AWS Certified Cloud Practitioner
(CLF-C01) Exam Guide

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Introduction

The AWS Certified Cloud Practitioner (CLF-C01) exam is intended for individuals who can effectively demonstrate an overall knowledge of the AWS Cloud independent of a specific job role.

The exam validates a candidate's ability to complete the following tasks:

- Explain the value of the AWS Cloud
- Understand and explain the AWS shared responsibility model
- Understand security best practices
- Understand AWS Cloud costs, economics, and billing practices
- Describe and position the core AWS services, including compute, network, databases, and storage
- Identify AWS services for common use cases

Target candidate description

The target candidate should have 6 months, or the equivalent, of active engagement with the AWS Cloud, with exposure to AWS Cloud design, implementation, and/or operations. Candidates will demonstrate an understanding of well-designed AWS Cloud solutions.

Recommended AWS knowledge

The target candidate should have the following knowledge:

- AWS Cloud concepts
- Security and compliance within the AWS Cloud
- Understanding of the core AWS services
- Understanding of the economics of the AWS Cloud

What is considered out of scope for the target candidate?

The following is a non-exhaustive list of related job tasks that the target candidate is not expected to be able to perform. These items are considered out of scope for the exam:

- Coding
- Designing cloud architecture
- Troubleshooting
- Implementation
- Migration
- Load and performance testing
- Business applications (for example, Amazon Alexa, Amazon Chime, Amazon WorkMail)

To view a detailed list of specific tools and technologies that might be covered on the exam, as well as lists of in-scope AWS services, refer to the Appendix.

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Exam content

Response types

There are two types of questions on the exam:

- **Multiple choice:** Has one correct response and three incorrect responses (distractors)
- **Multiple response:** Has two or more correct responses out of five or more response options

Select one or more responses that best complete the statement or answer the question. Distractors, or incorrect answers, are response options that a candidate with incomplete knowledge or skill might choose. Distractors are generally plausible responses that match the content area.

Unanswered questions are scored as incorrect; there is no penalty for guessing. The exam includes 50 questions that will affect your score.

Unscored content

The exam includes 15 unscored questions that do not affect your score. AWS collects information about candidate performance on these unscored questions to evaluate these questions for future use as scored questions. These unscored questions are not identified on the exam.

Exam results

The AWS Certified Cloud Practitioner exam is a pass or fail exam. The exam is scored against a minimum standard established by AWS professionals who follow certification industry best practices and guidelines.

Your results for the exam are reported as a scaled score of 100–1,000. The minimum passing score is 700. Your score shows how you performed on the exam as a whole and whether or not you passed. Scaled scoring models help equate scores across multiple exam forms that might have slightly different difficulty levels.

Your score report may contain a table of classifications of your performance at each section level. This information is intended to provide general feedback about your exam performance. The exam uses a compensatory scoring model, which means that you do not need to achieve a passing score in each section. You need to pass only the overall exam.

Each section of the exam has a specific weighting, so some sections have more questions than others. The table contains general information that highlights your strengths and weaknesses. Use caution when interpreting section-level feedback.

Content outline

This exam guide includes weightings, test domains, and objectives for the exam. It is not a comprehensive listing of the content on the exam. However, additional context for each of the objectives is available to help guide your preparation for the exam. The following table lists the main content domains and their weightings. The table precedes the complete exam content outline, which includes the additional context. The percentage in each domain represents only scored content.

