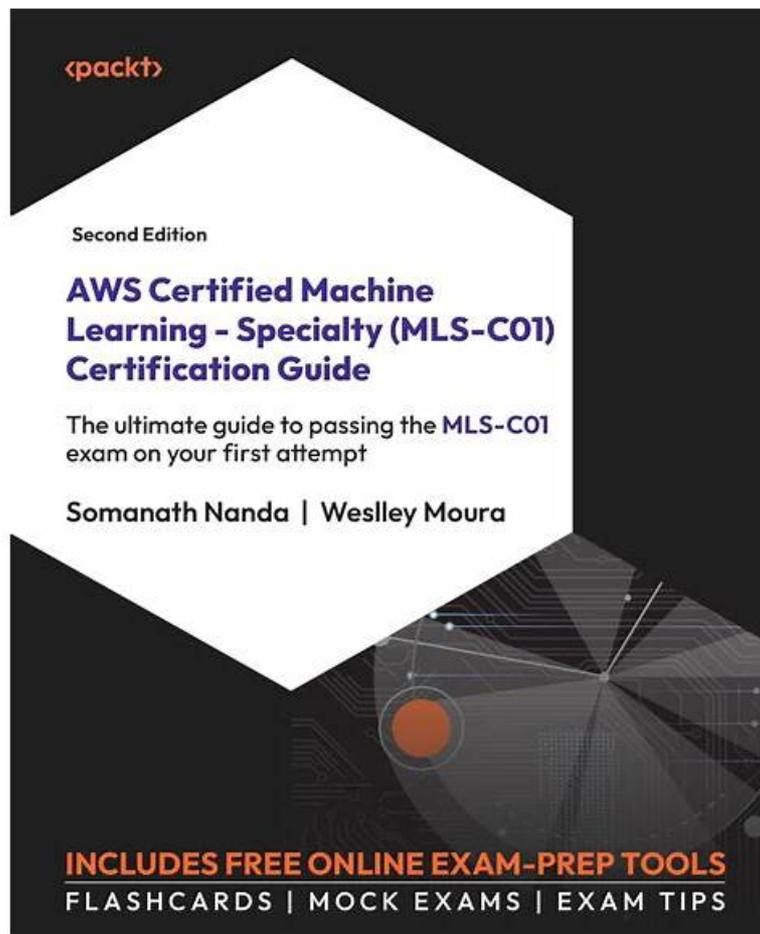


# AWS-Certified-Machine-Learning-Specialty Study Materials Review - Exam AWS-Certified-Machine-Learning-Specialty Book



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To take the Amazon MLS-C01 exam, candidates must have a strong background in machine learning concepts, programming languages such as Python, and experience with AWS services. AWS-Certified-Machine-Learning-Specialty exam consists of multiple-choice and multiple-answer questions and is administered online. Candidates have 170 minutes to complete the exam and must achieve a passing score of 750 out of 1000 points.

## What Is Audience for AWS Machine Learning Specialty Certification?

The AWS Certified Machine Learning Specialty certificate is intended for programmers, data scientists, and other candidates passionate about machine learning who want to learn how to use the benefits of artificial intelligence capabilities on the AWS platform. The training process necessary for obtaining this certification helps examinees develop the right skills to build, train, and deploy machine learning models using advanced AWS Cloud services. Candidates can achieve this certificate by obtaining the passing score in MLS-C01 exam. Even though this test doesn't have any mandatory requirements, the vendor recommends that candidates should have previous knowledge of certain topics. A successful applicant is one who has between 1 to 2 years of practical experience in developing, running and architecting ML and deep learning workloads on the AWS Cloud. Also, it would be

helpful if the candidate would have prior experience performing basic hyperparameter optimization and know how to follow model-training and operational best practices.

