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# Amazon Machine Learning

## API Reference

**API Version 2014-12-12**



## **Amazon Machine Learning: API Reference**

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# Welcome

Definition of the public APIs exposed by Amazon Machine Learning

This document was last published on October 7, 2020.



# Actions

The following actions are supported:

- [AddTags](#) (p. 3)
- [CreateBatchPrediction](#) (p. 7)
- [CreateDataSourceFromRDS](#) (p. 11)
- [CreateDataSourceFromRedshift](#) (p. 16)
- [CreateDataSourceFromS3](#) (p. 21)
- [CreateEvaluation](#) (p. 25)
- [CreateMLModel](#) (p. 29)
- [CreateRealtimeEndpoint](#) (p. 34)
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- [DescribeBatchPredictions](#) (p. 55)
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- [DescribeTags](#) (p. 79)
- [GetBatchPrediction](#) (p. 82)
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- [GetMLModel](#) (p. 98)
- [Predict](#) (p. 105)
- [UpdateBatchPrediction](#) (p. 109)
- [UpdateDataSource](#) (p. 112)
- [UpdateEvaluation](#) (p. 115)
- [UpdateMLModel](#) (p. 118)

## AddTags

Adds one or more tags to an object, up to a limit of 10. Each tag consists of a key and an optional value. If you add a tag using a key that is already associated with the ML object, AddTags updates the tag's value.

### Request Syntax

```
{
  "ResourceId": "string",
  "ResourceType": "string",
  "Tags": [
    {
      "Key": "string",
      "Value": "string"
    }
  ]
}
```

### Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

#### ResourceId (p. 3)

The ID of the ML object to tag. For example, `exampleModelId`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

#### ResourceType (p. 3)

The type of the ML object to tag.

Type: String

Valid Values: `BatchPrediction` | `DataSource` | `Evaluation` | `MLModel`

Required: Yes

#### Tags (p. 3)

The key-value pairs to use to create tags. If you specify a key without specifying a value, Amazon ML creates a tag with the specified key and a value of null.

Type: Array of [Tag](#) (p. 158) objects

Array Members: Maximum number of 100 items.

Required: Yes

## Response Syntax

```
{  
  "ResourceId": "string",  
  "ResourceType": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### ResourceId (p. 4)

The ID of the ML object that was tagged.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

### ResourceType (p. 4)

The type of the ML object that was tagged.

Type: String

Valid Values: BatchPrediction | DataSource | Evaluation | MLModel

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### InternalServerError

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### InvalidTagException

A submitted tag is invalid.

HTTP Status Code: 400

### ResourceNotFoundException

A specified resource cannot be located.

HTTP Status Code: 400

### TagLimitExceededException

The limit in the number of tags has been exceeded.

HTTP Status Code: 400

## Example

The following is an example of a request and response for the `AddTags` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.AddTags
{
  "ResourceId": "exampleModelId",
  "ResourceType": "MLModel",
  "Tags": {
    "Key": "exampleKey",
    "Value": "exampleKeyValue"
  }
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "ResourceId": "exampleModelId",
  "ResourceType": "MLModel"
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)



# CreateBatchPrediction

Generates predictions for a group of observations. The observations to process exist in one or more data files referenced by a `DataSource`. This operation creates a new `BatchPrediction`, and uses an `MLModel` and the data files referenced by the `DataSource` as information sources.

`CreateBatchPrediction` is an asynchronous operation. In response to `CreateBatchPrediction`, Amazon Machine Learning (Amazon ML) immediately returns and sets the `BatchPrediction` status to `PENDING`. After the `BatchPrediction` completes, Amazon ML sets the status to `COMPLETED`.

You can poll for status updates by using the [GetBatchPrediction \(p. 82\)](#) operation and checking the `Status` parameter of the result. After the `COMPLETED` status appears, the results are available in the location specified by the `OutputUri` parameter.

## Request Syntax

```
{  
  "BatchPredictionDataSourceId": "string",  
  "BatchPredictionId": "string",  
  "BatchPredictionName": "string",  
  "MLModelId": "string",  
  "OutputUri": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### **BatchPredictionDataSourceId (p. 7)**

The ID of the `DataSource` that points to the group of observations to predict.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### **BatchPredictionId (p. 7)**

A user-supplied ID that uniquely identifies the `BatchPrediction`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### **BatchPredictionName (p. 7)**

A user-supplied name or description of the `BatchPrediction`. `BatchPredictionName` can only use the UTF-8 character set.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **MLModelId (p. 7)**

The ID of the `MLModel` that will generate predictions for the group of observations.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

#### **OutputUri (p. 7)**

The location of an Amazon Simple Storage Service (Amazon S3) bucket or directory to store the batch prediction results. The following substrings are not allowed in the `s3` key portion of the `outputURI` field: `:', '///', './.', '/../`.

Amazon ML needs permissions to store and retrieve the logs on your behalf. For information about how to set permissions, see the [Amazon Machine Learning Developer Guide](#).

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\/]+)(/.*)?`

Required: Yes

## Response Syntax

```
{  
  "BatchPredictionId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### **BatchPredictionId (p. 8)**

A user-supplied ID that uniquely identifies the `BatchPrediction`. This value is identical to the value of the `BatchPredictionId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **IdempotentParameterMismatchException**

A second request to use or change an object was not allowed. This can result from retrying a request using a parameter that was not present in the original request.

HTTP Status Code: 400

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `BatchPrediction` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.CreateBatchPrediction
{
  "BatchPredictionId": "EXAMPLE-bp-2014-09-12-15-14-04-156",
  "BatchPredictionName": "EXAMPLE",
  "MLModelId": "EXAMPLE-pr-2014-09-12-15-14-04-924",
  "BatchPredictionDataSourceId": "EXAMPLE-tr-ds-2014-09-12-15-14-04-989",
  "OutputUri": "s3://eml-test-EXAMPLE/test-outputs/EXAMPLE-bp-2014-09-12-15-14-04-156/
  results"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"BatchPredictionId": "EXAMPLE-bp-2014-09-12-15-14-04-156"}
```



## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# CreateDataSourceFromRDS

Creates a DataSource object from an [Amazon Relational Database Service](#) (Amazon RDS). A DataSource references data that can be used to perform CreateMLModel, CreateEvaluation, or CreateBatchPrediction operations.

CreateDataSourceFromRDS is an asynchronous operation. In response to CreateDataSourceFromRDS, Amazon Machine Learning (Amazon ML) immediately returns and sets the DataSource status to PENDING. After the DataSource is created and ready for use, Amazon ML sets the Status parameter to COMPLETED. DataSource in the COMPLETED or PENDING state can be used only to perform >CreateMLModel>, CreateEvaluation, or CreateBatchPrediction operations.

If Amazon ML cannot accept the input source, it sets the Status parameter to FAILED and includes an error message in the Message attribute of the GetDataSource operation response.

## Request Syntax

```
{
  "ComputeStatistics": boolean,
  "DataSourceId": "string",
  "DataSourceName": "string",
  "RDSData": {
    "DatabaseCredentials": {
      "Password": "string",
      "Username": "string"
    },
    "DatabaseInformation": {
      "DatabaseName": "string",
      "InstanceIdentifier": "string"
    },
    "DataRearrangement": "string",
    "DataSchema": "string",
    "DataSchemaUri": "string",
    "ResourceRole": "string",
    "S3StagingLocation": "string",
    "SecurityGroupIds": [ "string" ],
    "SelectSqlQuery": "string",
    "ServiceRole": "string",
    "SubnetId": "string"
  },
  "RoleARN": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### ComputeStatistics (p. 11)

The compute statistics for a DataSource. The statistics are generated from the observation data referenced by a DataSource. Amazon ML uses the statistics internally during MLModel training. This parameter must be set to true if the DataSource needs to be used for MLModel training.

Type: Boolean

Required: No

#### **DataSourceId (p. 11)**

A user-supplied ID that uniquely identifies the `DataSource`. Typically, an Amazon Resource Number (ARN) becomes the ID for a `DataSource`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

#### **DataSourceName (p. 11)**

A user-supplied name or description of the `DataSource`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **RDSData (p. 11)**

The data specification of an Amazon RDS `DataSource`:

- **DatabaseInformation** -
  - **DatabaseName** - The name of the Amazon RDS database.
  - **InstanceIdentifier** - A unique identifier for the Amazon RDS database instance.
- **DatabaseCredentials** - AWS Identity and Access Management (IAM) credentials that are used to connect to the Amazon RDS database.
- **ResourceRole** - A role (`DataPipelineDefaultResourceRole`) assumed by an EC2 instance to carry out the copy task from Amazon RDS to Amazon Simple Storage Service (Amazon S3). For more information, see [Role templates](#) for data pipelines.
- **ServiceRole** - A role (`DataPipelineDefaultRole`) assumed by the AWS Data Pipeline service to monitor the progress of the copy task from Amazon RDS to Amazon S3. For more information, see [Role templates](#) for data pipelines.
- **SecurityInfo** - The security information to use to access an RDS DB instance. You need to set up appropriate ingress rules for the security entity IDs provided to allow access to the Amazon RDS instance. Specify a `[SubnetId, SecurityGroupIds]` pair for a VPC-based RDS DB instance.
- **SelectSqlQuery** - A query that is used to retrieve the observation data for the `Datasource`.
- **S3StagingLocation** - The Amazon S3 location for staging Amazon RDS data. The data retrieved from Amazon RDS using `SelectSqlQuery` is stored in this location.
- **DataSchemaUri** - The Amazon S3 location of the `DataSchema`.
- **DataSchema** - A JSON string representing the schema. This is not required if `DataSchemaUri` is specified.
- **DataRearrangement** - A JSON string that represents the splitting and rearrangement requirements for the `Datasource`.

Sample - `{"splitting":{"percentBegin":10,"percentEnd":60}}`

Type: [RDSDataSpec \(p. 140\)](#) object

Required: Yes

#### [RoleARN \(p. 11\)](#)

The role that Amazon ML assumes on behalf of the user to create and activate a data pipeline in the user's account and copy data using the `SelectSqlQuery` query from Amazon RDS to Amazon S3.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 110.

Required: Yes

## Response Syntax