Domain	% of Exam
Domain 1: Cloud Concepts	26%
Domain 2: Security and Compliance	25%
Domain 3: Technology	33%
Domain 4: Billing and Pricing	16%
TOTAL	**100%**

Domain 1: Cloud Concepts

1.1 Define the AWS Cloud and its value proposition
- Define the benefits of the AWS cloud including:
    - Security
    - Reliability
    - High Availability
    - Elasticity
    - Agility
    - Pay-as-you go pricing
    - Scalability
    - Global Reach
    - Economy of scale
- Explain how the AWS cloud allows users to focus on business value
    - Shifting technical resources to revenue-generating activities as opposed to managing infrastructure

1.2 Identify aspects of AWS Cloud economics
- Define items that would be part of a Total Cost of Ownership proposal
    - Understand the role of operational expenses (OpEx)
    - Understand the role of capital expenses (CapEx)
    - Understand labor costs associated with on-premises operations
    - Understand the impact of software licensing costs when moving to the cloud
- Identify which operations will reduce costs by moving to the cloud
    - Right-sized infrastructure
    - Benefits of automation
    - Reduce compliance scope (for example, reporting)
    - Managed services (for example, RDS, ECS, EKS, DynamoDB)

1.3 Explain the different cloud architecture design principles
- Explain the design principles
    - Design for failure   using SNS and SQS components communicate, loosely coupled
    - Decouple components versus monolithic architecture tightly coupled, includes storage, servers, databases etc,1fail= total fail
    - Implement elasticity in the cloud versus on-premises
    - Think parallel

Domain 2: Security and Compliance

2.1 Define the AWS shared responsibility model
- Recognize the elements of the Shared Responsibility Model
- Describe the customer's responsibly on AWS
  - o Describe how the customer's responsibilities may shift depending on the service used (for example with RDS, Lambda, or EC2)
- Describe AWS responsibilities

2.2 Define AWS Cloud security and compliance concepts
- Identify where to find AWS compliance information
  - o Locations of lists of recognized available compliance controls (for example, HIPPA, SOCs)
  - o Recognize that compliance requirements vary among AWS services
- At a high level, describe how customers achieve compliance on AWS
  - o Identify different encryption options on AWS (for example, In transit, At rest)
- Describe who enables encryption on AWS for a given service
- Recognize there are services that will aid in auditing and reporting
  - o Recognize that logs exist for auditing and monitoring (do not have to understand the logs)
  - o Define Amazon CloudWatch, AWS Config, and AWS CloudTrail
- Explain the concept of least privileged access

2.3 Identify AWS access management capabilities
- Understand the purpose of User and Identity Management
  - o Access keys and password policies (rotation, complexity)
  - o Multi-Factor Authentication (MFA)
  - o AWS Identity and Access Management (IAM)
    - Groups/users
    - Roles
    - Policies, managed policies compared to custom policies
  - o Tasks that require use of root accounts
    Protection of root accounts

2.4 Identify resources for security support
- Recognize there are different network security capabilities
  - o Native AWS services (for example, security groups, Network ACLs, AWS WAF)
  - o 3rd party security products from the AWS Marketplace
- Recognize there is documentation and where to find it (for example, best practices, whitepapers, official documents)
  - o AWS Knowledge Center, Security Center, security forum, and security blogs
  - o Partner Systems Integrators
- Know that security checks are a component of AWS Trusted Advisor

Domain 3: Technology

3.1 Define methods of deploying and operating in the AWS Cloud
- Identify at a high level different ways of provisioning and operating in the AWS cloud
  - o Programmatic access, APIs, SDKs, AWS Management Console, CLI, Infrastructure as Code
- Identify different types of cloud deployment models MODULE - 1
  - o All in with cloud/cloud native   Using google, AWS, Azure
  - o Hybrid   Using both private cloud and Cloud Service Provider's Cloud (Public Cloud)
  - o On-premises   Using private(own) cloud Ex: Dell, TCS etc
- Identify connectivity options
  - o VPN
  - o AWS Direct Connect
  - o Public internet

3.2 Define the AWS global infrastructure
- Describe the relationships among Regions, Availability Zones, and Edge Locations
- Describe how to achieve high availability through the use of multiple Availability Zones
  - o Recall that high availability is achieved by using multiple Availability Zones
  - o Recognize that Availability Zones do not share single points of failure
- Describe when to consider the use of multiple AWS Regions
  - o Disaster recovery/business continuity
  - o Low latency for end-users
  - o Data sovereignty
- Describe at a high level the benefits of Edge Locations
  - o Amazon CloudFront
  - o AWS Global Accelerator