To be eligible for the AWS Certified Machine Learning - Specialty exam, candidates should have a minimum of one to two years of experience in machine learning and a solid understanding of AWS services and architecture. Additionally, candidates should be familiar with programming languages such as Python, R, and Java, and have experience working with data processing and analysis tools such as Apache Spark and TensorFlow. Passing AWS-Certified-Machine-Learning-Specialty Exam can help professionals showcase their skills and expertise in the field of machine learning and open up new career opportunities.

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## Exam Amazon AWS-Certified-Machine-Learning-Specialty Book & AWS-Certified-Machine-Learning-Specialty Valid Exam Discount

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### Amazon AWS Certified Machine Learning - Specialty Sample Questions (Q187-Q192):

#### NEW QUESTION # 187

A manufacturing company wants to create a machine learning (ML) model to predict when equipment is likely to fail. A data science team already constructed a deep learning model by using TensorFlow and a custom Python script in a local environment. The company wants to use Amazon SageMaker to train the model.

Which TensorFlow estimator configuration will train the model MOST cost-effectively?

- A. Turn on SageMaker Training Compiler by adding `compiler_config=TrainingCompilerConfig()` as a parameter. Turn on managed spot training by setting the `use_spot_instances` parameter to `True`. Pass the script to the estimator in the call to the TensorFlow `fit()` method.
- B. Adjust the training script to use distributed data parallelism. Specify appropriate values for the distribution parameter. Pass the script to the estimator in the call to the TensorFlow `fit()` method.
- C. Turn on SageMaker Training Compiler by adding `compiler_config=TrainingCompilerConfig()` as a parameter. Set the `MaxWaitTimeInSeconds` parameter to be equal to the `MaxRuntimeInSeconds` parameter. Pass the script to the estimator in the call to the TensorFlow `fit()` method.
- D. Turn on SageMaker Training Compiler by adding `compiler_config=TrainingCompilerConfig()` as a parameter. Pass the script to the estimator in the call to the TensorFlow `fit()` method.

**Answer: A**

Explanation:

The TensorFlow estimator configuration that will train the model most cost-effectively is to turn on SageMaker Training Compiler by adding `compiler_config=TrainingCompilerConfig()` as a parameter, turn on managed spot training by setting the `use_spot_instances` parameter to `True`, and pass the script to the estimator in the call to the TensorFlow `fit()` method. This configuration will optimize the model for the target hardware platform, reduce the training cost by using Amazon EC2 Spot Instances, and use the custom Python script without any modification.

SageMaker Training Compiler is a feature of Amazon SageMaker that enables you to optimize your TensorFlow, PyTorch, and MXNet models for inference on a variety of target hardware platforms. SageMaker Training Compiler can improve the inference performance and reduce the inference cost of your models by applying various compilation techniques, such as operator fusion, quantization, pruning, and graph optimization. You can enable SageMaker Training Compiler by adding `compiler_config=TrainingCompilerConfig()` as a parameter to the TensorFlow estimator constructor<sup>1</sup>.

Managed spot training is another feature of Amazon SageMaker that enables you to use Amazon EC2 Spot Instances for training your machine learning models. Amazon EC2 Spot Instances let you take advantage of unused EC2 capacity in the AWS Cloud. Spot Instances are available at up to a 90% discount compared to On-Demand prices. You can use Spot Instances for various fault-tolerant and flexible applications. You can enable managed spot training by setting the `use_spot_instances` parameter to `True` and specifying the `max_wait` and `max_run` parameters in the TensorFlow estimator constructor<sup>2</sup>.

The TensorFlow estimator is a class in the SageMaker Python SDK that allows you to train and deploy TensorFlow models on SageMaker. You can use the TensorFlow estimator to run your own Python script on SageMaker, without any modification. You

can pass the script to the estimator in the call to the TensorFlow fit() method, along with the location of your input data. The fit() method starts a SageMaker training job and runs your script as the entry point in the training containers<sup>3</sup>.

