UK G-Cloud 10 Framework Agreement Amazon Web Services EMEA SARL Training Services Definition Document

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1.0 AWS Training Offerings – High-Level Summary

1.1 AWS Essentials Courses: Get Started

The following subsections describe foundational one-day workshops that introduce users to the benefits and core services of the Amazon Web Services (AWS) Cloud.

1.1.1 AWS Business Essentials

AWS Business Essentials helps IT business leaders and professionals understand the benefits of cloud computing and how a cloud strategy can help you meet your business objectives. In this course, we discuss the advantages of cloud computing for your business and the fundamentals of AWS, including financial benefits. This course also introduces you to successful cloud adoption frameworks so to help you consider the AWS platform within your cloud computing strategy.

1.1.2 AWS Technical Essentials

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

1.1.3. AWS Cloud Practitioner Essentials

AWS Cloud Practitioner Essentials 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.

1.2 AWS Technical Courses: Grow Your Skills

The following subsections describe three-day instructor-led courses from which you will deepen your technical skills and learn best practices for architecting, developing, and operating infrastructure and applications on AWS. These classes are taught by qualified AWS technical trainers and help you learn through a mix of presentation, group discussion, and hands-on lab exercises. These classes span three distinct certification categories: Architecting, Developing, and Operations.

1.2.1 Architecting on AWS

Architecting on AWS covers the fundamentals of building IT infrastructure on AWS. The course is designed to teach solutions architects how to optimise the use of the AWS Cloud by understanding AWS services and how these services fit into cloud-based solutions. Because architectural solutions may differ depending on industry, type of applications, and size of business, this course emphasises AWS Cloud best practices and recommended design patterns to help students think through the process of architecting optimal IT solutions on AWS. It also presents case studies throughout the course that showcase how some AWS customers have designed their infrastructures and the strategies and services

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they implemented. Opportunities to build a variety of infrastructures via a guided, hands-on approach are also provided.

1.2.2 Advanced Architecting on AWS

Building on concepts introduced in Architecting on AWS, *Advanced Architecting on AWS* is intended for individuals who are experienced with designing scalable and elastic applications on the AWS platform. This course covers how to build complex solutions that incorporate data services, governance, and security on AWS. This course introduces specialised AWS services, including AWS Direct Connect and AWS Storage Gateway to support hybrid architecture. It also covers designing best practices for building scalable, elastic, secure, and highly available applications on AWS. It is recommended that participants attend the *Architecting on AWS* as a prerequisite class. It is also recommended that participants have achieved the certification of *AWS Certified Solutions Architect – Associate*.

1.2.3 Developing on AWS

Developing on AWS helps developers understand how to use the AWS SDK to develop secure and scalable cloud applications. The course provides in-depth knowledge about how to interact with AWS using code and covers key concepts, best practices, and troubleshooting tips.

1.2.4 System Operations on AWS

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

1.2.5 DevOps Engineering on AWS

DevOps Engineering on AWS demonstrates how to use the most common DevOps patterns to develop, deploy, and maintain applications on AWS. The course covers the core principles of the DevOps methodology and examines a number of use cases applicable to startup, small and medium-sized business, and enterprise development scenarios. It is recommended that participants attend the *Developing on AWS* and *System Operations on AWS* courses as prerequisites.

1.3 AWS Specialty Courses: Grow Your Skills

The subsections below describe three-day instructor-led classes that allow customers and partners to dive deeper into specific solution areas.

1.3.1 Big Data on AWS

Big Data on AWS introduces you to cloud-based big data solutions such as Amazon Elastic MapReduce (Amazon EMR), Amazon Redshift, Amazon Kinesis, and the rest of the AWS big data platform. In this course, we show you how to use Amazon EMR to process

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data using the broad ecosystem of Hadoop tools like Hive and Hue. We also teach you how to create big data environments, work with Amazon DynamoDB, Amazon Redshift, and Amazon Kinesis, and leverage best practices to design big data environments for security and cost-effectiveness.

1.3.2 Security Operations on AWS

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

1.3.3 Data Warehousing on AWS

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

1.3.4 Migrating to AWS

Migrating to AWS focuses on planning and migrating existing workloads to the AWS Cloud. The course covers various cloud migration strategies with a detailed discussion on each phase of the migration process, including portfolio discovery, application migration planning and design, migration execution, and post-migration validation and application optimization. The first part of the course provides students with an overview of migration planning principles and best practices, and the second half of the class focuses on migration design and implementation with hands-on labs to reinforce concepts.