```
{  
  "DataSourceId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### [DataSourceId \(p. 13\)](#)

A user-supplied ID that uniquely identifies the datasource. This value should be identical to the value of the `DataSourceId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

#### **IdempotentParameterMismatchException**

A second request to use or change an object was not allowed. This can result from retrying a request using a parameter that was not present in the original request.

HTTP Status Code: 400

#### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

#### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample HTTP request and response of the `CreateDataSourceFromRDS` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.CreateDataSourceFromRDS
{
  "DataSourceId": "ml-rds-data-source-demo",
  "DataSourceName": "ml-rds-data-source-demo",
  "RDSData":
  {
    "DatabaseInformation":
    {
      "InstanceIdentifier": "demo",
      "DatabaseName": "demo"
    },
    "SelectSqlQuery": "select feature1, feature2, feature3, ..., featureN from
RDS_DEMO_TABLE;",
    "DatabaseCredentials":
    {
      "Username": "demo_user",
      "Password": "demo_password"
    },
    "S3StagingLocation": "s3://mldemo/data/",
    "DataSchemaUri": "s3://mldemo/schema/mldemo.csv.schema",
    "ResourceRole": "DataPipelineDefaultResourceRole",
    "ServiceRole": "DataPipelineDefaultRole",
    "SubnetId": "subnet-XXXX",
    "SecurityGroupIds":
      ["sg-XXXXXX", "sg-XXXXXX"]
  },
  "RoleARN": "arn:aws:iam::<awsAccountId>:role/<roleToAssume>"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "DataSourceId": "ml-rds-data-source-demo"
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# CreateDataSourceFromRedshift

Creates a `DataSource` from a database hosted on an Amazon Redshift cluster. A `DataSource` references data that can be used to perform either `CreateMLModel`, `CreateEvaluation`, or `CreateBatchPrediction` operations.

`CreateDataSourceFromRedshift` is an asynchronous operation. In response to `CreateDataSourceFromRedshift`, Amazon Machine Learning (Amazon ML) immediately returns and sets the `DataSource` status to `PENDING`. After the `DataSource` is created and ready for use, Amazon ML sets the `Status` parameter to `COMPLETED`. `DataSource` in `COMPLETED` or `PENDING` states can be used to perform only `CreateMLModel`, `CreateEvaluation`, or `CreateBatchPrediction` operations.

If Amazon ML can't accept the input source, it sets the `Status` parameter to `FAILED` and includes an error message in the `Message` attribute of the `GetDataSource` operation response.

The observations should be contained in the database hosted on an Amazon Redshift cluster and should be specified by a `SelectSqlQuery` query. Amazon ML executes an `Unload` command in Amazon Redshift to transfer the result set of the `SelectSqlQuery` query to `S3StagingLocation`.

After the `DataSource` has been created, it's ready for use in evaluations and batch predictions. If you plan to use the `DataSource` to train an `MLModel`, the `DataSource` also requires a recipe. A recipe describes how each input variable will be used in training an `MLModel`. Will the variable be included or excluded from training? Will the variable be manipulated; for example, will it be combined with another variable or will it be split apart into word combinations? The recipe provides answers to these questions.

You can't change an existing `datasource`, but you can copy and modify the settings from an existing Amazon Redshift `datasource` to create a new `datasource`. To do so, call `GetDataSource` for an existing `datasource` and copy the values to a `CreateDataSource` call. Change the settings that you want to change and make sure that all required fields have the appropriate values.

## Request Syntax

```
{
  "ComputeStatistics": boolean,
  "DataSourceId": "string",
  "DataSourceName": "string",
  "DataSpec": {
    "DatabaseCredentials": {
      "Password": "string",
      "Username": "string"
    },
    "DatabaseInformation": {
      "ClusterIdentifier": "string",
      "DatabaseName": "string"
    },
    "DataRearrangement": "string",
    "DataSchema": "string",
    "DataSchemaUri": "string",
    "S3StagingLocation": "string",
    "SelectSqlQuery": "string"
  },
  "RoleARN": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

#### **ComputeStatistics (p. 16)**

The compute statistics for a `DataSource`. The statistics are generated from the observation data referenced by a `DataSource`. Amazon ML uses the statistics internally during `MLModel` training. This parameter must be set to `true` if the `DataSource` needs to be used for `MLModel` training.

Type: Boolean

Required: No

#### **DataSourceId (p. 16)**

A user-supplied ID that uniquely identifies the `DataSource`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.- ]+`

Required: Yes

#### **DataSourceName (p. 16)**

A user-supplied name or description of the `DataSource`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **DataSpec (p. 16)**

The data specification of an Amazon Redshift `DataSource`:

- `DatabaseInformation` -
  - `DatabaseName` - The name of the Amazon Redshift database.
  - `ClusterIdentifier` - The unique ID for the Amazon Redshift cluster.
- `DatabaseCredentials` - The AWS Identity and Access Management (IAM) credentials that are used to connect to the Amazon Redshift database.
- `SelectSqlQuery` - The query that is used to retrieve the observation data for the `Datasource`.
- `S3StagingLocation` - The Amazon Simple Storage Service (Amazon S3) location for staging Amazon Redshift data. The data retrieved from Amazon Redshift using the `SelectSqlQuery` query is stored in this location.
- `DataSchemaUri` - The Amazon S3 location of the `DataSchema`.
- `DataSchema` - A JSON string representing the schema. This is not required if `DataSchemaUri` is specified.
- `DataRearrangement` - A JSON string that represents the splitting and rearrangement requirements for the `DataSource`.

Sample - `"{\"splitting\":{\"percentBegin\":10,\"percentEnd\":60}}"`

Type: [RedshiftDataSpec \(p. 150\)](#) object

Required: Yes



### RoleARN (p. 16)

A fully specified role Amazon Resource Name (ARN). Amazon ML assumes the role on behalf of the user to create the following:

- A security group to allow Amazon ML to execute the `SelectSqlQuery` query on an Amazon Redshift cluster
- An Amazon S3 bucket policy to grant Amazon ML read/write permissions on the `S3StagingLocation`

Type: String

Length Constraints: Minimum length of 1. Maximum length of 110.

Required: Yes

## Response Syntax

```
{
  "DataSourceId": "string"
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### DataSourceId (p. 18)

A user-supplied ID that uniquely identifies the datasource. This value should be identical to the value of the `DataSourceId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.- ]+`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **IdempotentParameterMismatchException**

A second request to use or change an object was not allowed. This can result from retrying a request using a parameter that was not present in the original request.

HTTP Status Code: 400

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `CreateDataSourceFromRedshift` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.CreateDataSourceFromRedshift
{
  "DataSourceId": "ds-exampleDatasourceId",
  "DataSourceName": "exampleDatasourceName",
  "DataSpec":
  {
    "DatabaseInformation":
    {
      "DatabaseName": "dev",
      "ClusterIdentifier": "test-cluster-1234"
    },
    "SelectSqlQuery": "select * from table",
    "DatabaseCredentials":
    {
      "Username": "foo",
      "Password": "foo"
    },
    "S3StagingLocation": "s3://bucketName/",
    "DataSchemaUri": "s3://bucketName/locationToUri/example.schema.json",
    "RoleARN": "arn:aws:iam::<awsAccountId>:role/username"
  }
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"DataSourceId": "ds-exampleDatasourceId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# CreateDataSourceFromS3

Creates a `DataSource` object. A `DataSource` references data that can be used to perform `CreateMLModel`, `CreateEvaluation`, or `CreateBatchPrediction` operations.