The other options are either less cost-effective or more complex to implement. Adjusting the training script to use distributed data parallelism would require modifying the script and specifying appropriate values for the distribution parameter, which could increase the development time and complexity. Setting the MaxWaitTimeInSeconds parameter to be equal to the MaxRuntimeInSeconds parameter would not reduce the cost, as it would only specify the maximum duration of the training job, regardless of the instance type.

References:

1: Optimize TensorFlow, PyTorch, and MXNet models for deployment using Amazon SageMaker Training Compiler | AWS Machine Learning Blog

2: Managed Spot Training: Save Up to 90% On Your Amazon SageMaker Training Jobs | AWS Machine Learning Blog

3: sagemaker.tensorflow - sagemaker 2.66.0 documentation

### NEW QUESTION # 188

A machine learning specialist is developing a proof of concept for government users whose primary concern is security. The specialist is using Amazon SageMaker to train a convolutional neural network (CNN) model for a photo classifier application. The specialist wants to protect the data so that it cannot be accessed and transferred to a remote host by malicious code accidentally installed on the training container.

Which action will provide the MOST secure protection?

- A. Encrypt the training and validation dataset.
- B. Encrypt the weights of the CNN model.
- C. Enable network isolation for training jobs.
- D. Remove Amazon S3 access permissions from the SageMaker execution role.

**Answer: C**

### NEW QUESTION # 189

A Machine Learning Specialist observes several performance problems with the training portion of a machine learning solution on Amazon SageMaker. The solution uses a large training dataset 2 TB in size and is using the SageMaker k-means algorithm. The observed issues include the unacceptable length of time it takes before the training job launches and poor I/O throughput while training the model. What should the Specialist do to address the performance issues with the current solution?

- A. Compress the training data into Apache Parquet format.
- B. Use the SageMaker batch transform feature.
- C. Copy the training dataset to an Amazon EFS volume mounted on the SageMaker instance.
- D. Ensure that the input mode for the training job is set to Pipe.

**Answer: D**

Explanation:

The input mode for the training job determines how the training data is transferred from Amazon S3 to the SageMaker instance. There are two input modes: File and Pipe. File mode copies the entire training dataset from S3 to the local file system of the instance before starting the training job. This can cause a long delay before the training job launches, especially if the dataset is large. Pipe mode streams the data from S3 to the instance as the training job runs. This can reduce the startup time and improve the I/O throughput, as the data is read in smaller batches. Therefore, to address the performance issues with the current solution, the Specialist should ensure that the input mode for the training job is set to Pipe. This can be done by using the SageMaker Python SDK and setting the input\_mode parameter to Pipe when creating the estimator or the fit method<sup>12</sup>. Alternatively, this can be done by using the AWS CLI and setting the InputMode parameter to Pipe when creating the training job<sup>3</sup>.

References:

Access Training Data - Amazon SageMaker

Choosing Data Input Mode Using the SageMaker Python SDK - Amazon SageMaker CreateTrainingJob - Amazon SageMaker Service

### NEW QUESTION # 190

IT leadership wants to transition a company's existing machine learning data storage environment to AWS as a temporary ad hoc solution. The company currently uses a custom software process that heavily leverages SQL as a query language and exclusively

stores generated csv documents for machine learning The ideal state for the company would be a solution that allows it to continue to use the current workforce of SQL experts The solution must also support the storage of csv and JSON files, and be able to query over semi-structured data The following are high priorities for the company:

- \* Solution simplicity
- \* Fast development time
- \* Low cost
- \* High flexibility

What technologies meet the company's requirements?

- A. Amazon DynamoDB and DynamoDB Accelerator (DAX)
- **B. Amazon S3 and Amazon Athena**
- C. Amazon RDS and Amazon ES
- D. Amazon Redshift and AWS Glue

**Answer: B**

Explanation:

Explanation

Amazon S3 and Amazon Athena are technologies that meet the company's requirements for a temporary ad hoc solution for machine learning data storage and query. Amazon S3 and Amazon Athena have the following features and benefits:

Amazon S3 is a service that provides scalable, durable, and secure object storage for any type of data.