1.3.5 Running Container-Enabled Microservices on AWS

Running Container-Enabled Microservices on AWS is designed to teach you how to manage and scale container-enabled applications by using Amazon EC2 Container Service (ECS). The course highlights the challenges of running containerized applications at scale and provides guidance on creating and using Amazon ECS to develop and deploy containerized microservices-based applications. In the hands-on lab exercises, you will use Amazon ECS to handle long-running services, build and deploy container images, link services together, and scale capacity to meet demand. This bootcamp also discusses how to run container workers for asynchronous application processes.

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1.3.6 Building a Serverless Data Lake

Building a Serverless Data Lake is a one-day, advanced-level bootcamp designed to teach you how to design, build, and operate a serverless data lake solution with AWS services. The bootcamp will include topics such as ingesting data from any data source at large scale, storing the data securely and durably, enabling the capability to use the right tool to process large volumes of data, and understanding the options available for analyzing the data in near-real time.

1.3.7. Deep Learning on AWS

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

2.0 AWS Training Offerings – Courses in Detail

2.1 AWS Essentials Courses: Get Started

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

2.1.1 AWS Business Essentials

AWS Business Essentials helps IT business leaders and professionals understand the benefits of cloud computing and how a cloud strategy can help you meet your business objectives. In this course, we discuss the advantages of cloud computing for your business and the fundamentals of AWS, including financial benefits. This course also introduces you to successful cloud adoption frameworks so to help you consider the AWS platform within your cloud computing strategy.

2.1.1.1 At a Glance

Level	Modality	Length
Foundational	Instructor-led, Live or Virtual Class	1 Day

(a) Course Objectives

This course is designed to teach you how to:

- Identify the value and benefits of the AWS Cloud
- Recognise the valuable ways that the AWS platform can be used

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- Understand the robust security capabilities, controls, and assurances in place to maintain data and network security
- Articulate the financial impact the AWS Cloud can have on an organization's cost management, while minimizing the risks associated with consumption-based pricing models

(b) Intended Audience

This course is intended for:

- IT Business Decision-Makers
- Individuals who are new to working with AWS

(c) Prerequisites

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

- Working knowledge of IT infrastructure concepts
- Familiarity with basic finance concepts
- Familiarity with basic IT security concepts

(d) Delivery Method

This course will be delivered through a mix of:

- Instructor-Led Training (ILT)
- Group Discussions/Workshop

(e) Course Outline

Note: Course outline may vary slightly based on the regional location and/or language in which the class is delivered.

This course will cover the following concepts:

- Getting started with the cloud
- Leveraging AWS for competitive advantages
- Cloud economics
- Security and compliance
- Migrating to the cloud

2.1.2 AWS Technical Essentials

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

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2.1.2.1 At a Glance

Level	Modality	Length
Foundational	Instructor-led, Live or Virtual Class	1 Day

(a) Course Objectives

This course teaches you how to:

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

(b) Intended Audience

This course is intended for:

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

(c) Delivery Method

- This course is delivered through a mix of ILT and hands-on labs.
- Hands-On Activity
- This course allows you to test new skills and apply knowledge to your working environment through a variety of practical exercises.

(d) Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

This course covers the following concepts:

- Introduction and History of AWS

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

2.1.3 AWS Cloud Practitioner Essentials

AWS Cloud Practitioner Essentials 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.

2.1.3.1 At a Glance

Level	Modality	Length
Foundational	Digital, Self-paced	6 Hours

(a) Course Objectives

Upon completion of this curriculum, learners should be able to:

- Define what the AWS Cloud is and the basic global infrastructure.
- Describe the key services on the AWS Platform and their common use cases (e.g., compute, analytics, etc.).
- Describe basic AWS Cloud architectural principles.
- Describe basic security and compliance aspects of the AWS platform and the shared security model.
- Define the billing, account management, and pricing models.
- Identify sources of documentation or technical assistance (e.g., whitepapers, support tickets, etc.).
- Describe the AWS Cloud value proposition.
- Describe basic/core characteristics of deploying and operating in the AWS Cloud.