`CreateDataSourceFromS3` is an asynchronous operation. In response to `CreateDataSourceFromS3`, Amazon Machine Learning (Amazon ML) immediately returns and sets the `DataSource` status to `PENDING`. After the `DataSource` has been created and is ready for use, Amazon ML sets the `Status` parameter to `COMPLETED`. `DataSource` in the `COMPLETED` or `PENDING` state can be used to perform only `CreateMLModel`, `CreateEvaluation` or `CreateBatchPrediction` operations.

If Amazon ML can't accept the input source, it sets the `Status` parameter to `FAILED` and includes an error message in the `Message` attribute of the `GetDataSource` operation response.

The observation data used in a `DataSource` should be ready to use; that is, it should have a consistent structure, and missing data values should be kept to a minimum. The observation data must reside in one or more `.csv` files in an Amazon Simple Storage Service (Amazon S3) location, along with a schema that describes the data items by name and type. The same schema must be used for all of the data files referenced by the `DataSource`.

After the `DataSource` has been created, it's ready to use in evaluations and batch predictions. If you plan to use the `DataSource` to train an `MLModel`, the `DataSource` also needs a recipe. A recipe describes how each input variable will be used in training an `MLModel`. Will the variable be included or excluded from training? Will the variable be manipulated; for example, will it be combined with another variable or will it be split apart into word combinations? The recipe provides answers to these questions.

## Request Syntax

```
{
  "ComputeStatistics": boolean,
  "DataSourceId": "string",
  "DataSourceName": "string",
  "DataSpec": {
    "DataLocationS3": "string",
    "DataRearrangement": "string",
    "DataSchema": "string",
    "DataSchemaLocationS3": "string"
  }
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### ComputeStatistics (p. 21)

The compute statistics for a `DataSource`. The statistics are generated from the observation data referenced by a `DataSource`. Amazon ML uses the statistics internally during `MLModel` training. This parameter must be set to `true` if the `DataSource` needs to be used for `MLModel` training.

Type: Boolean

Required: No

### **DataSourceId (p. 21)**

A user-supplied identifier that uniquely identifies the `DataSource`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### **DataSourceName (p. 21)**

A user-supplied name or description of the `DataSource`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: .\*\S.\*|^\$

Required: No

### **DataSpec (p. 21)**

The data specification of a `DataSource`:

- `DataLocationS3` - The Amazon S3 location of the observation data.
- `DataSchemaLocationS3` - The Amazon S3 location of the `DataSchema`.
- `DataSchema` - A JSON string representing the schema. This is not required if `DataSchemaUri` is specified.
- `DataRearrangement` - A JSON string that represents the splitting and rearrangement requirements for the `Datasource`.

Sample - `"{\"splitting\":{\"percentBegin\":10,\"percentEnd\":60}}"`

Type: [S3DataSpec \(p. 155\)](#) object

Required: Yes

## Response Syntax

```
{
  "DataSourceId": "string"
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### **DataSourceId (p. 22)**

A user-supplied ID that uniquely identifies the `DataSource`. This value should be identical to the value of the `DataSourceID` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **IdempotentParameterMismatchException**

A second request to use or change an object was not allowed. This can result from retrying a request using a parameter that was not present in the original request.

HTTP Status Code: 400

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `CreateDataSourceFromS3` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.CreateDataSourceFromS3
{
  "DataSourceId": "exampleDataSourceId",
  "DataSourceName": "exampleDataSourceName",
  "DataSpec":
  {
    "DataLocationS3": "s3://eml-test-EXAMPLE/data.csv",
    "DataSchemaLocationS3": "s3://eml-test-EXAMPLE/data.csv.schema",
    "DataRearrangement": "{\"splitting\":{\"percentBegin\":10,\"percentEnd\":60}}"
  }
}
```

### Sample Response

```
HTTP/1.1 200 OK
```

```
x-amzn-RequestId: <RequestId>  
Content-Type: application/x-amz-json-1.1  
Content-Length: <PayloadSizeBytes>  
Date: <Date>  
{ "DataSourceId": "exampleDataSourceId" }
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# CreateEvaluation

Creates a new `Evaluation` of an `MLModel`. An `MLModel` is evaluated on a set of observations associated to a `DataSource`. Like a `DataSource` for an `MLModel`, the `DataSource` for an `Evaluation` contains values for the `Target Variable`. The `Evaluation` compares the predicted result for each observation to the actual outcome and provides a summary so that you know how effective the `MLModel` functions on the test data. Evaluation generates a relevant performance metric, such as `BinaryAUC`, `RegressionRMSE` or `MulticlassAvgFScore` based on the corresponding `MLModelType`: `BINARY`, `REGRESSION` or `MULTICLASS`.

`CreateEvaluation` is an asynchronous operation. In response to `CreateEvaluation`, Amazon Machine Learning (Amazon ML) immediately returns and sets the evaluation status to `PENDING`. After the `Evaluation` is created and ready for use, Amazon ML sets the status to `COMPLETED`.

You can use the `GetEvaluation` operation to check progress of the evaluation during the creation operation.

## Request Syntax

```
{
  "EvaluationDataSourceId": "string",
  "EvaluationId": "string",
  "EvaluationName": "string",
  "MLModelId": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### [EvaluationDataSourceId \(p. 25\)](#)

The ID of the `DataSource` for the evaluation. The schema of the `DataSource` must match the schema used to create the `MLModel`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

### [EvaluationId \(p. 25\)](#)

A user-supplied ID that uniquely identifies the `Evaluation`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes



### EvaluationName (p. 25)

A user-supplied name or description of the `Evaluation`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

### MLModelId (p. 25)

The ID of the `MLModel` to evaluate.

The schema used in creating the `MLModel` must match the schema of the `DataSource` used in the `Evaluation`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

## Response Syntax

```
{
  "EvaluationId": "string"
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### EvaluationId (p. 26)

The user-supplied ID that uniquely identifies the `Evaluation`. This value should be identical to the value of the `EvaluationId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### IdempotentParameterMismatchException

A second request to use or change an object was not allowed. This can result from retrying a request using a parameter that was not present in the original request.

HTTP Status Code: 400

#### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

#### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `CreateEvaluation` operation:

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.CreateEvaluation
{
  "EvaluationId": "CreateEvaluation-pr-2014-09-12-15-14-04-924",
  "EvaluationName": "EXAMPLE",
  "MLModelId": "EXAMPLE-pr-2014-09-12-15-14-04-924",
  "EvaluationDataSourceId": "EXAMPLE-ev-ds-2014-09-12-15-14-04-411",
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"EvaluationId":"CreateEvaluation-pr-2014-09-12-15-14-04-924"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)

- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# CreateMLModel

Creates a new `MLModel` using the `DataSource` and the recipe as information sources.

An `MLModel` is nearly immutable. Users can update only the `MLModelName` and the `ScoreThreshold` in an `MLModel` without creating a new `MLModel`.

`CreateMLModel` is an asynchronous operation. In response to `CreateMLModel`, Amazon Machine Learning (Amazon ML) immediately returns and sets the `MLModel` status to `PENDING`. After the `MLModel` has been created and ready is for use, Amazon ML sets the status to `COMPLETED`.

You can use the `GetMLModel` operation to check the progress of the `MLModel` during the creation operation.

`CreateMLModel` requires a `DataSource` with computed statistics, which can be created by setting `ComputeStatistics` to `true` in `CreateDataSourceFromRDS`, `CreateDataSourceFromS3`, or `CreateDataSourceFromRedshift` operations.

