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INTRODUCTION

We are in an age of rapid technological innovation and information exchange. New technologies are being produced every day by different industries, governments, and researchers to make life more enjoyable. Hence, people are also beginning to shift their infrastructures onto the cloud, especially onto Amazon Web Services (AWS). The cloud is the perfect platform for innovation. It allows you to obtain compute and storage capacity simply through a click of a button. There is no need to meticulously allocate capital anymore for physical infrastructure and setting them up yourself.

For several years, AWS has been recognized as the leading cloud provider in the market[1]. They have been continuously upgrading their services to deliver customer satisfaction and drive customer success. Every year, you can expect AWS to deliver something new to the table. And since the AWS cloud is already so vast, industries will need trained people who understand how the AWS cloud operates and how to maximize solutions that will produce the best results. AWS formalizes this process of training and recognition through their highly valued **AWS Certifications**.

The path for learning cloud is like a long and exciting journey. Becoming an AWS Cloud Practitioner is a great way to start it off. It opens up a lot of career opportunities for you, and you can choose the path that you want to take. You can become a cloud solutions architect, a cloud developer, a system operations administrator, data analyst or a specialist of your choosing. The AWS Cloud Practitioner course is the first step in helping you understand the value of moving to the cloud, as well as the basic AWS services which are fundamental and crucial for building success in AWS.

Note: We took extra care to come up with these study guides and cheat sheets, however, this is meant to be just a supplementary resource when preparing for the exam. We highly recommend that you take our AWS Certified Cloud Practitioner video course with included hands-on labs and our high-quality practice exams to further expand your knowledge and improve your test-taking skills.

1 https://aws.amazon.com/blogs/aws/aws-named-as-a-leader-in-gartners-infrastructure-as-a-service-iaas-magic-quadrant-for-the-9th-consecutiveyear/

AWS CERTIFIED CLOUD PRACTITIONER EXAM OVERVIEW

Amazon Web Services began its Global Certification Program in 2013 with the primary purpose of validating the technical skills and knowledge of IT Professionals in building secure and reliable cloud-based applications using the AWS Cloud. On April 2013, AWS launched its first-ever AWS Certification test called the AWS Certified Solutions Architect Associate exam. This was followed by the AWS Certified SysOps Administrator and AWS Certified Developer Associate exams.

Amazon has been continuously expanding and updating its certification program year after year. They launched a series of Professional and Specialty-level certifications that cover various topics like DevOps, machine learning, data analytics, advanced networking, and many others. As the number of AWS services increases, a new and updated version of the AWS certification exam is released regularly to reflect the recent service changes and include the new knowledge areas.

On December 2017, AWS launched its entry-level certification test called the AWS Certified Cloud Practitioner exam. This exam is recommended for professionals with a non-technical background and individuals who are quite new to the IT industry, including college students and fresh graduates. The Cloud Practitioner exam checks your understanding of the different cloud concepts, cloud terminologies, AWS services, and other basic topics in AWS. It has an exam code of CLF-C02 and has no prerequisites – meaning you can take it directly without having to earn any prior certification, degree, or training.

The exam contains a mixture of scenario-based and easy WH questions that can either be in multiple-choice or multiple-response formats. The first question type has one correct answer and three incorrect responses, while the multiple-response format has two or more correct responses out of five or more options. The exam costs a hundred US dollars and can be taken either from a local testing center or online from the comfort of your home.

The Cloud Practitioner certification exam has a total of 65 questions that you should complete within 90 minutes or one hour and a half. The score range for this test is from 100 to 1,000, with a minimum passing score of 700. AWS is using a scaled scoring model to equate scores across multiple exam types that may have different difficulty levels. An email of your result will be sent to you after a few days, and the complete score report will be available to your AWS Certification account afterward.

The AWS Certified Cloud Practitioner exam is the easiest one among all of the AWS certification tests. It's easier than the others because most of the items being asked are just WH questions, so you'll see a one-liner question that starts with What, When, Where, Who, Why, Which, and How. Some items have one statement describing the scenario and another line asking the actual question. However, these questions do not exceed two lines, meaning that the items are fairly concise. The options are short too, which can be the name of an AWS Service, a phrase, or a brief statement.

This is in stark contrast with the Associate, Professional, and Specialty-level AWS exams, where you'll see long-winded scenarios and options. That's why the Cloud Practitioner exam is considered entry-level and very manageable to get a pass. However, this does not mean you don't have to study for it. The exam contains a handful of difficult questions on AWS Billing, the AWS Shared Responsibility Model, and other advanced cloud concepts; thus, you still have to study for this test to ensure a passing score.

Individuals who unfortunately did not pass the AWS exam must wait for 14 days before they are allowed to retake the exam. There is no hard limit on the number of exam attempts, so you can try again and again until you pass the exam. Take note that on each attempt, the full registration price of the exam must be paid.

Your AWS Certification Account will have a record of your complete exam results within 5 business days of completing your exam. The score report contains a table of your performance for each exam domain, which indicates whether you met the competency level required for these domains or not. AWS uses a compensatory scoring model, which means that you do not necessarily need to pass each and every individual section.

You will pass this exam as long as you get an overall score of 700 across 4 domains. Each section has a specific score weighting that translates to the number of questions; hence, some sections have more questions than others. Your Score Performance table highlights your strengths and weaknesses that you need to improve on.

Exam Details

The AWS Certified Cloud Practitioner (CLF-C02) examination is intended for individuals who have the knowledge and skills necessary to effectively demonstrate an overall understanding of the AWS Cloud, independent of specific technical roles addressed by other AWS certifications (for example, Solutions Architect - Associate, Developer - Associate, or SysOps Administrator - Associate). It is composed of identification and enumeration questions that are formatted as either multiple-choice or multiple-response.

For multiple-choice types of questions, you will have to choose one correct response out of four options. For multiple-response types of questions, you will have to choose two or more correct responses out of five or more options. You can take the exam via online proctoring or from a testing center close to you.

Exam Code:	CLF-C02
Prerequisites:	None
No. of Questions:	65
Score Range:	100-1000
Cost:	100 USD
Passing Score:	700
Time Limit:	90 minutes

Exam Domains

The AWS Certified Cloud Practitioner (CLF-C02) exam has four different domains, each with a corresponding weight and topic coverage. The domains are as follows:

- Domain 1: Cloud Concepts (24%)
- Domain 2: Security & Compliance (30%)
- Domain 3: Cloud Technology and Services (34%)
- Domain 4: Billing, Pricing and Support (12%)