(b) Intended Audience

This curriculum is intended for:

- Sales
- Legal
- Marketing
- Business analysts
- Project managers

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- Chief Experience Officers
- AWS Academy students
- Other IT-related professionals

(c) Prerequisites

- This is an entry-level training, but it assumes the following:
- General IT Technical Knowledge
- General IT Business Knowledge.

(d) Curriculum Outline

This course covers the following concepts:

Section 1: AWS Cloud Overview

- Introduction to the Cloud
- Introduction to the AWS Cloud

Section 2: AWS Technology Overview

- Overview of Services and Categories
- Introduction to the AWS Global Infrastructure
- Introduction to Amazon VPC
- Introduction to Security Groups
- Introduction to Amazon EC2
- Introduction to Amazon EBS
- Introduction to Amazon S3
- Introduction to AWS Database Solutions

Section 3: AWS Security Overview

- Introduction to AWS Security
- The AWS Shared Responsibility Model
- AWS Access Control and Management
- AWS Security Compliance Programs
- AWS Security Resources

Section 4: AWS Architecting Overview

- Introduction to the Well Architected Framework
- Reference Architecture: Fault Tolerance and High Availability
- Reference Architecture: Web Hosting

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Section 5: AWS Pricing and Support Overview

- Fundamentals of Pricing
- Pricing Details
- The TCO Calculator Overview
- AWS Support Plans Overview

2.2 AWS Technical Courses: Grow Your Skills

The following subsections describe 3-day instructor-led courses from which you will deepen your technical skills and learn best practices for architecting, developing, and operating infrastructure and applications on AWS. These classes are taught by qualified AWS technical trainers and help you learn through a mix of presentation, group discussion, and hands-on lab exercises. These classes span three distinct certification categories: Architecting, Developing, and Operations.

2.2.1 Architecting on AWS

Architecting on AWS covers the fundamentals of building IT infrastructure on AWS. The course is designed to teach solutions architects how to optimise the use of the AWS Cloud by understanding AWS services and how these services fit into cloud-based solutions. Because architectural solutions may differ depending on industry, type of applications, and size of business, this course emphasises AWS Cloud best practices and recommended design patterns to help students think through the process of architecting optimal IT solutions on AWS. It also presents case studies throughout the course that showcase how some AWS customers have designed their infrastructures and the strategies and services they implemented. Opportunities to build a variety of infrastructures via a guided, hands-on approach are also provided.

2.2.1.1 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live or Virtual Class	3 Days

(a) Course Objectives

This course teaches you how to:

- Make architectural decisions based on the AWS-recommended 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 AWS-based infrastructure more efficient in order to increase performance and reduce costs

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- Use the Well-Architected Framework to improve architectures with AWS solutions

(b) Intended Audience

This course is intended for:

- Solutions Architects
- Solution Design Engineers

(c) Prerequisites

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

- Courses taken: AWS Technical Essentials
- Working knowledge of distributed systems
- Familiarity with general networking concepts
- Working knowledge of multi-tier architectures
- Familiarity with cloud computing concepts

(d) Delivery Method

This course will be delivered through a mix of:

- ILT
- Hands-on Labs

(e) Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

Day 1

- Core AWS Knowledge
- Designing Your Environment
- Making Your Environment Highly Available
- Forklifting an Existing Application onto AWS

Day 2

- Event-Driven Scaling
- Automating and Decoupling Your Infrastructure
- Designing Storage at Scale
- Hosting a New Web Application on AWS

Day 3

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- The Four Pillars of the Well-Architected Framework
- Disaster Recovery and Failover Strategies
- Troubleshooting Your Environment
- Large-Scale Design Patterns and Case Studies

2.2.2 Advanced Architecting on AWS

Building on concepts introduced in Architecting on AWS, *Advanced Architecting on AWS* is intended for individuals who are experienced with designing scalable and elastic applications on the AWS platform. This course covers how to build complex solutions that incorporate data services, governance, and security on AWS. This course introduces specialised AWS services, including AWS Direct Connect and AWS Storage Gateway to support hybrid architecture. It also covers designing best practices for building scalable, elastic, secure, and highly available applications on AWS. It is recommended that participants attend the *Architecting on AWS* as a prerequisite class. It is also recommended that participants have achieved the certification of *AWS Certified Solutions Architect – Associate*.