## Request Syntax

```
{
  "MLModelId": "string",
  "MLModelName": "string",
  "MLModelType": "string",
  "Parameters": {
    "string": "string"
  },
  "Recipe": "string",
  "RecipeUri": "string",
  "TrainingDataSourceId": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### **MLModelId** (p. 29)

A user-supplied ID that uniquely identifies the `MLModel`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### **MLModelName** (p. 29)

A user-supplied name or description of the `MLModel`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **MLModelType (p. 29)**

The category of supervised learning that this `MLModel` will address. Choose from the following types:

- Choose `REGRESSION` if the `MLModel` will be used to predict a numeric value.
- Choose `BINARY` if the `MLModel` result has two possible values.
- Choose `MULTICLASS` if the `MLModel` result has a limited number of values.

For more information, see the [Amazon Machine Learning Developer Guide](#).

Type: String

Valid Values: `REGRESSION` | `BINARY` | `MULTICLASS`

Required: Yes

#### **Parameters (p. 29)**

A list of the training parameters in the `MLModel`. The list is implemented as a map of key-value pairs.

The following is the current set of training parameters:

- `sgd.maxMLModelSizeInBytes` - The maximum allowed size of the model. Depending on the input data, the size of the model might affect its performance.

The value is an integer that ranges from 100000 to 2147483648. The default value is 33554432.

- `sgd.maxPasses` - The number of times that the training process traverses the observations to build the `MLModel`. The value is an integer that ranges from 1 to 100. The default value is 10.
- `sgd.shuffleType` - Whether Amazon ML shuffles the training data. Shuffling the data improves a model's ability to find the optimal solution for a variety of data types. The valid values are `auto` and `none`. The default value is `none`. We strongly recommend that you shuffle your data.
- `sgd.l1RegularizationAmount` - The coefficient regularization L1 norm. It controls overfitting the data by penalizing large coefficients. This tends to drive coefficients to zero, resulting in a sparse feature set. If you use this parameter, start by specifying a small value, such as `1.0E-08`.

The value is a double that ranges from 0 to `MAX_DOUBLE`. The default is to not use L1 normalization. This parameter can't be used when `L2` is specified. Use this parameter sparingly.

- `sgd.l2RegularizationAmount` - The coefficient regularization L2 norm. It controls overfitting the data by penalizing large coefficients. This tends to drive coefficients to small, nonzero values. If you use this parameter, start by specifying a small value, such as `1.0E-08`.

The value is a double that ranges from 0 to `MAX_DOUBLE`. The default is to not use L2 normalization. This parameter can't be used when `L1` is specified. Use this parameter sparingly.

Type: String to string map

Required: No

#### **Recipe (p. 29)**

The data recipe for creating the `MLModel`. You must specify either the recipe or its URI. If you don't specify a recipe or its URI, Amazon ML creates a default.

Type: String

Length Constraints: Maximum length of 131071.

Required: No

#### [RecipeUri \(p. 29\)](#)

The Amazon Simple Storage Service (Amazon S3) location and file name that contains the `MLModel` recipe. You must specify either the recipe or its URI. If you don't specify a recipe or its URI, Amazon ML creates a default.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s]+)(/.*)?`

Required: No

#### [TrainingDataSourceId \(p. 29\)](#)

The `DataSource` that points to the training data.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

## Response Syntax

```
{  
  "MLModelId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### [MLModelId \(p. 31\)](#)

A user-supplied ID that uniquely identifies the `MLModel`. This value should be identical to the value of the `MLModelId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

#### **IdempotentParameterMismatchException**

A second request to use or change an object was not allowed. This can result from retrying a request using a parameter that was not present in the original request.

HTTP Status Code: 400

#### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

#### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `CreateMLModel` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.CreateMLModel
{
  "MLModelId": "exampleModelId",
  "MLModelName": "EXAMPLE",
  "MLModelType": "BINARY",
  "TrainingDataSourceId": "17SdAv6WC6r5vACAx7U",
  "RecipeUri": "s3://eml-test-EXAMPLE/data.recipe.json"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"MLModelId":"exampleModelId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)

- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)



# CreateRealtimeEndpoint

Creates a real-time endpoint for the `MLModel`. The endpoint contains the URI of the `MLModel`; that is, the location to send real-time prediction requests for the specified `MLModel`.

## Request Syntax

```
{  
  "MLModelId": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### **MLModelId** (p. 34)

The ID assigned to the `MLModel` during creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

## Response Syntax

```
{  
  "MLModelId": "string",  
  "RealtimeEndpointInfo": {  
    "CreatedAt": number,  
    "EndpointStatus": "string",  
    "EndpointUrl": "string",  
    "PeakRequestsPerSecond": number  
  }  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### **MLModelId** (p. 34)

A user-supplied ID that uniquely identifies the `MLModel`. This value should be identical to the value of the `MLModelId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

**RealtimeEndpointInfo** (p. 34)

The endpoint information of the `MLModel`

Type: [RealtimeEndpointInfo](#) (p. 146) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 161).

### InternalServerErrorException

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### ResourceNotFoundException

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `CreateRealtimeEndpoint` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.CreateRealtimeEndpoint
{
  "MLModelId": "ml-ModelExampleId",
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
```

```
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "MLModelId": "ml-ModelExampleId",
  "EndpointInfo":
  {
    "CreatedAt": 1422488124.71,
    "EndpointUrl": "<realtime endpoint from Amazon Machine Learning for ml-ModelExampleId>",
    "EndpointStatus": "READY",
    "PeakRequestsPerSecond": 200
  }
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DeleteBatchPrediction

Assigns the DELETED status to a `BatchPrediction`, rendering it unusable.

After using the `DeleteBatchPrediction` operation, you can use the [GetBatchPrediction \(p. 82\)](#) operation to verify that the status of the `BatchPrediction` changed to DELETED.

**Caution:** The result of the `DeleteBatchPrediction` operation is irreversible.

## Request Syntax

```
{  
  "BatchPredictionId": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### [BatchPredictionId \(p. 37\)](#)

A user-supplied ID that uniquely identifies the `BatchPrediction`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

## Response Syntax

```
{  
  "BatchPredictionId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### [BatchPredictionId \(p. 37\)](#)

A user-supplied ID that uniquely identifies the `BatchPrediction`. This value should be identical to the value of the `BatchPredictionID` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `DeleteBatchPrediction` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DeleteBatchPrediction
{"BatchPredictionId": "exampleBatchPredictionId"}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"BatchPredictionId": "exampleBatchPredictionId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DeleteDataSource

Assigns the DELETED status to a `DataSource`, rendering it unusable.

After using the `DeleteDataSource` operation, you can use the [GetDataSource \(p. 87\)](#) operation to verify that the status of the `DataSource` changed to DELETED.

**Caution:** The results of the `DeleteDataSource` operation are irreversible.

## Request Syntax

```
{  
  "DataSourceId": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### [DataSourceId \(p. 40\)](#)

A user-supplied ID that uniquely identifies the `DataSource`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

## Response Syntax

```
{  
  "DataSourceId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### [DataSourceId \(p. 40\)](#)

A user-supplied ID that uniquely identifies the `DataSource`. This value should be identical to the value of the `DataSourceId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `DeleteDataSource` operation:

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DeleteDataSource
{"DataSourceId": "exampleDataSourceId"}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"DataSourceId": "exampleDataSourceId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:



- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DeleteEvaluation

Assigns the `DELETED` status to an `Evaluation`, rendering it unusable.

After invoking the `DeleteEvaluation` operation, you can use the `GetEvaluation` operation to verify that the status of the `Evaluation` changed to `DELETED`.

**Caution:** The results of the `DeleteEvaluation` operation are irreversible.

## Request Syntax

```
{
  "EvaluationId": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### EvaluationId (p. 43)

A user-supplied ID that uniquely identifies the `Evaluation` to delete.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.- ]+`

Required: Yes

## Response Syntax

```
{
  "EvaluationId": "string"
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### EvaluationId (p. 43)

A user-supplied ID that uniquely identifies the `Evaluation`. This value should be identical to the value of the `EvaluationId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the **DeleteEvaluation** operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DeleteEvaluation
{"EvaluationId": "exampleEvaluationId"}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"EvaluationId": "exampleEvaluationId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DeleteMLModel

Assigns the `DELETED` status to an `MLModel`, rendering it unusable.

After using the `DeleteMLModel` operation, you can use the `GetMLModel` operation to verify that the status of the `MLModel` changed to `DELETED`.

**Caution:** The result of the `DeleteMLModel` operation is irreversible.

## Request Syntax

```
{  
  "MLModelId": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### MLModelId (p. 46)

A user-supplied ID that uniquely identifies the `MLModel`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

## Response Syntax

```
{  
  "MLModelId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### MLModelId (p. 46)

A user-supplied ID that uniquely identifies the `MLModel`. This value should be identical to the value of the `MLModelID` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the **DeleteMLModel** operation:

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DeleteMLModel
{"MLModelId": "exampleMLModelId"}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"MLModelId": "exampleMLModelId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DeleteRealtimeEndpoint

Deletes a real time endpoint of an `MLModel`.

## Request Syntax

```
{  
  "MLModelId": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### **MLModelId** (p. 49)

The ID assigned to the `MLModel` during creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

## Response Syntax

```
{  
  "MLModelId": "string",  
  "RealtimeEndpointInfo": {  
    "CreatedAt": number,  
    "EndpointStatus": "string",  
    "EndpointUrl": "string",  
    "PeakRequestsPerSecond": number  
  }  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### **MLModelId** (p. 49)

A user-supplied ID that uniquely identifies the `MLModel`. This value should be identical to the value of the `MLModelId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.