One exam domain is comprised of several task statements. A task statement is a sub-category of the exam domain that contains the required cloud concepts, knowledge, and skills for you to accomplish a particular task or activity in AWS. In the AWS Certified Cloud Practitioner (CLF-C02) test, the **Domain 3: Cloud Technology and Services** has the biggest weighting in the exam at 34% so expect to see a lot of technology-related scenarios in the exam. Conversely, the exam domain with the least exam weighting is **Domain 4: Billing, Pricing & Support** so you have to limit the time you spend studying under this knowledge area.
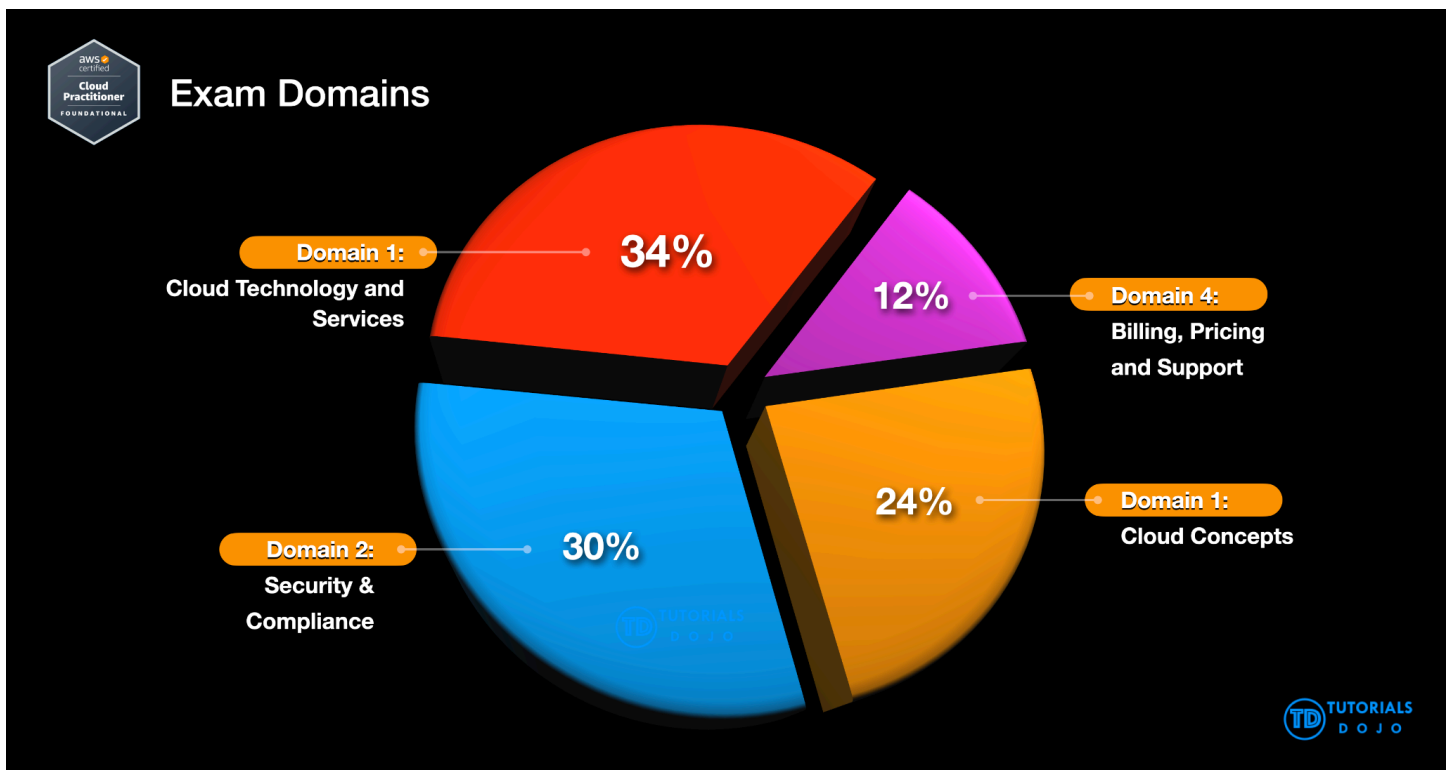
Domain 1: Cloud Concepts
 1.1. Define the benefits of the AWS Cloud.
 1.2. Identify design principles of the AWS Cloud.
 1.3. Understand the benefits of and strategies for migration to the AWS Cloud.
 1.4. Understand concepts of cloud economics.

Domain 2: Security and Compliance
 2.1. Understand the AWS shared responsibility model.
 2.2. Understand AWS Cloud security, governance, and compliance concepts.
 2.3. Identify AWS access management capabilities.
 2.4. Identify components and resources for security.

Domain 3: Cloud Technology and Services
 3.1. Define methods of deploying and operating in the AWS Cloud.
 3.2. Define the AWS global infrastructure.
 3.3. Identify AWS compute services.
 3.4. Identify AWS database services.
 3.5. Identify AWS network services.
 3.6. Identify AWS storage services.
 3.7. Identify AWS artificial intelligence and machine learning (AI/ML) services and analytics services.
 3.8. Identify services from other in-scope AWS service categories.

Domain 4: Billing, Pricing and Support
 4.1. Compare AWS pricing models.
 4.2. Understand resources for billing, budget, and cost management.
 4.3. Identify AWS technical resources and AWS Support options.

Exam-Related AWS Topics and Services

The official exam guide contains a list of key tools, technologies, and concepts that may show up on the Cloud Practitioner test. Keep in mind that this is just a non-exhaustive list of the tools and technologies that may or may not appear on the exam. This list can change at any time and is primarily given to test-takers to help them understand the general scope of services, features, or technologies for this certification. In addition, the general tools and technologies in this list appear in no particular order.

Here are the topics, AWS services, and concepts that you should focus on for your upcoming exam. You have to review your knowledge on:

- APIs
- Benefits of migrating to the AWS Cloud
- AWS Cloud Adoption Framework (AWS CAF)
- AWS Compliance
- Compute
- Cost management
- Databases
- Amazon EC2 instance types (for example, Reserved, On-Demand, Spot)
- AWS global infrastructure (for example, AWS Regions, Availability Zones)
- Infrastructure as code (IaC)
- AWS Knowledge Center
- Machine learning
- Management and governance
- Migration and data transfer
- Network services

- AWS Partner Network
- AWS Prescriptive Guidance
- AWS Pricing Calculator
- AWS Professional Services
- AWS re:Post
- AWS SDKs
- Security
- AWS Security Blog
- AWS Security Center
- AWS shared responsibility model
- AWS Solutions Architects
- Storage
- AWS Support Center
- AWS Support plans
- AWS Well-Architected Framework

Remember that out of the 4 exam domains, the Cloud Technology and Services domain has the biggest coverage in the exam, at 34 percent. This means that a third of the questions in the entire AWS Certified Cloud Practitioner exam covers the many cloud services and features in AWS. Most of these AWS services can be grouped according to their primary functions or use cases, such as Analytics, Application Integration, Compute, Database, Networking, et cetera.

The Appendix section of the exam guide also includes a list of relevant AWS services that you should focus on, so in your exam, make sure that you review the following AWS services.

For Analytics, we have Amazon Athena, AWS Data Exchange, Amazon EMR, AWS Glue, Amazon Kinesis, Amazon Managed Streaming for Apache Kafka (Amazon MSK), Amazon OpenSearch Service, Amazon QuickSight and Amazon Redshift.

For Application Integration, learn about Amazon EventBridge, Amazon Simple Notification Service (Amazon SNS) , Amazon Simple Queue Service (Amazon SQS) and AWS Step Functions. Additionally, you should also know how Business Applications in AWS works such as Amazon Connect and Amazon Simple Email Service (Amazon SES).

For Cloud Financial Management, research on how you can utilize the AWS Billing Conductor, AWS Budgets, AWS Cost and Usage Report, AWS Cost Explorer and AWS Marketplace in your organization.

For Computing services, study AWS Batch, Amazon EC2, AWS Elastic Beanstalk, Amazon Lightsail, AWS Local Zones, AWS Outposts and AWS Wavelength.Containers services are also in scope so make sure you know Amazon Elastic Container Service, Amazon Elastic Kubernetes Service and Amazon Elastic Container Registry (Amazon ECR). Serverless compute options like AWS Fargate and AWS Lambda are also covered.

For Customer Engagement, you have AWS Activate for Startups, AWS IQ, AWS Managed Services (AMS) and the various AWS Support Plan types that you can avail of. End User Computing services are also covered such as Amazon AppStream 2.0, Amazon WorkSpaces and Amazon WorkSpaces Web.

For Databases, you have Amazon Aurora, Amazon DynamoDB, Amazon MemoryDB for Redis, Amazon Neptune, Amazon RDS and other cloud databases in AWS.

For Developer Tools, familiarize yourself with the CI/CD services in AWS, namely AWS AppConfig, AWS CLI, AWS Cloud9, AWS CloudShell, AWS CodeArtifact, AWS CodeBuild, AWS CodeCommit, AWS CodeDeploy, AWS CodePipeline, AWS CodeStar and AWS X-Ray.

AWS Amplify, AWS AppSync and AWS Device Farm are the relevant services for Frontend Web & Mobile section while AWS IoT Core and AWS IoT Greengrass are for the Internet of Things (IoT) services in AWS.