3.3 Identify the core AWS services
- Describe the categories of services on AWS (compute, storage, network, database)
- Identify AWS compute services
  - o Recognize there are different compute families
  - o Recognize the different services that provide compute (for example, AWS Lambda compared to Amazon Elastic Container Service (Amazon ECS), or Amazon EC2, etc.)
  - o Recognize that elasticity is achieved through Auto Scaling Automatically adds or removes EC2 instances in response to change in application demand, Dynamic Scaling: Responds to changing demand, predictive Scaling: Scales depending upon predicted traffic
  - o Identify the purpose of load balancers automatically distributes incoming traffic to various multiple resources like EC2
- Identify different AWS storage services
  - o Describe Amazon S3
  - o Describe Amazon Elastic Block Store (Amazon EBS)
  - o Describe Amazon S3 Glacier
  - o Describe AWS Snowball
  - o Describe Amazon Elastic File System (Amazon EFS)
  - o Describe AWS Storage Gateway
- Identify AWS networking services
  - o Identify VPC
  - o Identify security groups
  - o Identify the purpose of Amazon Route 53
  - o Identify VPN, AWS Direct Connect
- Identify different AWS database services
  - o Install databases on Amazon EC2 compared to AWS managed databases

- o Identify Amazon RDS
- o Identify Amazon DynamoDB
- o Identify Amazon Redshift

3.4 Identify resources for technology support
- Recognize there is documentation (best practices, whitepapers, AWS Knowledge Center, forums, blogs)
- Identify the various levels and scope of AWS support
  - o AWS Abuse
  - o AWS support cases
  - o Premium support
  - o Technical Account Managers
- Recognize there is a partner network (marketplace, third-party) including Independent Software Vendors and System Integrators
- Identify sources of AWS technical assistance and knowledge including professional services, solution architects, training and certification, and the Amazon Partner Network
- Identify the benefits of using AWS Trusted Advisor

Domain 4: Billing and Pricing

4.1 Compare and contrast the various pricing models for AWS (for example, On-Demand Instances, Reserved Instances, and Spot Instance pricing)

short term, irregular workloads, No interruption

billing discount applied to the On-demand instances,

These are unused Amazon EC2 computing capacity

- Identify scenarios/best fit for On-Demand Instance pricing *used for short term, for testing, developing and running applications of unpredictable usage patterns, no upfronts or minimum contracts apply*
- Identify scenarios/best fit for Reserved-Instance pricing *Standard Reserved, Convertible Reserved for 1year or 3year term*
  Scheduled Reserved for 1 year term
  - o Describe Reserved-Instances flexibility *At the end of reserved instance you can continue using the instance without interrupt but pay on demand charges for extra time or purchase new reserved instance that matches the same attributes*
  - o Describe Reserved-Instances behavior in AWS Organizations *workloads for flexible start and end times, can withstand interruptions,90% offer of On-demand instances*
- Identify scenarios/best fit for Spot Instance pricing *if capacity is no longer available or demand for spot instances increasing your spot instance may get interrupted*

4.2 Recognize the various account structures in relation to AWS billing and pricing
- Recognize that consolidated billing is a feature of AWS Organizations
- Identify how multiple accounts aid in allocating costs across departments

4.3 Identify resources available for billing support
- Identify ways to get billing support and information
  - o Cost Explorer, AWS Cost and Usage Report, Amazon QuickSight, third-party partners, and AWS Marketplace tools
  - o Open a billing support case
  - o The role of the Concierge for AWS Enterprise Support Plan customers
- Identify where to find pricing information on AWS services
  - o AWS Simple Monthly Calculator
  - o AWS Services product pages
  - o AWS Pricing API
- Recognize that alarms/alerts exist
- Identify how tags are used in cost allocation

Appendix

Which key tools, technologies, and concepts might be covered on the exam?