Pattern: [a-zA-Z0-9\_.-]+

#### **RealtimeEndpointInfo (p. 49)**

The endpoint information of the `MLModel`

Type: [RealtimeEndpointInfo \(p. 146\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `DeleteRealtimeEndpoint` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DeleteRealtimeEndpoint
{
  "MLModelId": "ml-ModelExampleId",
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
```

```
Date: <Date>
{
  "MLModelId": "ml-ModelExampleId",
  "EndpointInfo":
  {
    "EndpointStatus": "NONE",
    "PeakRequestsPerSecond": 0
  }
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

## DeleteTags

Deletes the specified tags associated with an ML object. After this operation is complete, you can't recover deleted tags.

If you specify a tag that doesn't exist, Amazon ML ignores it.

### Request Syntax

```
{
  "ResourceId": "string",
  "ResourceType": "string",
  "TagKeys": [ "string" ]
}
```

### Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

#### **ResourceId** (p. 52)

The ID of the tagged ML object. For example, `exampleModelId`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

#### **ResourceType** (p. 52)

The type of the tagged ML object.

Type: String

Valid Values: `BatchPrediction` | `DataSource` | `Evaluation` | `MLModel`

Required: Yes

#### **TagKeys** (p. 52)

One or more tags to delete.

Type: Array of strings

Array Members: Maximum number of 100 items.

Length Constraints: Minimum length of 1. Maximum length of 128.

Pattern: `^([\p{L}\p{Z}\p{N}_.:/=+\-@]*)$`

Required: Yes

## Response Syntax

```
{  
  "ResourceId": "string",  
  "ResourceType": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### **ResourceId** (p. 53)

The ID of the ML object from which tags were deleted.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

### **ResourceType** (p. 53)

The type of the ML object from which tags were deleted.

Type: String

Valid Values: BatchPrediction | DataSource | Evaluation | MLModel

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **InvalidTagException**

A submitted tag is invalid.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following are an example request and response for the `DeleteTags` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DeleteTags
{
  "ResourceId": "exampleModelId",
  "ResourceType": "MLModel",
  "Tags": [
    "exampleKey"
  ]
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "ResourceId": "exampleModelId",
  "ResourceType": "MLModel"
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DescribeBatchPredictions

Returns a list of `BatchPrediction` operations that match the search criteria in the request.

## Request Syntax

```
{
  "EQ": "string",
  "FilterVariable": "string",
  "GE": "string",
  "GT": "string",
  "LE": "string",
  "Limit": number,
  "LT": "string",
  "NE": "string",
  "NextToken": "string",
  "Prefix": "string",
  "SortOrder": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### EQ (p. 55)

The equal to operator. The `BatchPrediction` results will have `FilterVariable` values that exactly match the value specified with `EQ`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

### FilterVariable (p. 55)

Use one of the following variables to filter a list of `BatchPrediction`:

- `CreatedAt` - Sets the search criteria to the `BatchPrediction` creation date.
- `Status` - Sets the search criteria to the `BatchPrediction` status.
- `Name` - Sets the search criteria to the contents of the `BatchPrediction` `Name`.
- `IAMUser` - Sets the search criteria to the user account that invoked the `BatchPrediction` creation.
- `MLModelId` - Sets the search criteria to the `MLModel` used in the `BatchPrediction`.
- `DataSourceId` - Sets the search criteria to the `DataSource` used in the `BatchPrediction`.
- `DataURI` - Sets the search criteria to the data file(s) used in the `BatchPrediction`. The URL can identify either a file or an Amazon Simple Storage Solution (Amazon S3) bucket or directory.

Type: String

Valid Values: `CreatedAt` | `LastUpdatedAt` | `Status` | `Name` | `IAMUser` | `MLModelId` | `DataSourceId` | `DataURI`

Required: No

**GE (p. 55)**

The greater than or equal to operator. The `BatchPrediction` results will have `FilterVariable` values that are greater than or equal to the value specified with `GE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**GT (p. 55)**

The greater than operator. The `BatchPrediction` results will have `FilterVariable` values that are greater than the value specified with `GT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**LE (p. 55)**

The less than or equal to operator. The `BatchPrediction` results will have `FilterVariable` values that are less than or equal to the value specified with `LE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**Limit (p. 55)**

The number of pages of information to include in the result. The range of acceptable values is 1 through 100. The default value is 100.

Type: Integer

Valid Range: Minimum value of 1. Maximum value of 100.

Required: No

**LT (p. 55)**

The less than operator. The `BatchPrediction` results will have `FilterVariable` values that are less than the value specified with `LT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**NE (p. 55)**

The not equal to operator. The `BatchPrediction` results will have `FilterVariable` values not equal to the value specified with `NE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### [NextToken \(p. 55\)](#)

An ID of the page in the paginated results.

Type: String

Required: No

#### [Prefix \(p. 55\)](#)

A string that is found at the beginning of a variable, such as `Name` or `Id`.

For example, a `Batch Prediction` operation could have the `Name` `2014-09-09-HolidayGiftMailer`. To search for this `BatchPrediction`, select `Name` for the `FilterVariable` and any of the following strings for the `Prefix`:

- `2014-09`
- `2014-09-09`
- `2014-09-09-Holiday`

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### [SortOrder \(p. 55\)](#)

A two-value parameter that determines the sequence of the resulting list of `MLModels`.

- `asc` - Arranges the list in ascending order (A-Z, 0-9).
- `dsc` - Arranges the list in descending order (Z-A, 9-0).

Results are sorted by `FilterVariable`.

Type: String

Valid Values: `asc` | `dsc`

Required: No

## Response Syntax

```
{
  "NextToken": "string",
  "Results": [
    {
      "BatchPredictionDataSourceId": "string",
      "BatchPredictionId": "string",
      "ComputeTime": number,
      "CreatedAt": number,
      "CreatedByIamUser": "string",
      "FinishedAt": number,
```



```
    "InputDataLocationS3": "string",
    "InvalidRecordCount": number,
    "LastUpdatedAt": number,
    "Message": "string",
    "MLModelId": "string",
    "Name": "string",
    "OutputUri": "string",
    "StartedAt": number,
    "Status": "string",
    "TotalRecordCount": number
  }
]
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### NextToken (p. 57)

The ID of the next page in the paginated results that indicates at least one more page follows.

Type: String

### Results (p. 57)

A list of `BatchPrediction` objects that meet the search criteria.

Type: Array of [BatchPrediction](#) (p. 122) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 161).

### InternalServerError

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `DescribeBatchPredictions` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
```

```
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DescribeBatchPredictions
{
  "FilterVariable": "Name",
  "Prefix": "bp-",
  "SortOrder": "asc",
  "Limit": 1
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "Results": [
    {
      "BatchPredictionDataSourceId": "ds-exampleDataSourceId",
      "BatchPredictionId": "bp-exampleBatchPredictionId",
      "CreatedAt": 1422057670.697,
      "CreatedByIamUser": "arn:aws:iam::<awsAccountId>:user/username",
      "InputDataLocationS3": "s3://bucket/locationToInput/example-data.testing.csv",
      "LastUpdatedAt": 1422057811.431,
      "MLModelId": "pr-exampleModelId",
      "Name": "bp-exampleBatchPredictionName",
      "OutputUri": "s3://bucket/locationToLogs/",
      "Status": "COMPLETED",
      "ComputeTime": "185200",
      "FinishedAt": "1422057711.192",
      "StartedAt": "14220557678.324",
      "TotalRecordCount": "21154",
      "InvalidRecordCount": "0"
    }
  ]
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)



# DescribeDataSources

Returns a list of `DataSource` that match the search criteria in the request.

## Request Syntax

```
{  
  "EQ": "string",  
  "FilterVariable": "string",  
  "GE": "string",  
  "GT": "string",  
  "LE": "string",  
  "Limit": number,  
  "LT": "string",  
  "NE": "string",  
  "NextToken": "string",  
  "Prefix": "string",  
  "SortOrder": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### EQ (p. 61)

The equal to operator. The `DataSource` results will have `FilterVariable` values that exactly match the value specified with `EQ`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

### FilterVariable (p. 61)

Use one of the following variables to filter a list of `DataSource`:

- `CreatedAt` - Sets the search criteria to `DataSource` creation dates.
- `Status` - Sets the search criteria to `DataSource` statuses.
- `Name` - Sets the search criteria to the contents of `DataSource` Name.
- `DataUri` - Sets the search criteria to the URI of data files used to create the `DataSource`. The URI can identify either a file or an Amazon Simple Storage Service (Amazon S3) bucket or directory.
- `IAMUser` - Sets the search criteria to the user account that invoked the `DataSource` creation.

Type: String

Valid Values: `CreatedAt` | `LastUpdatedAt` | `Status` | `Name` | `DataLocationS3` | `IAMUser`

Required: No

#### GE (p. 61)

The greater than or equal to operator. The `DataSource` results will have `FilterVariable` values that are greater than or equal to the value specified with `GE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### GT (p. 61)

The greater than operator. The `DataSource` results will have `FilterVariable` values that are greater than the value specified with `GT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### LE (p. 61)

The less than or equal to operator. The `DataSource` results will have `FilterVariable` values that are less than or equal to the value specified with `LE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### Limit (p. 61)

The maximum number of `DataSource` to include in the result.