2.2.2.1 At a Glance

Level	Modality	Length
Advanced	Instructor-led, Live or Virtual Class	3 Day

(a) Course Objectives

This course teaches you how to:

- Apply the AWS Well-Architected Framework.
- Manage multiple AWS accounts for your organization.
- Connect on-premises data centres to the AWS Cloud.
- Understand billing implications of connecting multi-region Amazon VPCs.
- Move large data from on-premises data centres to the AWS Cloud.
- Design large datastores for the AWS Cloud.
- Understand different architectural designs for scaling a large website.
- Protect your infrastructure from DDoS attacks.
- Secure your data on AWS with encryption.
- Design protection of data at rest as well as data in flight.
- Enhance the performance of your solutions.
- Select the most appropriate AWS deployment mechanism.

(b) Intended Audience

This course is intended for:

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- Experienced IT professionals who are already familiar with AWS services

(c) Prerequisites

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

- Attended Architecting on AWS
- Achieved AWS Certified Solutions Architect - Associate

(d) Delivery Method

This course is delivered through a mix of:

- ILT
- Web-Based Training (WBT)
- Hands-on Labs

(e) Hands-On Activity

This course allows you to test new skills and apply knowledge to your working environment through a variety of practical exercises.

Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

Day 1

- Review of Architecting for the Cloud Best Practices and the AWS Well-Architected Framework
- AWS Account Strategies
- Advanced Networking Architectures
- Deployment Management on AWS

Day 2

- Designing Large Datastores
- Moving Large Datastores into AWS
- Big Data Architectures
- Designing for Large Scale Applications

Day 3

- Building Resilience into Your Architecture
- Data Encryption and Key Management in AWS

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- Securing Data on AWS
- Designing for Performance

2.2.3 Developing on AWS

Developing on AWS helps developers understand how to use the AWS SDK to develop secure and scalable cloud applications. The course provides in-depth knowledge about how to interact with AWS using code and covers key concepts, best practices, and troubleshooting tips.

2.2.3.1 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live or Virtual Class	3 Days

(a) Course Objectives

This course is designed to teach you how to:

- Set up the AWS SDK and developer credentials for Java, C#/.Net, Python, and JavaScript.
- Use the AWS SDK to interact with AWS services and develop solutions.
- Use Amazon Simple Storage Service (Amazon S3) and Amazon DynamoDB as data stores.
- Integrate applications and data by using Amazon Kinesis, AWS Lambda, Amazon Simple Queue Service (Amazon SQS), Amazon Simple Notification Service (Amazon SNS), and Amazon Simple Workflow Service (Amazon SWF).
- Use AWS IAM for service authentication.
- Use Web Identity Framework and Amazon Cognito for user authentication.
- Use Amazon ElastiCache and Amazon CloudFront to improve application scalability.
- Deploy applications by using AWS Elastic Beanstalk and AWS CloudFormation.

(b) Intended Audience

This course is intended for:

- Intermediate-level software developers

(c) Prerequisites

Attendees should have the following prerequisites:

- Familiarity with AWS services
- A working knowledge of Java, C#/.Net, or Python

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(d) Delivery Method

This course is delivered through a mix of:

- Instructor-led Training
- Hands-on Labs

(e) Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

Day 1: Building the Foundation

- Introduction to Developing on AWS
- Choosing a Data Store
- Developing Storage Solutions with Amazon S3
- Developing Flexible NoSQL Solutions with Amazon DynamoDB

Day 2: Connecting Applications and Data with Event-Driven Processing

- Working with Events
- Developing Event-Driven Solutions with Amazon Kinesis Stream
- Developing Event-Driven Solutions with Amazon SWF, Amazon SQS, and Amazon SNS
- Developing Event-Driven Solutions with AWS Lambda

Day 3: Developing and Deploying Secure, Scalable Applications

- Developing Secure Applications
- Caching Information for Scalability
- Monitoring Your Application and AWS Resources with Amazon CloudWatch
- Deploying Applications with AWS Elastic Beanstalk and AWS CloudFormation

2.2.4 System Operations on AWS

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

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2.2.4.1 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live or Virtual Class	3 Days

(a) Course Objectives

This course is designed to teach you how to:

