troubleshooting Scenario*
- *Hands-on lab 1: Auditing AWS Resources with AWS Systems Manager and AWS Config*

Module 3: Deploy and Update Resources
- *Systems operations in deployments*
- *Tagging Strategies*
- *Deployment with Amazon Machine Images (AMI's)*
- *Deployment using AWS Control Tower*
- *Troubleshooting Scenario*

Module 4: Automate Resource Deployment
- *Deployment using AWS CloudFormation*
- *Deployment using AWS Service Catalog*
- *Troubleshooting Scenario*
- *Hands-on lab 2: Infrastructure as Code*

Day Two

Module 5: Manage Resources

- *AWS Systems Manager*
- *Troubleshooting Scenario*
- *Hands-on lab 3: Operations as Code*

Module 6a: Configure Highly Available Systems
- *Distributing Traffic with Elastic Load Balancing*
- *Amazon Route 53*

Module 6b: Automate Scaling
- *Scaling with AWS Auto Scaling*
- *Scaling with Spot Instances*
- *Managing licenses with AWS License Manager*
- *Troubleshooting Scenario*

Module 7: Monitoring and Maintaining System Health
- *Monitoring and maintaining healthy workloads*
- *Monitoring distributed applications*
- *Monitoring AWS Infrastructure*
- *Monitoring your AWS Account*
- *Troubleshooting Scenario*
- *Hands-on lab 4: Monitoring Applications and Infrastructure*

Module 8: Data Security and System Auditing
- *Maintaining a strong identity and access foundation*
- *Implementing detection mechanisms*
- *Automating incident remediation*
- *Troubleshooting Scenario*
- *Hands-on lab 5: Implementing IAM permissions boundaries*

Day Three

Module 9: Operate Secure Resilient Networks
- *Building a secure Amazon Virtual Private Network (Amazon VPC)*
- *Networking beyond the VPC*
- *Troubleshooting Scenario*

Module 10a: Mountable Storage
- *Configuring Amazon Elastic Block Storage (Amazon EBS)*
- *Sizing Amazon EBS volumes for performance*
- *Using Amazon EBS snapshots*
- *Using Amazon Data Lifecycle Manager to manager your AWS resources*
- *Creating backup and data recovery plans*
- *Configuring shared file system storage*

Module 10b: Object Storage
- *Deploying Amazon Simple Storage Service (Amazon S3) with Access Logs, Cross-Region Replication and S3 Intelligent Tiering*
- *Hands-on lab 6: Automating with AWS Backup for Archiving and Recovery*

Module 11: Cost Reporting, Alerts and Optimization
- *Gaining AWS cost awareness*
- *Using control mechanisms for cost management*
- *Optimizing your AWS Spend and Usage*
- *Hands-on lab 7: Capstone lab for SysOps*

Skills Domain: Serverless

Developing Serverless Solutions on AWS

Course description

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

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and demonstrations	3 days

Course objectives

In this course, you will learn to:
- 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 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

Intended audience

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

Prerequisites

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*

Developing Serverless Solutions on AWS Course Outline

Day One

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 authentication 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 and 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
- *Hands-on Lab 1: Deploying a Simple Serverless Application*
- *Hands-on Lab 2: Message Fan-Out with Amazon EventBridge*

Day Two

Module 7: Writing Good Lambda Functions
- *How the Lambda lifecycle influences your function mode*
- *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 call back pattern*
- *Standard vs. Express workflows*
- *Step functions direct integrations*
- *Try it out exercise: Troubleshooting a standard step function workflow*

Module 9: Observability and Monitoring
- *The three pillars of observability*
- *Amazon CloudWatch 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
- *Hands-on Lab 3: Workflow Orchestration using AWS Step Functions*
- *Hands-on Lab 4: Observability and Monitoring*

Day Three

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 consideration 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 deployment*
- *Best practices for automation*
- *Course Wrap-up*

Hands-on Labs:
- *Hands-on Lab 5: Securing Serverless applications*
- *Hands-on Lab 6: Serverless CS/CD on AWS*

Skills Domain: Security

AWS Security Best Practices

Course description
This course focuses on understanding and implementing AWS security best practices. It provides an overview of AWS security and control types and then a deep dive on securing network infrastructure, compute security, and logging and alerting.