Type: Integer

Valid Range: Minimum value of 1. Maximum value of 100.

Required: No

#### LT (p. 61)

The less than operator. The `DataSource` results will have `FilterVariable` values that are less than the value specified with `LT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### NE (p. 61)

The not equal to operator. The `DataSource` results will have `FilterVariable` values not equal to the value specified with `NE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **NextToken (p. 61)**

The ID of the page in the paginated results.

Type: String

Required: No

#### **Prefix (p. 61)**

A string that is found at the beginning of a variable, such as `Name` or `Id`.

For example, a `DataSource` could have the `Name` `2014-09-09-HolidayGiftMailer`. To search for this `DataSource`, select `Name` for the `FilterVariable` and any of the following strings for the `Prefix`:

- `2014-09`
- `2014-09-09`
- `2014-09-09-Holiday`

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **SortOrder (p. 61)**

A two-value parameter that determines the sequence of the resulting list of `DataSource`.

- `asc` - Arranges the list in ascending order (A-Z, 0-9).
- `dsc` - Arranges the list in descending order (Z-A, 9-0).

Results are sorted by `FilterVariable`.

Type: String

Valid Values: `asc` | `dsc`

Required: No

## Response Syntax

```
{
  "NextToken": "string",
  "Results": [
    {
      "ComputeStatistics": boolean,
      "ComputeTime": number,
      "CreatedAt": number,
      "CreatedByIamUser": "string",
      "DataLocationS3": "string",
```

```

        "DataRearrangement": "string",
        "DataSizeInBytes": number,
        "DataSourceId": "string",
        "FinishedAt": number,
        "LastUpdatedAt": number,
        "Message": "string",
        "Name": "string",
        "NumberOfFiles": number,
        "RDSMetadata": {
            "Database": {
                "DatabaseName": "string",
                "InstanceIdentifier": "string"
            },
            "DatabaseUserName": "string",
            "DataPipelineId": "string",
            "ResourceRole": "string",
            "SelectSqlQuery": "string",
            "ServiceRole": "string"
        },
        "RedshiftMetadata": {
            "DatabaseUserName": "string",
            "RedshiftDatabase": {
                "ClusterIdentifier": "string",
                "DatabaseName": "string"
            },
            "SelectSqlQuery": "string"
        },
        "RoleARN": "string",
        "StartedAt": number,
        "Status": "string"
    }
}

```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### NextToken (p. 63)

An ID of the next page in the paginated results that indicates at least one more page follows.

Type: String

### Results (p. 63)

A list of DataSource that meet the search criteria.

Type: Array of [DataSource \(p. 125\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### InternalServerError

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `DescribeDataSources` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
 SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
 requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DescribeDataSources
{
  "FilterVariable": "Name",
  "Prefix": "bp-",
  "SortOrder": "asc",
  "Limit": 1
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "NextToken": "{ \"DataSourceId\": \"ds-exampleDataSource2\" }",
  "Results": [
    {
      "ComputeStatistics": true,
      "CreatedAt": 1428008286.077,
      "CreatedByIamUser": "arn:aws:iam::<awsAccountId>:user/username",
      "DataLocationS3": "s3://bucket/locationToInput/example-data.testing.csv",
      "DataSourceId": "ds-exampleDataSourceId",
      "LastUpdatedAt": 1428018286.654,
      "Name": "exampleDataSource",
      "Status": "COMPLETED",
      "ComputeTime": "185200",
      "FinishedAt": "1428018286.654",
      "StartedAt": "1428008287.324"
    },
    {
      "ComputeStatistics": true,
      "CreatedAt": 1428008286.077,
      "CreatedByIamUser": "arn:aws:iam::<awsAccountId>:user/username",
      "DataLocationS3": "s3://bucket/locationToInput/example-data.testing.csv",
```



```
    "DataSourceId": "ds-exampleDataSourceId",  
    "LastUpdatedAt": 1428018286.654,  
    "Name": "exampleDataSource",  
    "Status": "PENDING"  
  }  
]  
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DescribeEvaluations

Returns a list of `DescribeEvaluations` that match the search criteria in the request.

## Request Syntax

```
{
  "EQ": "string",
  "FilterVariable": "string",
  "GE": "string",
  "GT": "string",
  "LE": "string",
  "Limit": number,
  "LT": "string",
  "NE": "string",
  "NextToken": "string",
  "Prefix": "string",
  "SortOrder": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### EQ (p. 67)

The equal to operator. The `Evaluation` results will have `FilterVariable` values that exactly match the value specified with `EQ`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

### FilterVariable (p. 67)

Use one of the following variable to filter a list of `Evaluation` objects:

- `CreatedAt` - Sets the search criteria to the `Evaluation` creation date.
- `Status` - Sets the search criteria to the `Evaluation` status.
- `Name` - Sets the search criteria to the contents of `Evaluation Name`.
- `IAMUser` - Sets the search criteria to the user account that invoked an `Evaluation`.
- `MLModelId` - Sets the search criteria to the `MLModel` that was evaluated.
- `DataSourceId` - Sets the search criteria to the `DataSource` used in `Evaluation`.
- `DataUri` - Sets the search criteria to the data file(s) used in `Evaluation`. The URL can identify either a file or an Amazon Simple Storage Solution (Amazon S3) bucket or directory.

Type: String

Valid Values: `CreatedAt` | `LastUpdatedAt` | `Status` | `Name` | `IAMUser` | `MLModelId` | `DataSourceId` | `DataURI`

Required: No

**GE (p. 67)**

The greater than or equal to operator. The `Evaluation` results will have `FilterVariable` values that are greater than or equal to the value specified with `GE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**GT (p. 67)**

The greater than operator. The `Evaluation` results will have `FilterVariable` values that are greater than the value specified with `GT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**LE (p. 67)**

The less than or equal to operator. The `Evaluation` results will have `FilterVariable` values that are less than or equal to the value specified with `LE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**Limit (p. 67)**

The maximum number of `Evaluation` to include in the result.

Type: Integer

Valid Range: Minimum value of 1. Maximum value of 100.

Required: No

**LT (p. 67)**

The less than operator. The `Evaluation` results will have `FilterVariable` values that are less than the value specified with `LT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

**NE (p. 67)**

The not equal to operator. The `Evaluation` results will have `FilterVariable` values not equal to the value specified with `NE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **NextToken (p. 67)**

The ID of the page in the paginated results.

Type: String

Required: No

#### **Prefix (p. 67)**

A string that is found at the beginning of a variable, such as `Name` or `Id`.

For example, an `Evaluation` could have the `Name` `2014-09-09-HolidayGiftMailer`. To search for this `Evaluation`, select `Name` for the `FilterVariable` and any of the following strings for the `Prefix`:

- `2014-09`
- `2014-09-09`
- `2014-09-09-Holiday`

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **SortOrder (p. 67)**

A two-value parameter that determines the sequence of the resulting list of `Evaluation`.

- `asc` - Arranges the list in ascending order (A-Z, 0-9).
- `dsc` - Arranges the list in descending order (Z-A, 9-0).

Results are sorted by `FilterVariable`.

Type: String

Valid Values: `asc` | `dsc`

Required: No

## Response Syntax

```
{
  "NextToken": "string",
  "Results": [
    {
      "ComputeTime": number,
      "CreatedAt": number,
      "CreatedByIamUser": "string",
      "EvaluationDataSourceId": "string",
      "EvaluationId": "string",
      "FinishedAt": number,
```

```
    "InputDataLocationS3": "string",
    "LastUpdatedAt": number,
    "Message": "string",
    "MLModelId": "string",
    "Name": "string",
    "PerformanceMetrics": {
      "Properties": {
        "string": "string"
      }
    },
    "StartedAt": number,
    "Status": "string"
  }
]
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### NextToken (p. 69)

The ID of the next page in the paginated results that indicates at least one more page follows.

Type: String

### Results (p. 69)

A list of `Evaluation` that meet the search criteria.

Type: Array of [Evaluation \(p. 128\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### InternalServerError

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `DescribeEvaluations` operation.