- Use standard AWS infrastructure features such as Amazon VPC, Amazon EC2, Elastic Load Balancing, and Auto Scaling from the command line
- Use AWS CloudFormation and other automation technologies to produce stacks of AWS resources that can be deployed in an automated, repeatable fashion
- Build functioning virtual private networks with Amazon VPC from the ground up using the AWS Management Console
- Deploy Amazon EC2 instances using command line calls and troubleshoot the most common problems with instances
- Monitor the health of Amazon EC2 instances and other AWS services
- Manage user identity, AWS permissions, and security in the cloud
- Manage resource consumption in an AWS account using tools such as Amazon CloudWatch, tagging, and Trusted Advisor
- Select and implement the best strategy for creating reusable Amazon EC2 instances
- Configure a set of Amazon EC2 instances that launch behind a load balancer, with the system scaling up and down in response to demand
- Edit and troubleshoot a basic AWS CloudFormation stack definition

(b) Intended Audience

This course is intended for:

- System Administrators
- Software Developers, especially those in a DevOps role

(c) Prerequisites

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

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

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(d) Delivery Method

This course will be delivered through a mix of:

- ILT
- Hands-on Labs

(e) Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

Day 1

- System Operations on AWS Overview
- Networking in the Cloud
- Computing in the Cloud

Day 2

- Storage and Archiving in the Cloud
- Monitoring in the Cloud
- Managing Resource Consumption in the Cloud

Day 3

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

2.2.5 DevOps Engineering on AWS

DevOps Engineering on AWS demonstrates how to use the most common DevOps patterns to develop, deploy, and maintain applications on AWS. The course covers the core principles of the DevOps methodology and examines a number of use cases applicable to startup, small and medium-sized business, and enterprise development scenarios. It is recommended that participants attend the *Developing on AWS* and *System Operations on AWS* courses as prerequisites.

(a) Course Objectives

This course is designed to teach you how to:

- Use the principal concepts and practices behind the DevOps methodology
- Design and implement an infrastructure on AWS that supports one or more DevOps development projects

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- Use AWS CloudFormation and AWS OpsWorks to deploy the infrastructure necessary to create development, test, and production environments for a software development project
- Use AWS CodeCommit and understand the array of options for enabling a Continuous Integration environment on AWS
- Use AWS CodePipeline to design and implement a Continuous Integration and Delivery pipeline on AWS
- Implement several common Continuous Deployment use cases using AWS technologies, including blue/green deployment and A/B testing
- Distinguish between the array of application deployment technologies available on AWS (including AWS CodeDeploy, AWS OpsWorks, AWS Elastic Beanstalk, Amazon EC2 Container Service, and Amazon EC2 Container Registry), and decide which technology best fits a given scenario
- Fine tune the applications you deliver on AWS for high performance and use AWS tools and technologies to monitor your application and environment for potential issues

(b) Intended Audience

This course is intended for:

- System Administrators
- Software Developers

(c) Prerequisites

We recommend that attendees of this course have the following prerequisites

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

(d) Delivery Method

- ILT
- Hands-on Labs

(e) Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

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Day 1

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

Day 2

- Continuous Integration on AWS
- Continuous Deployment on AWS
- Deploying Applications on AWS, Part 1

Day 3

- Deploying Applications on AWS, Part 2
- Continuous Integration and Delivery Pipelines on AWS
- Performance-Tuning Your Deployments
- Administering and Automating Your Infrastructure

2.3 AWS Specialty Courses: Grow Your Skills

The subsections below describe 3-day instructor-led classes that allow customers and partners to dive deeper into specific solution areas.

2.3.1 Big Data on AWS

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

2.3.1.1 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live or Virtual Class	3 Days

(a) Course Objectives

This course teaches you how to:

- Fit AWS solutions inside of a big data ecosystem
- Leverage Apache Hadoop in the context of Amazon EMR
- Identify the components of an Amazon EMR cluster

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

(b) Intended Audience

This course is intended for:

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

(c) Prerequisites

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

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

(d) Delivery Method

This course will be delivered through a mix of:

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- ILT
- Hands-on Labs

(e) Hands-On Activity

- This course allows you to test new skills and apply knowledge to your working environment through a variety of practical exercises

(f) Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

Day 1

- Overview of Big Data
- Big Data Ingestion and Transfer
- Big Data Streaming and Amazon Kinesis
- Lab 1: Using Amazon Kinesis to Stream and Analyse Apache Server Log Data
- Big Data Storage Solutions
- Big Data Processing and Analytics
- Lab 2: Using Amazon Athena to Query Log Data From Amazon S3