Amazon S3 can store csv and JSON files, as well as other formats, and can handle large volumes of data with high availability and performance. Amazon S3 also integrates with other AWS services, such as Amazon Athena, for further processing and analysis of the data.

Amazon Athena is a service that allows querying data stored in Amazon S3 using standard SQL.

Amazon Athena can query over semi-structured data, such as JSON, as well as structured data, such as csv, without requiring any loading or transformation. Amazon Athena is serverless, meaning that there is no infrastructure to manage and users only pay for the queries they run. Amazon Athena also supports the use of AWS Glue Data Catalog, which is a centralized metadata repository that can store and manage the schema and partition information of the data in Amazon S3.

Using Amazon S3 and Amazon Athena, the company can achieve the following high priorities:

**Solution simplicity:** Amazon S3 and Amazon Athena are easy to use and require minimal configuration and maintenance. The company can simply upload the csv and JSON files to Amazon S3 and use Amazon Athena to query them using SQL. The company does not need to worry about provisioning, scaling, or managing any servers or clusters.

**Fast development time:** Amazon S3 and Amazon Athena can enable the company to quickly access and analyze the data without any data preparation or loading. The company can use the existing workforce of SQL experts to write and run queries on Amazon Athena and get results in seconds or minutes.

**Low cost:** Amazon S3 and Amazon Athena are cost-effective and offer pay-as-you-go pricing models.

Amazon S3 charges based on the amount of storage used and the number of requests made. Amazon Athena charges based on the amount of data scanned by the queries. The company can also reduce the costs by using compression, encryption, and partitioning techniques to optimize the data storage and query performance.

**High flexibility:** Amazon S3 and Amazon Athena are flexible and can support various data types, formats, and sources. The company can store and query any type of data in Amazon S3, such as csv, JSON, Parquet, ORC, etc. The company can also query data from multiple sources in Amazon S3, such as data lakes, data warehouses, log files, etc.

The other options are not as suitable as option A for the company's requirements for the following reasons:

**Option B:** Amazon Redshift and AWS Glue are technologies that can be used for data warehousing and data integration, but they are not ideal for a temporary ad hoc solution. Amazon Redshift is a service that provides a fully managed, petabyte-scale data warehouse that can run complex analytical queries using SQL. AWS Glue is a service that provides a fully managed extract, transform, and load (ETL) service that can prepare and load data for analytics. However, using Amazon Redshift and AWS Glue would require more effort and cost than using Amazon S3 and Amazon Athena. The company would need to load the data from Amazon S3 to Amazon Redshift using AWS Glue, which can take time and incur additional charges. The company would also need to manage the capacity and performance of the Amazon Redshift cluster, which can be complex and expensive.

**Option C:** Amazon DynamoDB and DynamoDB Accelerator (DAX) are technologies that can be used for fast and scalable NoSQL database and caching, but they are not suitable for the company's data storage and query needs. Amazon DynamoDB is a service that provides a fully managed, key-value and document database that can deliver single-digit millisecond performance at any scale. DynamoDB Accelerator (DAX) is a service that provides a fully managed, in-memory cache for DynamoDB that can improve the read performance by up to 10 times. However, using Amazon DynamoDB and DAX would not allow the company to continue to use SQL as a query language, as Amazon DynamoDB does not support SQL. The company would need to use the DynamoDB API or the AWS SDKs to access and query the data, which can require more coding and learning effort. The company would also need to transform the csv and JSON files into DynamoDB items, which can involve additional processing and complexity.

**Option D:** Amazon RDS and Amazon ES are technologies that can be used for relational database and search and analytics, but they are not optimal for the company's data storage and query scenario.