Level	Delivery method	Duration
Intermediate	Instructor-led training, presentations, and assessments	1 day

Course objectives
In this course, you will learn how to:
- Design and implement a secure network infrastructure
- Design and implement compute security
- Design and implement a logging solution

Intended audience
This course is intended for:
- Solutions Architects, Cloud Engineers, Security Engineers, Delivery and Implementation Engineers, and Cloud Center of Excellence (CCOE)

Prerequisites
Before attending this course, participants should have completed the following:
Required:
- AWS Security Fundamentals course
- AWS Security Essentials course
- Certifications Achieved: AWS Certified Solutions Architect – Associate or a strong background in information security concepts, techniques, and paradigms in the area of networking, operating systems, data encryption, and operational controls

AWS Security Best Practices course outline

Module 1: AWS Security Overview
- *Global Infrastructure*
- *Security Best Practices*
- *Shared Responsibility Model*

Module 2: Network Design

- *AWS Virtual Private Cloud*
- *VPC Connectivity*
- *DNS Operations and Security*

Module 3: Securing the Network
- *Defense in Depth*
- *Native Network Security*
- *Types of Security Groups*
- *Layered Filtering*
- *VPC Traffic Mirroring*
- *Layering Security with AWS*
- *Leveraging Third Party Networks*

Lab 1: Controlling the Network
- *Create a three-security zone network infrastructure.*
- *Implement network segmentation using security groups, NACLs, and public and private subnets.*
- *Monitor network traffic to EC2 instances using VPC flow logs.*

Module 4: Compute Security
- *Introduction to Compute Security*
- *Common EC2 Vulnerabilities*
- *Compute Hardening*
- *Elastic Block Store Encryption*
- *Secure Maintenance*
- *Container Security*
- *Using AWS Marketplace*

Lab 2: Securing the starting point (EC2)
- *Create a custom AMI.*
- *Deploy a new EC2 instance from a custom AMI.*
- *Patch an EC2 instance using AWS Systems Manager.*
- *Encrypt an EBS volume.*
- *Understand how EBS encryption works and how it impacts other operations.*
- *Use security groups to limit traffic between EC2 instances to only that which is encrypted.*

Module 5: Logging and Alerting
- *Introduction to Logging and Alerting*
- *AWS CloudTrail*
- *AWS CloudWatch*
- *Amazon VPC Flow Logs*
- *Audit your AWS Environment*

Lab 3: Security Monitoring
- *Configure an Amazon Linux 2 instance to send log files to Amazon CloudWatch.*
- *Create Amazon CloudWatch alarms and notifications to monitor for failed login attempts.*
- *Create Amazon CloudWatch alarms to monitor network traffic through a NAT gateway.*

AWS Security Governance at Scale

Course description

Security is foundational to AWS. Governance at scale is a new concept for automating cloud governance that can help companies retire manual processes in account management, budget enforcement, and security and compliance. By automating common challenges, companies can scale without inhibiting agility, speed, or innovation. In addition, they can provide decision makers with the visibility, control, and governance necessary to protect sensitive data and systems. In this course, you will learn how to facilitate developer speed and agility, and incorporate preventive and detective controls. By the end of this course, you will be able to apply governance best practices.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	1 day

Course objectives

In this course, you will learn how to:
- Establish a landing zone with AWS Control Tower
- Configure AWS Organizations to create a multi-account environment
- Implement identity management using AWS Single Sign-On users and groups
- Federate access using AWS SSO
- Enforce policies using prepackaged guardrails
- Centralize logging using AWS CloudTrail and AWS Config
- Enable cross-account security audits using AWS Identity and Access Management (IAM)
- Define workflows for provisioning accounts using AWS Service Catalog and AWS Security Hub

Intended audience

This course is intended for:
- Solutions Architect, Security DevOps, and Security engineers

Prerequisites

Before attending this course, participants should have completed the following:
Required:
- AWS Security Fundamentals course
- AWS Security Essentials course

Optional:
- AWS Cloud Management Assessment
- Introduction to AWS Control Tower course
- Automated Landing Zone course
- Introduction to AWS Service Catalog course

AWS Security Governance at Scale course outline

Module 1: Governance at Scale
- *Governance at scale focal points*
- *Business and Technical Challenges*