There are also several Machine Learning services covered in the exam such as Amazon Comprehend, Amazon Kendra, Amazon Lex, Amazon Polly, Amazon Rekognition, Amazon SageMaker, Amazon Textract, Amazon Transcribe and Amazon Translate. Don't worry too much as the AI-related questions for this category should be on the easy level and not in-depth.

The Cloud Practitioner exam covers a handful of services that relates to Management and Governance. These are AWS Auto Scaling, AWS CloudFormation, AWS CloudTrail, Amazon CloudWatch, AWS Compute Optimizer, AWS Config, AWS Control Tower, AWS Health Dashboard, AWS Launch Wizard, AWS License Manager, AWS Management Console, AWS Organizations, AWS Resource Groups and Tag Editor, AWS Service Catalog, AWS Systems Manager, AWS Trusted Advisor and AWS Well-Architected Tool.

For Migration and Transfer, it covers AWS Application Discovery Service, AWS Application Migration Service, AWS Database Migration Service (AWS DMS), AWS Migration Hub, AWS Schema Conversion Tool (AWS SCT), AWS Snow Family, AWS Transfer Family. For Networking and Content Delivery category, Amazon API Gateway, Amazon CloudFront, AWS Direct Connect, AWS Global Accelerator, Amazon Route 53, Amazon VPC and AWS VPN.

For Security, Identity, and Compliance category, prepare to see a range of AWS services that you can use to secure your enterprise applications and AWS resources. Check out the AWS Artifact, AWS Audit Manager, AWS

Certificate Manager (ACM), AWS CloudHSM, Amazon Cognito, Amazon Detective, AWS Directory Service, AWS Firewall Manager, Amazon GuardDuty, AWS Identity and Access Management (IAM), AWS IAM Identity Center (AWS Single Sign-On), Amazon Inspector, AWS Key Management Service (AWS KMS), Amazon Macie, AWS Network Firewall, AWS Resource Access Manager (AWS RAM), AWS Secrets Manager, AWS Security Hub, AWS Shield and AWS WAF. You have to pay attention to how these services work together and know the appropriate AWS service to use for a particular business case or situation.

Lastly, don't forget to study the plethora of cloud storage services at your disposal, such as AWS Backup, Amazon Elastic Block Store (Amazon EBS), Amazon Elastic File System (Amazon EFS), AWS Elastic Disaster Recovery, Amazon FSx, Amazon S3, Amazon S3 Glacier and the various types of AWS Storage Gateway.

Exam Scoring System

You can get a score from 100 to 1,000 with a minimum passing score of **700** when you take the AWS Certified Cloud Practitioner exam. AWS uses a scaled scoring model to associate scores across multiple exam types that may have different levels of difficulty. Your complete score report will be sent to you by email 1 - 5 business days after your exam. However, as soon as you finish your exam, you'll immediately see a pass or fail notification on the testing screen.

For individuals who unfortunately do not pass their exams, you must wait 14 days before you are allowed to retake the exam. There is no hard limit on the number of attempts you can retake an exam. Once you pass, you'll receive various benefits such as a discount coupon which you can use for your next AWS exam.

Once you receive your score report via email, the result should also be saved in your AWS Certification account already. The score report contains a table of your performance on each domain and it will indicate whether you have met the level of competency required for these domains. Take note that you do not need to achieve competency in all domains for you to pass the exam. At the end of the report, there will be a score performance table that highlights your strengths and weaknesses which will help you determine the areas you need to improve on.

Section	Score Performance		
	% of Scored Items	Needs Improvement	Meets Competencies
Domain 1.0: Cloud Concepts	34%	■	
Domain 2.0: Security and Compliance	30%		■
Domain 3.0: Cloud Technology and Services	24%	■	
Domain 4.0: Billing, Pricing and Support	12%		■

Exam Benefits

If you successfully passed any AWS exam, you will be eligible for the following benefits:

- **Exam Discount** - You'll get a 50% discount voucher that you can apply for your recertification or any other exam you plan to pursue. To access your discount voucher code, go to the "Benefits" section of your AWS Certification Account, and apply the voucher when you register for your next exam.

- **Free Practice Exam** - To help you prepare for your next exam, AWS provides another voucher that you can use to take any official AWS practice exam for free. You can access your voucher code from the "Benefits" section of your AWS Certification Account.

- **AWS Certified Store** - All AWS certified professionals will be given access to exclusive AWS Certified merchandise. You can get your store access from the "Benefits" section of your AWS Certification Account.

- **Certification Digital Badges** - You can showcase your achievements to your colleagues and employers with digital badges on your email signatures, Linkedin profile, or on your social media accounts. You can also show your Digital Badge to gain exclusive access to Certification Lounges at AWS re:Invent, regional Appreciation Receptions, and select AWS Summit events. To view your badges, simply go to the "Digital Badges" section of your AWS Certification Account.

You can visit the official AWS Certification FAQ page to view the frequently asked questions about getting AWS Certified and other information about the AWS Certification: https://aws.amazon.com/certification/faqs/.

AWS CERTIFIED CLOUD PRACTITIONER EXAM STUDY GUIDE

The AWS Certified Cloud Practitioner exam or AWS CCP is the easiest to achieve among all the AWS certification exams. This certification covers most, if not all, fundamental knowledge that one should know when venturing into the Cloud. The AWS CCP course intends to provide practitioners a fundamental understanding of the AWS Cloud without having to dive deep into the technicalities. This includes the AWS Global Infrastructure, best practices in using AWS Cloud, pricing models, technical support options, and many more. You can view the complete details and guidelines for the certification exam here.

What to review

1. The AWS Cloud Services

Currently, AWS offers more than 160+ services and products to their customers. And every year, the list grows longer. You don't have to memorize every single service and function to pass the exam (although that would be amazing if you did!). What's important is that you familiarize yourself with the more commonly used services such as those under **compute**, **storage**, **databases**, **security**, **networking and content delivery, management and governance,** and a few others**.** To quickly view over the different categories, you may visit this link.

To help you get started with the familiarization, this AWS whitepaper contains an overview of the different AWS services along with their definitions and use cases. It is also important to know what cloud computing introduces into the industry, and how the AWS Global Infrastructure is set up to help you maximize the capabilities of cloud computing. Aside from questions on the different services, questions about Regions and Availability Zones commonly pop up in the exam as well.

2. Best Practices when Architecting for the Cloud

This section is highly important and might comprise the bulk of your CCP exam. Focus on reading the contents of this AWS Well-Architected Framework whitepaper. The best practices are essentially the ways you can take advantage of AWS Cloud's strengths. This paper elaborates on the different pillars that make up a well-architected system. Reading through the design principles and core services of each pillar will help you connect the dots between the best practices and AWS services. Lastly, you can visit this site to gather more information and view additional content for your review of this section.