### Sample Request

```
POST / HTTP/1.1
```

```
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DescribeEvaluations
{
  "FilterVariable": "Name",
  "Prefix": "ev-",
  "SortOrder": "asc",
  "Limit": 1
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "NextToken": "{\"EvaluationId\":\"ev-exampleId2\"}",
  "Results": [
    {
      "CreatedAt": 1420745248.785,
      "CreatedByIamUser": "arn:aws:iam::<awsAccountId>:user/username",
      "EvaluationDataSourceId": "ds-exampleDataSourceId",
      "EvaluationId": "ev-exampleId1",
      "InputDataLocationS3": "s3://bucket/locationToInput/example-data.testing.csv",
      "LastUpdatedAt": 1420745524.506,
      "MLModelId": "pr-exampleModelId",
      "Name": "ev-1",
      "PerformanceMetrics":
        {
          "Properties": {"BinaryAUC": "0.9228827246570067"}
        },
      "Status": "COMPLETED",
      "ComputeTime": "185200",
      "FinishedAt": "1420745524.506",
      "StartedAt": "1420745249.324"
    }
  ]
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)

- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DescribeMLModels

Returns a list of `MLModel` that match the search criteria in the request.

## Request Syntax

```
{  
  "EQ": "string",  
  "FilterVariable": "string",  
  "GE": "string",  
  "GT": "string",  
  "LE": "string",  
  "Limit": number,  
  "LT": "string",  
  "NE": "string",  
  "NextToken": "string",  
  "Prefix": "string",  
  "SortOrder": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### **EQ (p. 73)**

The equal to operator. The `MLModel` results will have `FilterVariable` values that exactly match the value specified with `EQ`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

### **FilterVariable (p. 73)**

Use one of the following variables to filter a list of `MLModel`:

- `CreatedAt` - Sets the search criteria to `MLModel` creation date.
- `Status` - Sets the search criteria to `MLModel` status.
- `Name` - Sets the search criteria to the contents of `MLModel Name`.
- `IAMUser` - Sets the search criteria to the user account that invoked the `MLModel` creation.
- `TrainingDataSourceId` - Sets the search criteria to the `DataSource` used to train one or more `MLModel`.
- `RealtimeEndpointStatus` - Sets the search criteria to the `MLModel` real-time endpoint status.
- `MLModelType` - Sets the search criteria to `MLModel` type: binary, regression, or multi-class.
- `Algorithm` - Sets the search criteria to the algorithm that the `MLModel` uses.
- `TrainingDataURI` - Sets the search criteria to the data file(s) used in training a `MLModel`. The URL can identify either a file or an Amazon Simple Storage Service (Amazon S3) bucket or directory.



Type: String

Valid Values: CreatedAt | LastUpdatedAt | Status | Name | IAMUser | TrainingDataSourceId | RealtimeEndpointStatus | MLModelType | Algorithm | TrainingDataURI

Required: No

#### **GE (p. 73)**

The greater than or equal to operator. The `MLModel` results will have `FilterVariable` values that are greater than or equal to the value specified with `GE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **GT (p. 73)**

The greater than operator. The `MLModel` results will have `FilterVariable` values that are greater than the value specified with `GT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **LE (p. 73)**

The less than or equal to operator. The `MLModel` results will have `FilterVariable` values that are less than or equal to the value specified with `LE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### **Limit (p. 73)**

The number of pages of information to include in the result. The range of acceptable values is 1 through 100. The default value is 100.

Type: Integer

Valid Range: Minimum value of 1. Maximum value of 100.

Required: No

#### **LT (p. 73)**

The less than operator. The `MLModel` results will have `FilterVariable` values that are less than the value specified with `LT`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### NE (p. 73)

The not equal to operator. The `MLModel` results will have `FilterVariable` values not equal to the value specified with `NE`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### NextToken (p. 73)

The ID of the page in the paginated results.

Type: String

Required: No

#### Prefix (p. 73)

A string that is found at the beginning of a variable, such as `Name` or `Id`.

For example, an `MLModel` could have the `Name` `2014-09-09-HolidayGiftMailer`. To search for this `MLModel`, select `Name` for the `FilterVariable` and any of the following strings for the `Prefix`:

- `2014-09`
- `2014-09-09`
- `2014-09-09-Holiday`

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

#### SortOrder (p. 73)

A two-value parameter that determines the sequence of the resulting list of `MLModel`.

- `asc` - Arranges the list in ascending order (A-Z, 0-9).
- `dsc` - Arranges the list in descending order (Z-A, 9-0).

Results are sorted by `FilterVariable`.

Type: String

Valid Values: `asc` | `dsc`

Required: No

## Response Syntax

```
{  
  "NextToken": "string",
```

```

"Results": [
  {
    "Algorithm": "string",
    "ComputeTime": number,
    "CreatedAt": number,
    "CreatedByIamUser": "string",
    "EndpointInfo": {
      "CreatedAt": number,
      "EndpointStatus": "string",
      "EndpointUrl": "string",
      "PeakRequestsPerSecond": number
    },
    "FinishedAt": number,
    "InputDataLocationS3": "string",
    "LastUpdatedAt": number,
    "Message": "string",
    "MLModelId": "string",
    "MLModelType": "string",
    "Name": "string",
    "ScoreThreshold": number,
    "ScoreThresholdLastUpdatedAt": number,
    "SizeInBytes": number,
    "StartedAt": number,
    "Status": "string",
    "TrainingDataSourceId": "string",
    "TrainingParameters": {
      "string": "string"
    }
  }
]
}

```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### NextToken (p. 75)

The ID of the next page in the paginated results that indicates at least one more page follows.

Type: String

### Results (p. 75)

A list of `MLModel` that meet the search criteria.

Type: Array of [MLModel \(p. 131\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### InternalServerError

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

## Example

The following is a sample request and response of the DescribeMLModels operation:

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DescribeMLModels
{
  "FilterVariable": "Name",
  "Prefix": "ml-",
  "SortOrder": "asc",
  "Limit": 1
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "NextToken": "\"PredictorId\": \"Spr-ml-model-testing\"",
  "Results": [
    {
      "CreatedAt": 1422475435.595,
      "CreatedByIamUser": "arn:aws:iam::<awsAccountId>:user/username",
      "InputDataLocationS3": "s3://bucket/locationToInput/example-data.testing.csv",
      "LastUpdatedAt": 1422475709.691,
      "MLModelId": "ml-model-testing",
      "MLModelType": "MULTICLASS",
      "EndpointInfo": {
        "CreatedAt": 1424378682.266,
        "EndpointStatus": "READY",
        "EndpointUrl": "<realtime endpoint from Amazon Machine Learning for ml-model-
testing>",
        "PeakRequestsPerSecond": 200}
      "Name": "ml-model-name",
      "Algorithm": "sgd",
      "SizeInBytes": 352720,
      "Status": "COMPLETED",
      "ComputeTime": "185200",
      "FinishedAt": "1422475709.691",
      "StartedAt": "1422475438.324",
      "TrainingDataSourceId": "exampleDataSourceId",
      "TrainingParameters":
    }
  ]
}
```

```
{
  "algorithm": "sgd",
  "sgd.l1RegularizationAmount": "0.0",
  "sgd.l2RegularizationAmount": "1E-6",
  "sgd.maxMLModelSizeInBytes": "33554432",
  "sgd.maxPasses": "10"
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# DescribeTags

Describes one or more of the tags for your Amazon ML object.

## Request Syntax

```
{  
  "ResourceId": "string",  
  "ResourceType": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### ResourceId (p. 79)

The ID of the ML object. For example, `exampleModelId`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.- ]+`

Required: Yes

### ResourceType (p. 79)

The type of the ML object.

Type: String

Valid Values: `BatchPrediction` | `DataSource` | `Evaluation` | `MLModel`

Required: Yes

## Response Syntax

```
{  
  "ResourceId": "string",  
  "ResourceType": "string",  
  "Tags": [  
    {  
      "Key": "string",  
      "Value": "string"  
    }  
  ]  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### **ResourceId (p. 79)**

The ID of the tagged ML object.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

#### **ResourceType (p. 79)**

The type of the tagged ML object.

Type: String

Valid Values: BatchPrediction | DataSource | Evaluation | MLModel

#### **Tags (p. 79)**

A list of tags associated with the ML object.

Type: Array of [Tag \(p. 158\)](#) objects

Array Members: Maximum number of 100 items.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

#### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

#### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

#### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following are an example request and response for the `DescribeTags` operation.

#### **Sample Request**

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
```

```
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.DescribeTags
{
  "ResourceId": "exampleModelId",
  "ResourceType": "MLModel"
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "ResourceId": "exampleModelId",
  "ResourceType": "MLModel",
  "Tags": {
    "Key": "exampleKey",
    "Value": "exampleKeyValue"
  }
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)



# GetBatchPrediction

Returns a `BatchPrediction` that includes detailed metadata, status, and data file information for a `Batch Prediction` request.