Day 2

- Apache Hadoop and Amazon EMR
- Lab 3: Storing and Querying Data on Amazon DynamoDB
- Using Amazon EMR
- Hadoop Programming Frameworks
- Lab 4: Processing Server Logs With Hive on Amazon EMR
- Web Interfaces on Amazon EMR
- Lab 5: Running Pig Scripts in Hue on Amazon EMR
- Apache Spark on Amazon EMR
- Lab 6: Processing NY Taxi data using Spark on Amazon EMR

Day 3

- Amazon Redshift and Big Data
- Visualizing and Orchestrating Big Data
- Lab 7: Using TIBCO Spotfire to Visualise Data
- Managing Big Data Costs

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- Securing Your Amazon Deployments
- Big Data Design Patterns

2.3.2 Security Operations on AWS

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

2.3.2.1 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live or Virtual Class	3 Days

(a) Course Objectives

This course teaches you how to:

- Assimilate and leverage the AWS shared security responsibility model
- Mange user identity and access management in the AWS Cloud
- Use AWS security services such as AWS IAM, Amazon Virtual Private Cloud, AWS Config, AWS CloudTrail, AWS Key Management Service, AWS CloudHSM, and AWS Trusted Advisor
- Implement better security controls for your resources in the AWS Cloud
- Manage and audit your AWS resources from a security perspective
- Monitor and log access and usage of AWS compute, storage, networking, and database services
- Assimilate and leverage the AWS shared compliance responsibility model
- Identify AWS services and tools to help automate, monitor, and manage security operations on AWS
- Perform security incident management in the AWS Cloud

(b) Intended Audience

This course is intended for:

- Security engineers
- Security architects
- Security analysts

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

(c) Prerequisites

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

- Attended AWS Security Fundamentals
- Experience with governance, risk, and compliance regulations and control objectives
- Working knowledge of IT security practices
- Working knowledge of IT infrastructure concepts
- Familiarity with cloud computing concepts

(d) Delivery Method

This course is delivered through a mix of:

- ILT
- Hands-On Labs

(e) Hands-On Activity

This course allows you to test new skills and apply knowledge to your working environment through a variety of practical exercises.

(f) Course Outline

Day 1

- Module 1: Introduction to Cloud Security
- Module 2: Cloud Aware Governance and Compliance
- Module 3: Identity and Access Management
- Lab 1: Using AWS IAM
- Module 4: Securing AWS Infrastructure Services – Part 1
- Lab 2: Creating a virtual private cloud

Day 2

- Module 5: Securing AWS Infrastructure Services – Part 2
- Module 6: Securing AWS Container Services – Part 1
- Module 6: Securing AWS Container Services – Part 2
- Lab 3: Using Amazon RDS security groups

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- Module 7: Securing AWS Abstracted Services
- Lab 4: Securing Amazon S3 buckets
- Module 8: Using AWS Security Services – Part 1
- Lab 5: Capturing logs

Day 3

- Module 9: Using AWS Security Products – Part 2
- Lab 6: Using AWS Config
- Lab 7: Using AWS Service Catalog
- Module 10: Data Protection in the AWS Cloud
- Module 11: Building Compliant Workloads on AWS – Case Studies
- Module 12: Security Incident Management in the Cloud

2.3.3 Data Warehousing on AWS

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

2.3.3.1 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live or Virtual Class	3 Days

(a) Course Objectives

This course teaches you how to:

- Discuss the core concepts of data warehousing.
- Evaluate the relationship between Amazon Redshift and other big data systems.
- Evaluate use cases for data warehousing workloads and review case studies that demonstrate implementation of AWS data and analytic services as part of a data warehousing solution.
- Choose an appropriate Amazon Redshift node type and size for your data needs.
- Discuss security features as they pertain to Amazon Redshift, such as encryption, IAM permissions, and database permissions.
- Launch an Amazon Redshift cluster and use the components, features, and functionality to implement a data warehouse in the cloud.