Module 2: Governance Automation
- *Multi-account strategies, guidance, and architecture*
- *Environments for agility and governance at scale*
- *Governance with AWS Control Tower*
- *Use cases for governance at scale*

Module 3: Preventive Controls
- *Enterprise environment challenges for developers*
- *AWS Service Catalog*
- *Resource creation*
- *Workflows for provisioning accounts*
- *Preventive cost and security governance*
- *Self-service with existing IT service management (ITSM) tools*

Lab 1: Deploy Resources for AWS Catalog
- *Create a new AWS Service Catalog portfolio and product.*
- *Add an IAM role to a launch constraint to limit the actions the product can perform.*
- *Grant access for an IAM role to view the catalog items.*
- *Deploy an S3 bucket from an AWS Service Catalog product.*

Module 4: Detective Controls
- *Operations aspect of governance at scale*
- *Resource monitoring*
- *Configuration rules for auditing*
- *Operational insights*
- *Remediation*
- *Clean up accounts*

Lab 2: Compliance and Security Automation with AWS Config
- *Apply Managed Rules through AWS Config to selected resources*
- *Automate remediation based on AWS Config rules*
- *Investigate the Amazon Config dashboard and verify resources and rule compliance*

Lab 3: Taking Action with AWS Systems Manager
- *Setup Resource Groups for various resources based on common requirements*
- *Perform automated actions against targeted Resource Groups*

Module 5: Resources
- *Explore additional resources for security governance at scale*

aws training and certification

Security Engineering on AWS

Course description

This course demonstrates how to efficiently use AWS security services to stay secure in the AWS Cloud. The course focuses on the security practices that AWS recommends for enhancing the security of your data and systems in the cloud. It highlights the security features of AWS key services including compute, storage, networking, and database services. You will also learn how to leverage AWS services and tools for automation, continuous monitoring and logging, and responding to security incidents.

Level	Delivery method	Duration
Intermediate	Instructor-led training, hands-on labs, and group exercises	3 days

Course objectives

In this course you will:
- Identify security benefits and responsibilities of using the AWS Cloud
- Build secure application infrastructures
- Protect applications and data from common security threats
- Perform and automate security checks
- Configure authentication and permissions for applications and resources
- Monitor AWS resources and respond to incidents
- Capture and process logs
- Create and configure automated and repeatable deployments with tools such as AMI's and AWS CloudFormation

Intended audience

This course is intended for:
- Security Engineers
- Security Architects
- Information Security professionals

Prerequisites

We recommend that attendees of this course have:
- Working knowledge of IT security practices and infrastructure concepts
- Completed AWS Security Essentials and Architecting on AWS Instructor Led Course

Security Engineering on AWS course outline

Day One
Module 1: Security on AWS
- *Security in the AWS Cloud*
- *AWS Shared Responsibility Model*

- *Incident response overview*
- *DevOps with security engineering*

Module 2: Identifying Entry Points on AWS
- *Identify the different ways to access the AWS platform*
- *Understanding IAM policies*
- *IAM Permissions Boundary*
- *IAM Access Analyzer*
- *Multi-factor authentication*
- *AWS CloudTrail*
- *Hands-on lab 1: Cross-account access*

Module 3: Security Considerations: Web Application Environments
- *Threats in a three-tier architecture*
- *Common threats: User access*
- *Common threats: Data access*
- *AWS Trusted Advisor*

Module 4: Application security
- *Amazon machine images (AMIs)*
- *Amazon Inspector*
- *AWS Systems Manager*
- *Hands-on lab 2: Using AWS Systems Manager and Amazon Inspector*

Module 5: Data security
- *Data protection strategies*
- *Encryption on AWS*
- *Protecting data at rest with Amazon S3, Amazon RDS, and Amazon DynamoDB*
- *Protecting archived data with Amazon S3 Glacier*
- *Amazon S3 Analyzer*
- *Amazon S3 Access Points*

Day Two

Module 6: Securing Network Communications
- *Amazon VPC security considerations*
- *Amazon VPC traffic monitoring*
- *Responding to compromised instances*
- *Elastic Load Balancing*
- *AWS Certificate Manager*

Module 7: Monitoring and Collecting Logs on AWS
- *Amazon CloudWatch and CloudWatch Logs*
- *AWS Config*
- *Amazon Macie*
- *Amazon VPC Flow logs*
- *Amazon S3 server access logs*
- *ELB access logs*
- *Hands-on lab 3: Monitor and Respond with AWS Config*