Amazon RDS is a service that provides a fully managed, relational database that supports various database engines, such as MySQL, PostgreSQL, Oracle, etc. Amazon ES is a service that provides a fully managed, Elasticsearch cluster, which is mainly used for search and analytics purposes. However, using Amazon RDS and Amazon ES would not be as simple and cost-effective as using Amazon S3 and Amazon Athena. The company would need to load the data from Amazon S3 to Amazon RDS, which can take time and incur additional charges. The company would also need to manage the capacity and performance of the Amazon RDS and Amazon ES clusters, which can be complex and expensive.

Moreover, Amazon RDS and Amazon ES are not designed to handle semi-structured data, such as JSON, as well as Amazon S3 and Amazon Athena.

References:

Amazon S3

Amazon Athena

Amazon Redshift

AWS Glue

Amazon DynamoDB

[DynamoDB Accelerator (DAX)]

[Amazon RDS]

[Amazon ES]

### NEW QUESTION # 191

An office security agency conducted a successful pilot using 100 cameras installed at key locations within the main office. Images from the cameras were uploaded to Amazon S3 and tagged using Amazon Rekognition, and the results were stored in Amazon ES. The agency is now looking to expand the pilot into a full production system using thousands of video cameras in its office locations globally. The goal is to identify activities performed by non-employees in real time.

Which solution should the agency consider?

- A. Install AWS DeepLens cameras and use the DeepLens\_Kinesis\_Video module to stream video to Amazon Kinesis Video Streams for each camera. On each stream, run an AWS Lambda function to capture image fragments and then call Amazon Rekognition Image to detect faces from a collection of known employees, and alert when non-employees are detected.
- **B. Use a proxy server at each local office and for each camera, and stream the RTSP feed to a unique Amazon Kinesis Video Streams video stream. On each stream, use Amazon Rekognition Video and create a stream processor to detect faces from a collection of known employees, and alert when non-employees are detected.**
- C. Use a proxy server at each local office and for each camera, and stream the RTSP feed to a unique Amazon Kinesis Video Streams video stream. On each stream, use Amazon Rekognition Image to detect faces from a collection of known employees and alert when non-employees are detected.
- D. Install AWS DeepLens cameras and use the DeepLens\_Kinesis\_Video module to stream video to Amazon Kinesis Video Streams for each camera. On each stream, use Amazon Rekognition Video and create a stream processor to detect faces from a collection on each stream, and alert when nonemployees are detected.

**Answer: B**

Explanation:

The solution that the agency should consider is to use a proxy server at each local office and for each camera, and stream the RTSP feed to a unique Amazon Kinesis Video Streams video stream. On each stream, use Amazon Rekognition Video and create a stream processor to detect faces from a collection of known employees, and alert when non-employees are detected.

This solution has the following advantages:

It can handle thousands of video cameras in real time, as Amazon Kinesis Video Streams can scale elastically to support any number of producers and consumers<sup>1</sup>.

It can leverage the Amazon Rekognition Video API, which is designed and optimized for video analysis, and can detect faces in challenging conditions such as low lighting, occlusions, and different poses<sup>2</sup>.

It can use a stream processor, which is a feature of Amazon Rekognition Video that allows you to create a persistent application that analyzes streaming video and stores the results in a Kinesis data stream<sup>3</sup>. The stream processor can compare the detected faces with a collection of known employees, which is a container for persisting faces that you want to search for in the input video stream<sup>4</sup>.

The stream processor can also send notifications to Amazon Simple Notification Service (Amazon SNS) when non-employees are detected, which can trigger downstream actions such as sending alerts or storing the events in Amazon Elasticsearch Service (Amazon ES)<sup>3</sup>.

References:

1: What Is Amazon Kinesis Video Streams? - Amazon Kinesis Video Streams

2: Detecting and Analyzing Faces - Amazon Rekognition

3: Using Amazon Rekognition Video Stream Processor - Amazon Rekognition

4: Working with Stored Faces - Amazon Rekognition