3. Security in the Cloud

Security in the AWS Cloud is another major part of your CCP Exam. AWS has defined the security controls that they manage and the security controls that you manage through the **Shared Responsibility Model** below.
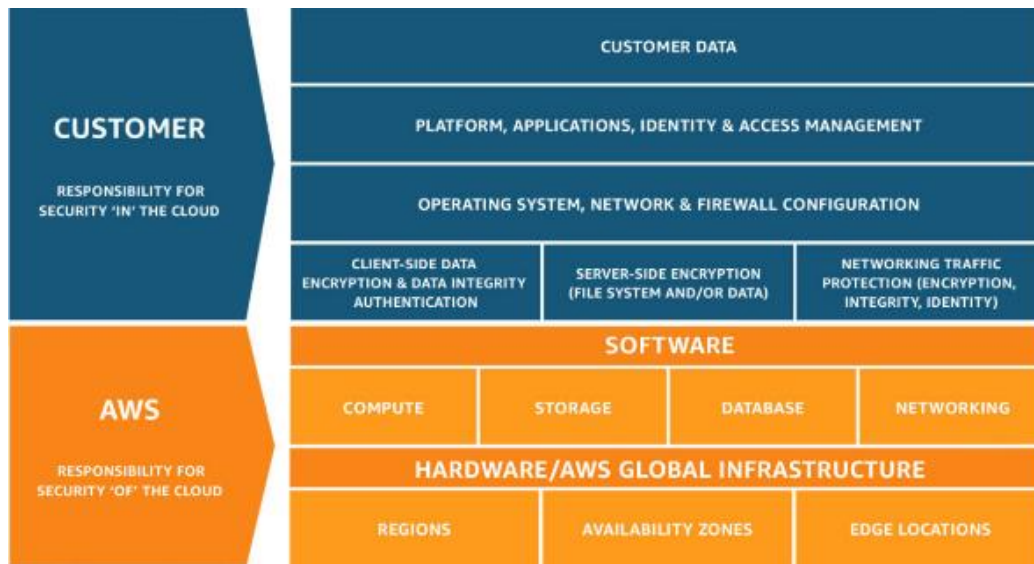
The primary resource that you should be studying for this section is this whitepaper. The AWS Security Best Practices whitepaper discusses the many ways you can secure your applications and services. I suggest you thoroughly review the following:

1) Data encryption at rest and in transit (EBS, S3, EC2, RDS, etc)

2) Identity and Access Management (IAM)

3) VPC and Application Network Security (security groups, ACLs, etc)

4) Monitoring and Logging of your Infrastructure (Cloudwatch, cloudtrail, etc)

5) AWS Compliance Programs

4. AWS Pricing Model

One of the advantages of using Cloud is having on-demand capacity provisioning. Therefore, it is also crucial for you to understand the provider's pricing model. AWS charges you in multiple ways. There is no exact model that applies to all, since different AWS services have their own cost plans. However, AWS has three fundamental drivers of cost that usually apply to any kind of service. They are:

i. Compute cost
ii. Storage cost
iii. Outbound data transfer cost

Aside from on-demand capacity provisioning, AWS also offers you multiple ways to lower your total cost, such as the option to reserve capacity or create a savings plan.

Detailed information about each of these costs can be seen in this whitepaper, which also serves as your main study material for this section. The purpose of studying cost and pricing models is to help you optimize your costs in AWS. AWS provides a great tool to calculate expected monthly costs, known as the **AWS Pricing Calculator**. Note that the CCP exam frequently asks scenarios where you'd have to optimize your costs.

5. AWS Support Plans

AWS offers different types of support plans namely: Basic, Developer, Business, Enterprise and Enterprise On-Ramp. It is important to know how each support plan differs from one another. With that said, this webpage will serve as your primary study material. You might miss the subtle details if you don't read each support plan properly, so be sure to take note of these details.

In tandem with learning the AWS Support Plans is studying AWS Trusted Advisor. AWS Trusted Advisor is a tool that offers best practice checks and recommendations across various categories such as Cost Optimization, Security, Fault Tolerance, Performance, Operational Excellence and Service Limits. You do not need to memorize each check in AWS Trusted Advisor, though browsing through them is an advantage.

How to review

As with any exam, the very first step is always the same - **KNOWING WHAT TO STUDY**. Although we have already enumerated them in the previous section, I highly suggest you go over the AWS Certified Cloud Practitioner Exam Guide again and see the exam contents.

AWS already has a vast number of free resources available for you to prepare for the exam. I suggest you first read Overview of Amazon Web Services whitepaper, and gain a good understanding of the different AWS concepts and services. Again, you don't need to memorize every single AWS service and function there. Rather, focus on the services that are more commonly used by the industry. You can check out the amazing Tutorials Dojo cheat sheets to supplement your review for this section.

After reviewing the services whitepaper, I recommend reading the whitepaper How Pricing Works next. The AWS CCP exam frequently throws out tricky questions about pricing, TCO and cost optimization. Be extra careful in answering questions that ask for the most cost effective solution. Always prioritize utility over pricing, since there might be a choice in the question where it is the cheapest solution, but is not appropriate for the scenario's needs. You can compare the pricing of the different services here on this website.

The AWS Security Best Practices whitepaper discusses what you'll need to know for AWS Security. Also, familiarize yourself with the **Shared Responsibility Model**. This frequently comes up in the AWS CCP exam.

With security, you should know the following:

- Protect your data in AWS and going out of AWS. Different services have different encryption methods and protocols.
- Network level security and subnet level security. There are many ways you can secure your VPC and the services inside it, such as NACLs and security groups.
- Be comfortable with IAM. Focus on concepts of IAM users, groups, policies and roles.
- Understand AWS monitoring and logging features such as Cloudwatch, CloudWatch Logs, VPC Logs and CloudTrail.

The last whitepaper you need to review is the AWS Well-Architected Framework whitepaper. The material nicely wraps up all the AWS services, products, features, and pricing that you've learned. It is very important to understand what the best practices are, since scenario questions in the exam always revolve around these topics. You can open up an AWS Management Console to help you visualize what is being discussed in this paper.

After reading through all the whitepapers, the last section of your review is the AWS Support Plans. This is a quick browse of a webpage, and shouldn't take you long to study. Take note of what support plans are available, and how they differ from each other. There might be questions in the exam that ask which support plan offers some specific service.

AWS also provides a free, online virtual course called AWS Cloud Practitioner Essentials which you can take to better prepare yourself for the AWS CCP exam. This course contains a set of video lectures that summarize everything you've read so far in your review, and discuss topics you might have missed.

Also check out this article: **Top 5 FREE AWS Review Materials**.

Common Exam Scenarios

Scenario	Solution
Domain 1: Cloud Concepts	
A key financial benefit of migrating systems hosted on your on-premises data center to AWS.	- Replaces upfront capital expenses (CAPEX) with low variable operational expenses (OPEX). - Reduce the Total Cost of Ownership (TCO)

4 cloud architectures design principle in AWS	1. Design for failure.
	    Decouple your components
	    Implement elasticity
	2. Think parallel

A cloud architecture for mission-critical workloads in AWS which must be highly-available.	Use multiple Availability Zones
A change or a failure in one component should not cascade to other components.	Loose coupling
You need to enable your Amazon EC2 instances in the public subnet to connect to the public Internet.	Internet Gateway
You need to enable your EC2 instances in the private subnet to connect to the public Internet.	NAT Gateway
Domain 2: Security and Compliance	
A security management tool to configure your AWS WAF rules across your accounts.	AWS Firewall Manager
A company needs to download the compliance-related documents in AWS such as Service Organization Controls (SOC) reports	AWS Artifact
Improve the security of IAM users.	- Enable Multi-Factor Authentication (MFA) - Configure a strong password policy
An IAM identity that uses access keys to manage cloud resources via AWS CLI.	IAM User

Grant temporary access to your AWS resources.	IAM Role
Apply and easily manage the common access permissions to a large number of IAM users in AWS.	IAM Group
Grant the required permissions to access your Amazon S3 resources.	Bucket Policy User Policy
You must provide temporary AWS credentials for users who have authenticated via their social media logins as well as for guest users who do not require any authentication.	Amazon Cognito Identity Pool
A startup needs to evaluate the newly created IAM policies.	IAM Policy Simulator
A service that discovers, classifies, and protects sensitive data such as personally identifiable information (PII) or intellectual property.	Amazon Macie
A threat detection service that continuously monitors for malicious activity to protect your AWS account.	Amazon GuardDuty
Prevent unauthorized deletion of Amazon S3 objects.	Enable Multi-Factor Authentication (MFA)
A company needs to control the traffic going in and out of their VPC subnets.	Network Access Control List (NACL)
What acts as a virtual firewall in AWS that controls the traffic at the EC2 instance level?	Security Group
Set up an automated security assessment service to improve the security and compliance of your applications.	Amazon Inspector
Domain 3: Cloud Technology and Services	
A company needs to use the AWS global network to improve availability of deployed applications on AWS using an anycast static IP address.	AWS Global Accelerator
You need to securely transfer hundreds of petabytes of data into and out of the AWS Cloud.	AWS Snowball Edge