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- Use other AWS data and analytic services, such as Amazon DynamoDB, Amazon EMR, Amazon Kinesis Firehose, and Amazon S3, to contribute to the data warehousing solution.
- Evaluate approaches and methodologies for designing data warehouses.
- Identify data sources and assess requirements that affect the data warehouse design.
- Design the data warehouse to make effective use of compression, data distribution, and sort methods.
- Load and unload data and perform data maintenance tasks.
- Write queries and evaluate query plans to optimise query performance.
- Configure the database to allocate resources such as memory to query queues and define criteria to route certain types of queries to your configured query queues for improved processing.
- Use features and services, such as Amazon Redshift database audit logging, Amazon CloudTrail, Amazon CloudWatch, and Amazon Simple Notification Service (Amazon SNS), to audit, monitor, and receive event notifications about activities in the data warehouse.
- Prepare for operational tasks, such as resizing Amazon Redshift clusters and using snapshots to back up and restore clusters.
- Use a Business Intelligence (BI) application to perform data analysis and visualization tasks against your data.

(b) Intended Audience

This course is intended for:

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

(c) Prerequisites

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

- Courses taken: AWS Technical Essentials (or equivalent experience with AWS)
- Familiarity with relational databases and database design concepts

(d) Delivery Method

This course will be delivered through a mix of:

- ILT

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- Hands-on Labs

(e) Hands-On Activity

This course allows you to test new skills and apply knowledge to your working environment through a variety of practical exercises

(f) Course Outline

Day 1

- Course Introduction
- Introduction to Data Warehousing
- Introduction to Amazon Redshift
- Understanding Amazon Redshift Components and Resources
- Launching an Amazon Redshift Cluster

Day 2

- Reviewing Data Warehousing Approaches
- Identifying Data Sources and Requirements
- Designing the Data Warehouse
- Loading Data into the Data Warehouse

Day 3

- Writing Queries and Tuning Performance
- Maintaining the Data Warehouse
- Analysing and Visualizing Data
- Course Summary

2.3.4 Migrating to AWS

Migrating to AWS focuses on planning and migrating existing workloads to the AWS Cloud. The course covers various cloud migration strategies with a detailed discussion on each phase of the migration process, including portfolio discovery, application migration planning and design, migration execution, and post-migration validation and application optimization. The first part of the course provides students with an overview of migration planning principles and best practices, and the second half of the class focuses on migration design and implementation with hands-on labs to reinforce concepts.

This course is designed for solutions architects and engineers who perform cloud migrations and have an understanding of core AWS services and design patterns covered in *Architecting on AWS*, and is also available to IT project managers involved in the planning of those migrations who have completed *AWS Technical Essentials*.

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2.3.4.1 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live or Virtual Class	2 Days

(a) Course Objectives

This course teaches you how to:

- Explain the various cloud migration strategies
- Assess cloud migration readiness
- Discover your portfolio and plan for migration
- Plan and design your application migration strategy
- Perform and validate application migration to the cloud
- Optimise your applications and operations after migrating to the cloud

(b) Intended Audience

This course is intended for:

- Solutions Architects and engineers who perform cloud migrations and have completed AWS Technical Essentials or Architecting on AWS
- IT Project Managers who are involved in projects related to migrating existing workloads to the AWS Cloud and have completed AWS Technical Essentials or Architecting on AWS
- Individuals who are part of an organization's cloud Centre of Excellence (CoE)

(c) Prerequisites

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

- For IT project managers - Courses taken: *AWS Technical Essentials*
- For IT professionals - Courses taken: *Architecting on AWS*
- Certifications achieved (optional): AWS Certified Solutions Architect - Associate
- Familiarity with enterprise IT infrastructure (hardware and software)

(d) Delivery Method

This course will be delivered through a mix of:

- ILT
- Hands-on Labs

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(e) Hands-On Activity

This course includes several group activities and case studies to reinforce the concepts learned. It also includes hands-on labs to help you test new skills and apply knowledge to your working environment through a variety of practical exercises.

(f) Course Outline

Note: course outline may vary slightly based on the regional location and/or language in which the class is delivered.

Day 1

- Migrating to AWS - An Overview
- Discovery, Analysis, and Planning
- Migration Planning and Design

Day 2

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

2.3.5 Running Container-Enabled Microservices on AWS

Running Container-Enabled Microservices on AWS is designed to teach you how to manage and scale container-enabled applications by using Amazon EC2 Container Service (ECS). The course highlights the challenges of running containerized applications at scale and provides guidance on creating and using Amazon ECS to develop and deploy containerized microservices-based applications. In the hands-on lab exercises, you will use Amazon ECS to handle long-running services, build and deploy container images, link services together, and scale capacity to meet demand. This bootcamp also discusses how to run container workers for asynchronous application processes.