Module 8: Processing Logs on AWS
- *Amazon Kinesis for log processing*
- *Amazon Athena for log processing*
- *Hands-on lab 4: Web Server Log Analysis*

Module 9: Security Considerations: Hybrid Environments
- *AWS Site-to-Site and Client VPN connections*
- *AWS Direct Connect*
- *AWS Transit Gateway*

Module 10: Out-of-region protection
- *Amazon Route 53*
- *AWS WAF*
- *Amazon CloudFront*
- *AWS Shield*
- *AWS Firewall Manager*
- *DDoS mitigation on AWS*

Day Three

Module 11: Security Considerations: Serverless Environments
- *Amazon Cognito*
- *Amazon API Gateway*
- *AWS Lambda*

Module 12: Threat Detection and investigation
- *Amazon GuardDuty*
- *AWS Security Hub*
- *AWS Detective*

Module 13: Secrets Management on AWS
- *AWS Key Management Service (AWS KMS)*
- *AWS CloudHSM*
- *AWS Secrets Manager*
- *Hands-on lab 5: Using AWS KMS*

Module 14: Automation and Security by Design
- *AWS CloudFormation*
- *AWS Service Catalog*
- *Hands-on lab 6: Security automation on AWS with AWS Service Catalog*

Module 15: Account Management and Provisioning on AWS
- *AWS Organizations*
- *AWS Control Tower*
- *AWS SSO*
- *AWS Directory Services*
- *Hands-on lab 7: Federated Access with ADFS*

Exam Readiness

Before taking an AWS Certification exam, we recommend you have hands-on experience with relevant AWS products and services. We offer a number of resources to supplement your experience and help you prepare for your AWS Certification.

Exam Readiness Intensive Workshop Classroom Training Course

LEVEL	COURSE TITLE	DESCRIPTION	DURATION
Intermediate	*Exam Readiness Intensive Workshop: AWS Certified Solutions Architect – Associate*	*Learn architectural principles and best practices and how to prepare for the exam with this course that combines Architecting on AWS and Exam Readiness: AWS Certified Solutions Architect – Associate with additional content, quizzes, and a review of the practice exam included only in this five-day course.*	*5 days*

Exam Readiness Classroom Training Courses

COURSE TITLE	DESCRIPTION	DURATION
Exam Readiness: AWS Certified Solutions Architect – Associate	*Learn how to prepare for the exam by exploring the exam's topic areas and how they map to architecting on AWS and to specific areas to study.*	*4 hours*
Exam Readiness: AWS Certified Developer – Associate	*Learn how to prepare for the exam by exploring the exam's topic areas, mapping them to developing on AWS, and identifying specific areas to study.*	*4 hours*
Exam Readiness: AWS Certified SysOps Administrator – Associate	*Learn how to prepare for the exam by exploring the exam's topic areas and how they map to SysOps on AWS and to specific areas to study.*	*4 hours*
Exam Readiness: AWS Certified DevOps Engineer – Professional	*Learn how to prepare for the exam by exploring the exam's topic areas and how they map to DevOps on AWS and to specific areas to study.*	*1 day*
Exam Readiness: AWS Certified Solutions Architect – Professional	*Prepare for the exam by exploring the exam's topic areas, how they map to architecting on AWS and mapping them to specific areas to study.*	*1 day*
Exam Readiness: AWS Certified Advanced Networking – Specialty	*Learn to navigate the exam, understand advanced networking concepts, and practice network security and network troubleshooting best practices.*	*1 day*
Exam Readiness: AWS Certified Security - Specialty	*Learn how to prepare for the exam by exploring the exam's topic areas and mapping them to specific areas to study.*	*4 hours*
Exam Readiness: AWS Certified Machine Learning - Specialty	*Learn how to prepare for the exam by exploring the exam's topic areas and mapping them to specific areas to study.*	*4 hours*
Exam Readiness: AWS Certified Database - Specialty	*Learn to what expect for the exam, how the exam is structured, and how to interpret questions.*	*1 day*
Exam Readiness: AWS Certified Data Analytics - Specialty	*Learn to what expect for the exam, how the exam is structured, and how to interpret questions.*	*1 day*

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