A type of an EC2 instance that allows you to use your existing server-bound software licenses.	Dedicated Host
A service that allows you to continuously monitor and log account activities such as the user actions made from the AWS Management Console and AWS SDKs.	AWS CloudTrail
A highly available and scalable cloud DNS web service in AWS.	Amazon Route 53
Store the results of I/O-intensive SQL database queries to improve the application performance.	Amazon ElastiCache
A combination of AWS services that allows you to serve the static files with lowest possible latency.	Amazon S3 Amazon CloudFront
Automatically scale the capacity of an AWS cloud resource based on the incoming traffic to improve availability and reduce failures	AWS Auto Scaling
A company needs to migrate an on-premises MySQL database to Amazon RDS.	AWS Database Migration Service (AWS DMS)
Automatically transfer your infrequently accessed data in your S3 bucket to a more cost-effective storage class.	S3 Lifecycle Policy
You need to upload a single object as a set of parts to improve throughput and have a quicker recovery from any network issues.	Use Multipart Upload API
A company needs to establish a dedicated connection between their on-premises network and their AWS VPC.	AWS Direct Connect
A Machine Learning service that allows you to add a visual analysis feature to your applications.	Amazon Rekognition
A source control service that allows you to host Git-based repositories.	AWS CodeCommit
A service that can trace user requests in your application.	AWS X-Ray

A company needs to retrieve the instance ID, public keys, and public IP address of their EC2 instance.	Instance metadata
You need to speed up the content delivery of static assets to your customers around the globe	Amazon CloudFront
Create and deploy infrastructure-as-code templates	AWS CloudFormation
You have to encrypt the log data that is stored and managed by AWS CloudTrail.	AWS Key Management Service (AWS KMS)
A database service that can be used to store JSON documents.	Amazon DynamoDB
Domain 4: Billing, Pricing and Support	
A designated technical point of contact that will maintain an operationally healthy AWS environment.	Technical Account Manager (TAM)
A tool that inspects your AWS environment and makes recommendations that follows AWS best practices.	AWS Trusted Advisor
A startup needs to estimate the costs of moving their application to AWS.	AWS Pricing Calculator
Set coverage targets and receive alerts when your utilization drops.	AWS Budgets
A type of Reserved Instance that allows you to change its instance family, instance type, platform, scope, or tenancy.	Convertible RI
Take advantage of unused EC2 capacity in the AWS Cloud and provides up to 90% discount.	Spot Instance
You need to centrally manage policies and consolidate billing across multiple AWS accounts.	AWS Organizations
The most cost-efficient storage option for retaining database backups that allows occasional data retrieval in minutes.	Amazon Glacier

Forecast future costs and usage of your AWS resources based on your past consumption.	AWS Cost Explorer
Categorize and track AWS costs on a detailed level.	Cost allocation tags
A company launched a new VPC which is way beyond the default service limit.	Request a service limit increase in AWS Support Center
The most cost-effective option when you purchase a Reserved Instance for a 1-year term.	All Upfront
You have to combine usage volume discounts of your multiple AWS accounts.	Consolidated Billing
Sell your catalog of custom AMIs in AWS	AWS Marketplace

Validate Your Knowledge

When you are feeling confident with your review, it is best to validate your knowledge through sample exams. **Tutorials Dojo** offers a very useful and well-reviewed set of practice tests for the Cloud Practitioner exam takers **here** as well as a **video course with included hands-on labs** to help you prepare well. Each test contains many unique questions which will surely help you verify if you have missed out on anything important that might appear on your exam. You can pair ou video course and practice exams with this study guide eBook.

If you have scored well on the **Tutorials Dojo AWS Certified Cloud Practitioner practice tests** and you think you are ready, then go earn your certification with your head held high. If you think you are lacking in certain areas, better go review them again, and take note of any hints in the questions that will help you select the correct answers. If you are not that confident that you'll pass, then it would be best to reschedule your exam to another day, and take your time preparing for it. In the end, the efforts you have put in for this will surely reward you.

Sample Practice Test Questions:

Question 1

Which of the following is true on how AWS lessens the time to provision your IT resources?

1. It provides an AI-powered IT ticketing platform for fulfilling resource requests.
2. It provides various ways to programmatically provision IT resources.
3. It provides an automated system of requesting and fulfilling IT resources from third-party vendors.
4. It provides express service to deliver your servers to your data centers fast.

Correct Answer: 2

Cloud computing is the on-demand delivery of compute power, database, storage, applications, and other IT resources via the internet with pay-as-you-go pricing.

Whether you are using it to run applications that share photos to millions of mobile users or to support business critical operations, a cloud services platform provides rapid access to flexible and low cost IT resources. With cloud computing, you don't need to make large upfront investments in hardware and spend a lot of time on the heavy lifting of managing that hardware. Instead, you can provision exactly the right type and size of computing resources you need to power your newest idea or operate your IT department. You can access as many resources as you need, almost instantly, and only pay for what you use.

With Cloud Computing, you can stop spending money running and maintaining data centers. You can then focus on projects that differentiate your business, not the infrastructure. Cloud computing lets you focus on your own customers, rather than on the heavy lifting of racking, stacking, and powering servers.

With the cloud, businesses no longer need to plan for and procure servers and other IT infrastructure weeks or months in advance. Instead, they can instantly spin up hundreds or thousands of servers in minutes and deliver results faster. AWS provides you various ways and tools to programmatically provision IT resources such as AWS CLI, AWS API and the web-based AWS Management Console.

Hence, the correct answer is: **It provides various ways to programmatically provision IT resources.**

The option that says: **It provides an AI-powered IT ticketing platform for fulfilling resource requests** is incorrect because AWS doesn't have this kind of ticketing platform. What AWS actually does is it allows you to programmatically provision IT resources using AWS CLI, AWS API, and the web-based AWS Management Console.

The option that says: **It provides an automated system of requesting and fulfilling IT resources from third-party vendors** is incorrect because AWS primarily is the cloud vendor and it doesn't rely on third-party vendors to provision your resources.

The option that says: **It provides express service to deliver your servers to your data centers fast** is incorrect because AWS actually handles the underlying servers needed to run the cloud resources you requested. Remember that Cloud Computing is the on-demand delivery of compute power, database, storage, applications, and other IT resources via the Internet and not from your on-premises data centers.

References:
https://docs.aws.amazon.com/whitepapers/latest/aws-overview/six-advantages-of-cloud-computing.html
https://d1.awsstatic.com/whitepapers/aws-overview.pdf

Question 2

Which among the options below can you use to launch a new Amazon RDS database cluster to your VPC in a quick and easy manner? (Select TWO)

1. AWS Management Console
2. AWS Concierge
3. AWS CodePipeline
4. AWS CloudFormation
5. AWS Systems Manager

Correct Answers: 1,4

Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups. It frees you to focus on your applications so you can give them the fast performance, high availability, security and compatibility they need.

You can launch a new RDS database cluster using the AWS Management Console, AWS CLI, and AWS CloudFormation. The AWS Management Console provides a web-based way to administer AWS services. You can sign in to the console and create, list, and perform other tasks with AWS services for your account. These tasks might include starting and stopping Amazon EC2 instances and Amazon RDS databases, creating Amazon DynamoDB tables, creating IAM users, and so on. The AWS Command Line Interface (CLI), on the other hand, is a unified tool to manage your AWS services.

AWS CloudFormation provides a common language for you to describe and provision all the infrastructure resources in your cloud environment. CloudFormation allows you to use programming languages or a simple text file to model and provision, in an automated and secure manner, all the resources needed for your applications across all regions and accounts.

Hence, the correct answers are: **AWS Management Console** and **AWS CloudFormation**.

AWS Concierge is incorrect because this is actually a senior customer service agent who is assigned to your account when you subscribe to an Enterprise or qualified Reseller Support plan. This customer service agent is not authorized to launch an RDS cluster on your behalf.