The following is a non-exhaustive list of the tools and technologies that could appear on the exam. This list is subject to change and is provided to help you understand the general scope of services, features, or technologies on the exam. The general tools and technologies in this list appear in no particular order. AWS services are grouped according to their primary functions. While some of these technologies will likely be covered more than others on the exam, the order and placement of them in this list are no indication of relative weight or importance:

- APIs
- Cost Explorer
- AWS Cost and Usage Report
- AWS Command Line Interface (CLI)
- Elastic Load Balancers
- Amazon EC2 instance types (for example, Reserved, On-Demand, Spot)
- AWS global infrastructure (for example, AWS Regions, Availability Zones)
- Infrastructure as Code (IaC)
- Amazon Machine Images (AMIs)
- AWS Management Console
- AWS Marketplace
- AWS Professional Services
- AWS Personal Health Dashboard
- Security groups
- AWS Service Catalog
- AWS Service Health Dashboard
- Service quotas
- AWS software development kits (SDKs)
- AWS Support Center
- AWS Support tiers
- Virtual private networks (VPNs)

AWS services and features

Analytics:
- Amazon Athena
- Amazon Kinesis
- Amazon QuickSight

Application Integration:
- Amazon Simple Notification Service (Amazon SNS) publish/subscribe service, publisher publishes messages to subscribers (webserver, Email address, AWS Lambda etc)
- Amazon Simple Queue Service (Amazon SQS) message Queuing service, send store and receive messages between software components

Compute and Serverless:
- AWS Batch
- Amazon EC2
- AWS Elastic Beanstalk

- **AWS Lambda** Serverless computing, no need to provision or manage server, charges apply only when your code is running
- Amazon Lightsail
- Amazon WorkSpaces

Containers:

- **Amazon Elastic Container Service (Amazon ECS)** highly scalable, performance container management system, enables us to run and scale containerized applications on AWS, Supports DOCKER Containers
- **Amazon Elastic Kubernetes Service (Amazon EKS)** fully managed service, can be used to run kubernetes on AWS
- **AWS Fargate** serverless compute engine, manages both ECS and EKS, don't need to provision or manage servers

Database:

- Amazon Aurora
- Amazon DynamoDB
- Amazon ElastiCache
- Amazon RDS
- Amazon Redshift

Developer Tools:

- AWS CodeBuild
- AWS CodeCommit
- AWS CodeDeploy
- AWS CodePipeline
- AWS CodeStar

Customer Engagement:

- Amazon Connect

Management, Monitoring, and Governance:

- AWS Auto Scaling
- AWS Budgets
- AWS CloudFormation
- AWS CloudTrail
- Amazon CloudWatch
- AWS Config
- AWS Cost and Usage Report
- Amazon EventBridge (Amazon CloudWatch Events)
- AWS License Manager
- AWS Managed Services
- AWS Organizations
- AWS Secrets Manager
- AWS Systems Manager
- AWS Systems Manager Parameter Store
- AWS Trusted Advisor

Networking and Content Delivery:

- Amazon API Gateway
- Amazon CloudFront
- AWS Direct Connect
- Amazon Route 53
- Amazon VPC

Security, Identity, and Compliance:

- AWS Artifact
- AWS Certificate Manager (ACM)
- AWS CloudHSM
- Amazon Cognito
- Amazon Detective
- Amazon GuardDuty
- AWS Identity and Access Management (IAM)
- Amazon Inspector
- AWS License Manager
- Amazon Macie
- AWS Shield
- AWS WAF

Storage:

- AWS Backup
- Amazon Elastic Block Store (Amazon EBS)
- Amazon Elastic File System (Amazon EFS)
- Amazon S3
- Amazon S3 Glacier
- AWS Snowball Edge
- AWS Storage Gateway