2.3.5.1 At a Glance

Level	Modality	Length
Advanced	Instructor-led, Live Class	1 Day

(a) Course Objectives

This course teaches you how to:

- Design a microservices-based architecture that uses containers.
- Use Amazon ECS to run and scale a microservices-based application.
- Integrate Amazon ECS with other AWS services.

(b) Intended Audience

This course is intended for:

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- Developers
- Systems Administrators
- Solutions Architects

(c) Prerequisites

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

- Fundamental knowledge of core AWS services and Features
- Working knowledge of running containerized applications

(d) Delivery Method

This course will be delivered through a mix of:

- ILT
- Hands-on Labs

(e) Course Outline

The course covers the following concepts:

- Overview of containers on AWS
- Introduction to microservices-based architecture on AWS
- Scaling container-based applications
- Integrating Amazon ECS with other AWS services

2.3.6 Building a Serverless Data Lake

Building a Serverless Data Lake is a one-day, advanced-level bootcamp designed to teach you how to design, build, and operate a serverless data lake solution with AWS services. The bootcamp will include topics such as ingesting data from any data source at large scale, storing the data securely and durably, enabling the capability to use the right tool to process large volumes of data, and understanding the options available for analyzing the data in near-real time.

2.3.6.1 At a Glance

Level	Modality	Length
Advanced	Instructor-led, Live Class	1 Day

(a) Course Objectives

This course teaches you how to:

- Collect large amounts of data using services such as Kinesis Streams and Firehose and store the data durably and securely in Amazon Simple Storage Service.
- Create a metadata index of your data lake.

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- Choose the best tools for ingesting, storing, processing, and analyzing your data in the lake.
- Apply the knowledge to hands-on labs that provide practical experience with building an end-to-end solution.

(b) Intended Audience

This course is intended for:

- Solutions Architects
- Big Data Developers
- Data Architects and Analysts
- Other hands-on data analyst practitioners

(c) Prerequisites

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

- Good working knowledge of AWS core services, including Amazon Elastic Compute Cloud (EC2) and Amazon Simple Storage Service (S3)
- Some experience working with a programming or scripting language
- Familiarity with the Linux operating system and command line interface
- Requires a laptop to complete lab exercises – tablets are not appropriate

(d) Delivery Method

This course will be delivered through a mix of:

- ILT
- Hands-on Labs

(e) Hands-On Activity

This course includes several group activities and case studies to reinforce the concepts learned. It also includes hands-on labs to help you test new skills and apply knowledge to your working environment through a variety of practical exercises.

(f) Course Outline

This course covers the following concepts:

- Key services that help enable a serverless data lake architecture
- A data analytics solution that follows the ingest, store, process, and analyze workflow
- Repeatable template deployment for implementing a data lake solution
- Building a metadata index and enabling search capability

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- Setup of a large-scale data-ingestion pipeline from multiple data sources
- Transformation of data with simple functions that are event triggered
- Data processing by choosing the best tools and services for the use case
- Options available to better analyze the processed data
- Best practices for deployment and operations

2.3.7. Deep Learning on AWS

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

2.3.6.2 At a Glance

Level	Modality	Length
Intermediate	Instructor-led, Live Class	1 Day

(a) Course Objectives

This course teaches you how to:

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

(b) Intended Audience

This course is intended for:

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

(c) Prerequisites

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

- Basic understanding of machine learning processes

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- Basic understanding of AWS core services like Amazon EC2 and knowledge of AWS SDK
- Basic knowledge of a scripting language (e.g., Python)

(d) Delivery Method

This course will be delivered through a mix of:

- ILT
- Hands-on Labs

(e) Course Outline

This course covers the following concepts:

- Introduction to Machine Learning
- Introduction to Deep Learning
- Lab 1: Setting up a Deep Learning AMI instance and running a multi-layer perceptron neural network model
- Introduction to MXNet on AWS
- Lab 2: Running a Convolutional Neural Network (CNN) model to predict images using CIFAR-10 dataset
- Deploying Smart Applications on AWS
- Lab 3: Deploying a Deep Learning model for predicting images using AWS Lambda

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