AWS CodePipeline is incorrect because this is just a fully managed continuous delivery service that helps you automate your release pipelines for fast and reliable application and infrastructure updates.

AWS Systems Manager is incorrect because this is just a unified user interface so you can view operational data from multiple AWS services, and allows you to automate operational tasks across your AWS resources.

References:
https://docs.aws.amazon.com/IAM/latest/UserGuide/console.html
https://aws.amazon.com/cli/
https://aws.amazon.com/cloudformation/

Check out this AWS CloudFormation Cheat Sheet:
https://turon.tutorialsdojo.com/aws-cheat-sheet-aws-cloudformation/

Click **here** for more **AWS Certified Cloud Practitioner practice exam questions**.

What to expect from the exam

There are two types of questions on the examination:

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

Distractors, or incorrect answers, are response options that an examinee with incomplete knowledge or skill would likely choose. However, they are generally plausible responses that fit in the content area defined by the test objective.

Unanswered questions are scored as incorrect; there is no penalty for guessing.

Majority of questions are usually scenario based. Some will ask you to identify a specific service or concept. While others will ask you to select multiple responses that fit the given requirements. No matter the style of the question, as long as you understand what is being asked, then you will do fine.

Your examination may include unscored items that are placed on the test by AWS to gather statistical information. These items are not identified on the form and do not affect your score.

The AWS Certified Cloud Practitioner (CLF-C02) examination is a pass or fail exam. Your results for the examination are reported as a scaled score from 100 through 1000, with a minimum passing score of 700. Right after the exam, you will immediately know whether you passed or you failed. And in the succeeding business days, you should receive your complete results with the score breakdown (and hopefully the certificate too).

A few more tips:

1. Be sure to get proper sleep the night before, and don't be lazy in preparing for the exam. If you feel that you aren't ready enough, you can just reschedule your exam.
2. Come early to the exam venue so that you have time to handle mishaps if there are any.
3. Read the exam questions properly, but don't spend too much time on a question you don't know the answer to. You can always go back to it after you answer the rest.
4. Keep your reviewer if you plan on taking other AWS certifications in the future. It will be handy for sure.
5. And be sure to visit the Tutorials Dojo website to see our latest AWS reviewers, cheat sheets and other guides.

AWS BASICS

AWS Global infrastructure

Amazon Web Services provides the most extensive global footprint compared to any other cloud providers in the market, and it opens up new regions faster than others/. AWS maintains numerous geographic regions around the globe, from North America, South America, Europe, Asia Pacific, and the Middle East. AWS serves over a million active customers in more than 190 countries.

AWS is able to support this massive workload, thanks to its Global Cloud Infrastructure which consists of Availability Zones, Regions, and Edge Networks.

The AWS Global Cloud Infrastructure is the most secure, extensive, and reliable cloud platform in the industry today, which offers a wide range of cloud service offerings. AWS is the top choice of small and medium enterprises for deploying their application workloads across the globe and for distributing content closer to their end-users with low-latency. It provides you a highly available and fault-tolerant cloud infrastructure where and when you need it.

AWS owns and operates thousands of servers and networking devices that are running in various data centers, scattered around the globe. A data center is a physical facility that houses hundreds of computer systems, network devices, and storage appliances. You can run your applications in two or more data centers to achieve high availability; so if there is an outage in one of the data centers, you still have other servers running in another data center. A data center can also deliver cached content to your global end-users to improve response times.

At its core, the AWS Global Infrastructure utilizes multiple data centers and group them into Availability Zones, Regions, and Edge Locations. Let's discuss these components one by one.

Availability Zone

An Availability Zone consists of one or more data centers, each with redundant power, networking, and connectivity. The data centers of a single Availability Zone, or "AZ" for short, are typically within 100 kilometers or 60 miles of each other. Think of it as a cluster of interconnected data centers in a specific geographic zone, that can help your applications become highly available – hence the name, Availability Zone.

AWS Region

An AWS Region consists of multiple Availability Zones. AWS has various regions available in North America, South America, Europe, Asia, and other parts of the globe. Since a single AZ consists of multiple data centers, your system can achieve a higher level of fault-tolerance by running it in two or more AZs. This enables companies to build highly available, fault-tolerant, and scalable cloud architecture instead of running their applications on a single datacenter.
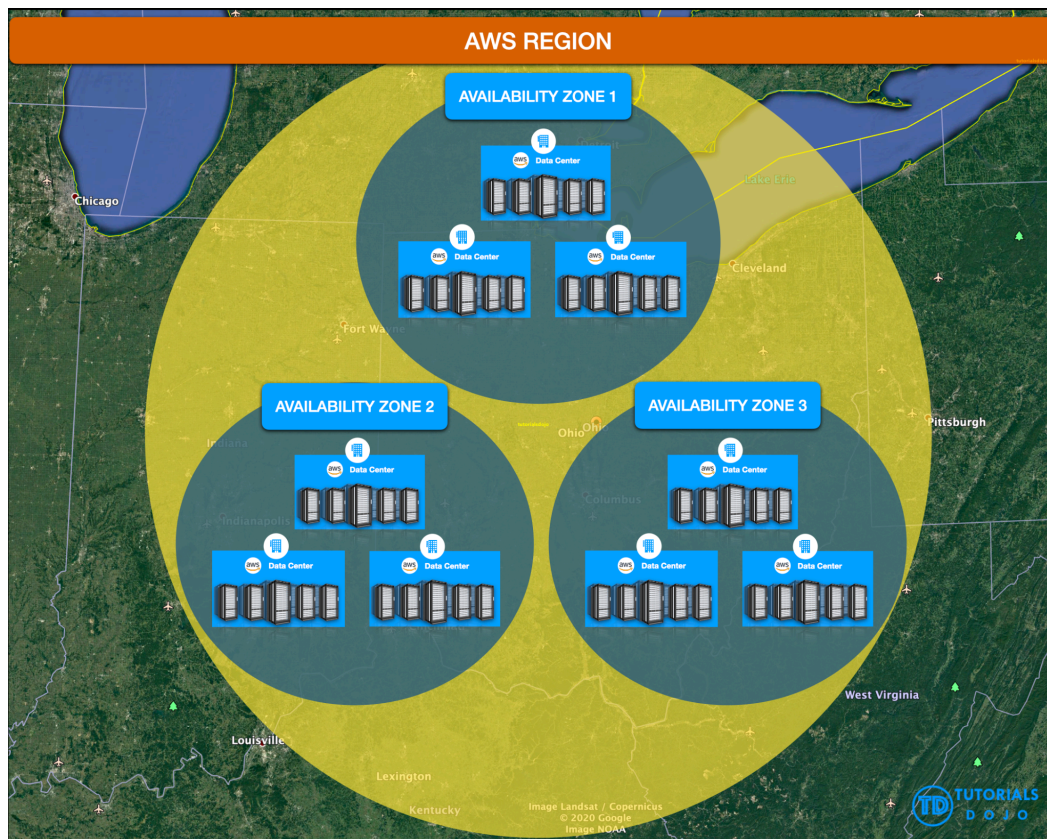
Remember that a single AZ consists of one or more data centers. Since you can deploy your application or your database to multiple AZs in a single region, your systems will still be running even if three or more data centers experienced an outage simultaneously.

To improve the durability of your data, you can also replicate it to two or more regions. This is helpful for disaster recovery and backups. The Availability Zones of a single AWS Region are typically within hundreds of kilometers or miles of each other. However, these AZs are still within a specific country to comply with the data sovereignty requirement. This is particularly useful if you have sensitive data that must only be stored in a certain location or country for data privacy compliance.

There is also a type of region called an AWS Local Region which is just a single data center designed to complement an existing AWS Region. An AWS Local Zone has less redundancy than a regular AWS Region since it is only composed of a single data center. The main purpose of having this localized region is to make the compute, storage, database, and other selected AWS services closer to a certain country or geographical location where there is no existing AWS Region.

Edge Locations

The other component of the AWS Global Cloud Infrastructure is the edge networks of Point-of-Presence or PoP. It consists of Edge Locations and Regional Edge Caches, which enables you to distribute your content with low-latency to your global users. Basically, a PoP serves as an access point that allows two different networks to communicate with each other. By using these global edge networks, a user request doesn't need to travel far back to your origin just to fetch data. The cached contents can quickly be retrieved from regional edge caches that are closer to your end-users. This is also referred to as a Content Delivery Network or CDN.
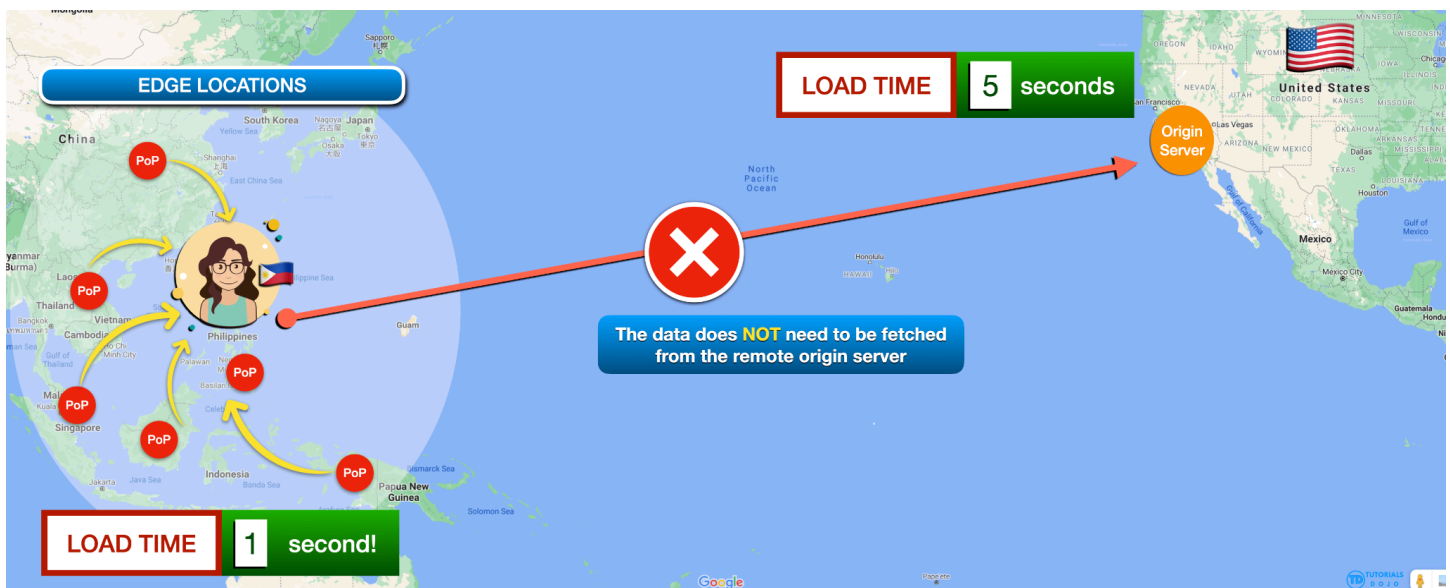

So for example, you have high-resolution images stored in a server in California. You can cache these media files to an edge location in the Philippines, India, or Singapore to allow your customers in Asia to retrieve these photos faster. The images will be loaded quickly because it is fetched to an edge server near your users, instead of retrieving it from its origin server in California.

AWS Shared Responsibility Model

Cloud computing is defined as a model for enabling ubiquitous, convenient, and on-demand network access to a shared pool of configurable computing resources. This shared pool of configurable computing resources is actually composed of thousands of high-powered physical rack servers that are scattered in multiple data centers all across the globe. Each of these servers has enterprise-grade processors that can generate hundreds or even thousands of virtual machines that can be used by thousands of customers.

A physical server is also called a host computer which runs a host operating system and a hypervisor. This hypervisor is responsible for generating multiple virtual machines; each with its own guest operating system that is chosen by the customer. So if you have a virtual machine right now in the US East Northern Virginia region, your server instance is actually running in one of the physical rack servers that are located in one of the many data centers within the state of Virginia.

Aside from virtual machines, customers can also use another type of computing resource called an abstracted service, which can be a ready-to-use database, storage, or messaging service in the cloud. These abstracted services are called as such because the cloud service provider abstracts, or removes away the responsibility of server maintenance, patching, and troubleshooting from the end customer.
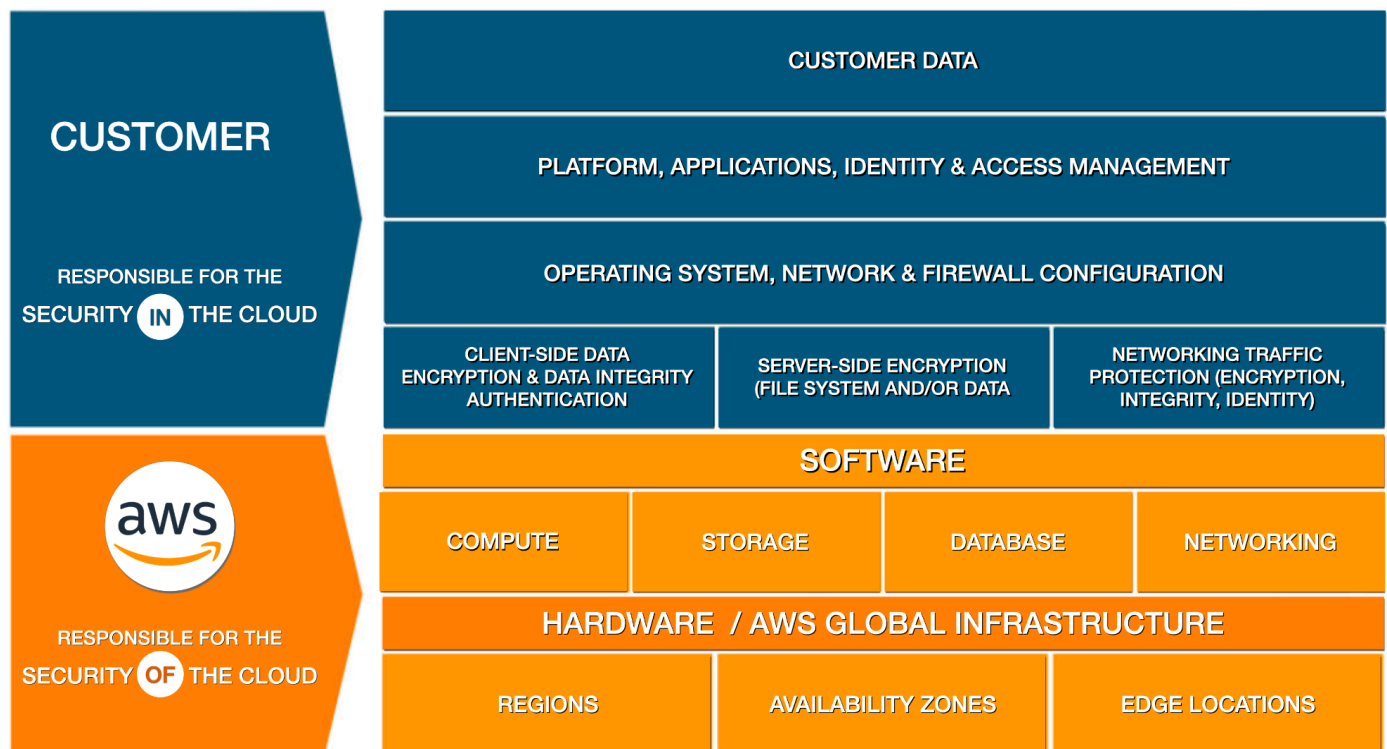
If you are running your applications in the cloud, you should be aware of who is responsible for each and every component of your cloud solutions. There is a concept called Shared Responsibility Model in Amazon Web Services that defines the specific things that AWS is responsible for and the items for which the customer has full responsibility. The Shared Responsibility Model also covers a set of IT controls that are managed exclusively by AWS, by the customer, or by both parties. This ensures security and compliance in every building block of your cloud infrastructure.

Let's first step back and ask ourselves these questions:

- Who is responsible for patching the operating system of your Amazon EC2 instance?
- Who is responsible for applying the security patches of the guest operating system that your EC2 instance is using?
- Who is responsible for running the host operating system and the virtualization layer that powers your Amazon EC2 instances?
- Who is responsible for managing all your IAM user access and secret keys?
- Who is responsible for maintaining the underlying server of your AWS Lambda functions?
- Who is responsible for the Service and Communications Protection or Zone Security of your data?
- Who is responsible for the physical security of the servers and the entire network of data centers of the AWS Global Infrastructure?
- Who is responsible for designing encryption-at-rest strategies and other security features in your Amazon RDS database?
- Who is responsible for the security "of" the cloud and the security "in" the cloud?

The Shared Responsibility Model depicts how AWS and the customer share the responsibility of securing the physical infrastructure that powers the AWS cloud as well as the configuration management that protects the end-user data. AWS is responsible for the security "of" the cloud while the customer is responsible for the security "in" the cloud. The keywords here are "of" and "in" the cloud which looks the same at first glance but has a significant difference if you analyze it further. These prepositions describe the scope of responsibility of AWS and the customer.

Security "OF" the Cloud – The Responsibility of AWS

The phrase "Security of the Cloud" means that AWS is responsible for protecting the entire physical infrastructure that runs all of the available services offered in the AWS Cloud. We have discussed earlier that the "cloud" is actually a shared pool of configurable computing resources composed of thousands of high-powered physical rack servers and networking devices scattered in multiple data centers around the world. The AWS Cloud simply won't exist without these servers and data centers. As a cloud service provider, AWS is mainly responsible for the security "of" its global cloud infrastructure including all the hardware, software, networking, and physical facilities that run its various cloud services.

AWS owns hundreds of data centers across multiple countries and each data center hosts thousands of bare-metal servers that are linked together to form the AWS Cloud. A data center is a physical facility where a network of computers, storage systems, and computing infrastructure are hosted. Just like any other building, a data center needs physical security to protect the countless IT assets that are residing on its premises. Remember that the customer data actually exists in one of the storage volumes within a single data center or is distributed across multiple Availability Zones or AWS Regions. Millions of companies are hosting their mission-critical applications on these servers so a failure in one of the rack servers or data centers might cause production issues or data loss for the customer.

AWS has the obligation of maintaining the host operating system and the virtualization layer of its physical servers. This includes the task of applying the OS patches to both the host operating system and the hypervisor that instantiates and runs the Amazon EC2 virtual machines. Installing firmware updates on its computing and networking hardware is also in scope. Aside from implementing physical and environmental controls for its data centers, AWS also covers the activities that ensure the availability, reliability, and scalability of its cloud service.

Security "IN" the Cloud – The Responsibility of the Customer

The customer is responsible for the "Security in the Cloud" which basically means protecting its custom data that is processed and stored within the AWS Global Infrastructure. There are certain configuration and management tasks that the customer can do in order to encrypt and secure its data in the cloud. Customers can add security groups to their EC2 instances, set up network ACLs for their Amazon VPCs, enable data encryption, and use other readily-available security features that are provided by AWS to secure their sensitive data.

The level of customer responsibility is determined by the type of cloud services that they are actually using which can be an Infrastructure as a Service (IaaS) or an abstracted service. An example of this is Amazon EC2 which is an Infrastructure as a Service that provides a pay-as-you-go model for your computing and virtualization needs. Amazon EC2 provides a range of options that you can choose from to fully customize, configure, and secure your own computing resources.

Customers are responsible for updating and applying the security patches of the guest operating system that's being used by their Linux or Windows instances. Take note that AWS takes care of the host operating system of the physical host server that generates the virtual machines that come with a guest OS defined by the customer. The customer is also expected to set up the virtual firewall, security group, network ACL, and other security features on every EC2 instance it owns.
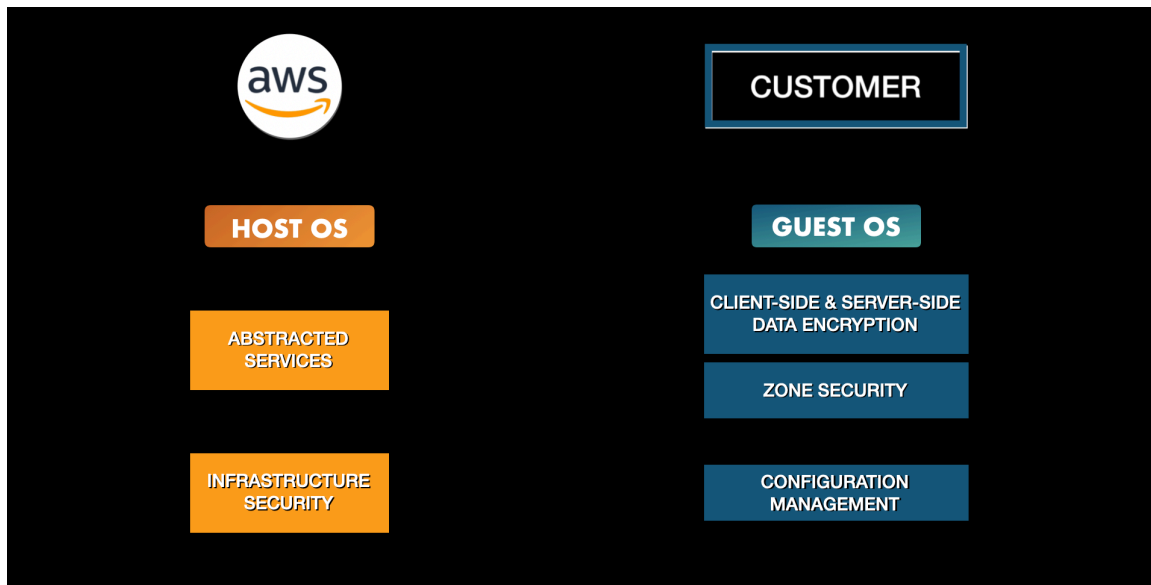
Client-side and server-side data encryption are also managed by the customer which can be achieved by enabling the encryption options available in Amazon EC2, Amazon EBS, Amazon FSx, and other services. Customers are also expected to handle the identity and access management of their EC2 fleet as well as the Service and Communications Protection, which is also known as Zone Security.

An Amazon EC2 instance typically resides within a single Available Zone only but certain route table configurations can be implemented in its Amazon VPC that may inadvertently allow unauthorized access to the customer data. This can be prevented by routing or zoning the data within the specific environments that you define using an AWS Network Firewall, Transit Gateway, and other networking services.

For abstracted services, AWS handles almost everything from the infrastructure layer, the operating system, the software, and the platforms including the external dependencies used by the service. Consider Amazon S3 and Amazon DynamoDB. Amazon S3 is an extremely scalable storage service in AWS that can be used immediately by the customer without launching its own virtual storage network. AWS is the one that provides all the required physical storage devices that allow the customer to just upload large amounts of data without worrying about server or storage limits. Most or all of the underlying layers that make up the service are abstracted from the customer's perspective.

The same is true for Amazon DynamoDB. This NoSQL database can store millions of records without burdening the customer to provision more storage capacity. Abstracted services are also called Platform-as-a-Service or Software-as-a-Service depending on their type. Infrastructure security is already provided by these services but customers can further secure their data by using encryption features, configuring endpoints, and crafting IAM policies to allow fine-grained permissions to meet their compliance requirements.