## Request Syntax

```
{  
  "BatchPredictionId": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### BatchPredictionId (p. 82)

An ID assigned to the `BatchPrediction` at creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

## Response Syntax

```
{  
  "BatchPredictionDataSourceId": "string",  
  "BatchPredictionId": "string",  
  "ComputeTime": number,  
  "CreatedAt": number,  
  "CreatedByIamUser": "string",  
  "FinishedAt": number,  
  "InputDataLocationS3": "string",  
  "InvalidRecordCount": number,  
  "LastUpdatedAt": number,  
  "LogUri": "string",  
  "Message": "string",  
  "MLModelId": "string",  
  "Name": "string",  
  "OutputUri": "string",  
  "StartedAt": number,  
  "Status": "string",  
  "TotalRecordCount": number  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

**BatchPredictionDataSourceId (p. 82)**

The ID of the `DataSource` that was used to create the `BatchPrediction`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

**BatchPredictionId (p. 82)**

An ID assigned to the `BatchPrediction` at creation. This value should be identical to the value of the `BatchPredictionID` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

**ComputeTime (p. 82)**

The approximate CPU time in milliseconds that Amazon Machine Learning spent processing the `BatchPrediction`, normalized and scaled on computation resources. `ComputeTime` is only available if the `BatchPrediction` is in the `COMPLETED` state.

Type: Long

**CreatedAt (p. 82)**

The time when the `BatchPrediction` was created. The time is expressed in epoch time.

Type: Timestamp

**CreatedByIamUser (p. 82)**

The AWS user account that invoked the `BatchPrediction`. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam::[0-9]+:((user/.+)|(root))`

**FinishedAt (p. 82)**

The epoch time when Amazon Machine Learning marked the `BatchPrediction` as `COMPLETED` or `FAILED`. `FinishedAt` is only available when the `BatchPrediction` is in the `COMPLETED` or `FAILED` state.

Type: Timestamp

**InputDataLocationS3 (p. 82)**

The location of the data file or directory in Amazon Simple Storage Service (Amazon S3).

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s/]+)(/.*)?`

**InvalidRecordCount (p. 82)**

The number of invalid records that Amazon Machine Learning saw while processing the `BatchPrediction`.

Type: Long

**LastUpdatedAt (p. 82)**

The time of the most recent edit to `BatchPrediction`. The time is expressed in epoch time.

Type: Timestamp

**LogUri (p. 82)**

A link to the file that contains logs of the `CreateBatchPrediction` operation.

Type: String

**Message (p. 82)**

A description of the most recent details about processing the batch prediction request.

Type: String

Length Constraints: Maximum length of 10240.

**MLModelId (p. 82)**

The ID of the `MLModel` that generated predictions for the `BatchPrediction` request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

**Name (p. 82)**

A user-supplied name or description of the `BatchPrediction`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

**OutputUri (p. 82)**

The location of an Amazon S3 bucket or directory to receive the operation results.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\/]+)/(.*)?`

**StartedAt (p. 82)**

The epoch time when Amazon Machine Learning marked the `BatchPrediction` as `INPROGRESS`. `StartedAt` isn't available if the `BatchPrediction` is in the `PENDING` state.

Type: Timestamp

**Status (p. 82)**

The status of the `BatchPrediction`, which can be one of the following values:

- `PENDING` - Amazon Machine Learning (Amazon ML) submitted a request to generate batch predictions.
- `INPROGRESS` - The batch predictions are in progress.
- `FAILED` - The request to perform a batch prediction did not run to completion. It is not usable.
- `COMPLETED` - The batch prediction process completed successfully.

- **DELETED** - The `BatchPrediction` is marked as deleted. It is not usable.

Type: String

Valid Values: `PENDING` | `INPROGRESS` | `FAILED` | `COMPLETED` | `DELETED`

#### **TotalRecordCount** (p. 82)

The number of total records that Amazon Machine Learning saw while processing the `BatchPrediction`.

Type: Long

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 161).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `GetBatchPrediction` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.GetBatchPrediction
{"BatchPredictionId": "EXAMPLE-bp-2014-09-12-15-14-04-156"}
```

### Sample Response

```
HTTP/1.1 200 OK
```

```
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "BatchPredictionDataSourceId": "EXAMPLE-tr-ds-2014-09-12-15-14-04-989",
  "BatchPredictionId": "EXAMPLE-bp-2014-09-12-15-14-04-156",
  "CreatedAt": 1410560632.327,
  "CreatedByIamUser": "arn:aws:iam::<awsAccountId>:user/user",
  "InputDataLocationS3": "s3://eml-test-EXAMPLE/example.csv",
  "LastUpdatedAt": 1410560632.327,
  "LogUri": "https://s3bucket/locationToLogs/logname.tar.gz",
  "Name": "EXAMPLE",
  "OutputUri": "s3://eml-test-EXAMPLE/test-outputs/EXAMPLE-bp-2014-09-12-15-14-04-156/
results",
  "MLModelId": "EXAMPLE-pr-2014-09-12-15-14-04-924",
  "Status": "COMPLETED",
  "ComputeTime": "185200",
  "FinishedAt": 1410560632.327,
  "StartedAt": 1410560632.327,
  "TotalRecordCount": "21154",
  "InvalidRecordCount": "0"
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# GetDataSource

Returns a `DataSource` that includes metadata and data file information, as well as the current status of the `DataSource`.

`GetDataSource` provides results in normal or verbose format. The verbose format adds the schema description and the list of files pointed to by the `DataSource` to the normal format.

## Request Syntax

```
{  
  "DataSourceId": "string",  
  "Verbose": boolean  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### [DataSourceId](#) (p. 87)

The ID assigned to the `DataSource` at creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### [Verbose](#) (p. 87)

Specifies whether the `GetDataSource` operation should return `DataSourceSchema`.

If true, `DataSourceSchema` is returned.

If false, `DataSourceSchema` is not returned.

Type: Boolean

Required: No

## Response Syntax

```
{  
  "ComputeStatistics": boolean,  
  "ComputeTime": number,  
  "CreatedAt": number,  
  "CreatedByIamUser": "string",  
  "DataLocationS3": "string",  
  "DataRearrangement": "string",  
  "DataSizeInBytes": number,  
}
```

```
"DataSourceId": "string",
"DataSourceSchema": "string",
"FinishedAt": number,
"LastUpdatedAt": number,
"LogUri": "string",
"Message": "string",
"Name": "string",
"NumberOfFiles": number,
"RDSEMetadata": {
  "Database": {
    "DatabaseName": "string",
    "InstanceIdentifier": "string"
  },
  "DatabaseUserName": "string",
  "DataPipelineId": "string",
  "ResourceRole": "string",
  "SelectSqlQuery": "string",
  "ServiceRole": "string"
},
"RedshiftMetadata": {
  "DatabaseUserName": "string",
  "RedshiftDatabase": {
    "ClusterIdentifier": "string",
    "DatabaseName": "string"
  },
  "SelectSqlQuery": "string"
},
"RoleARN": "string",
"StartedAt": number,
"Status": "string"
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### ComputeStatistics (p. 87)

The parameter is `true` if statistics need to be generated from the observation data.

Type: Boolean

### ComputeTime (p. 87)

The approximate CPU time in milliseconds that Amazon Machine Learning spent processing the `DataSource`, normalized and scaled on computation resources. `ComputeTime` is only available if the `DataSource` is in the `COMPLETED` state and the `ComputeStatistics` is set to `true`.

Type: Long

### CreatedAt (p. 87)

The time that the `DataSource` was created. The time is expressed in epoch time.

Type: Timestamp

### CreatedByIAMUser (p. 87)

The AWS user account from which the `DataSource` was created. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam:[0-9]+:(user/.+)|(root))`

#### **DataLocationS3 (p. 87)**

The location of the data file or directory in Amazon Simple Storage Service (Amazon S3).

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s]+)/.*)?`

#### **DataRearrangement (p. 87)**

A JSON string that represents the splitting and rearrangement requirement used when this `DataSource` was created.

Type: String

#### **DataSizeInBytes (p. 87)**

The total size of observations in the data files.

Type: Long

#### **DataSourceId (p. 87)**

The ID assigned to the `DataSource` at creation. This value should be identical to the value of the `DataSourceId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

#### **DataSourceSchema (p. 87)**

The schema used by all of the data files of this `DataSource`.

**Note:** This parameter is provided as part of the verbose format.

Type: String

Length Constraints: Maximum length of 131071.

#### **FinishedAt (p. 87)**

The epoch time when Amazon Machine Learning marked the `DataSource` as `COMPLETED` or `FAILED`. `FinishedAt` is only available when the `DataSource` is in the `COMPLETED` or `FAILED` state.

Type: Timestamp

#### **LastUpdatedAt (p. 87)**

The time of the most recent edit to the `DataSource`. The time is expressed in epoch time.

Type: Timestamp

#### **LogUri (p. 87)**

A link to the file containing logs of `CreateDataSourceFrom*` operations.

Type: String

#### **Message (p. 87)**

The user-supplied description of the most recent details about creating the `DataSource`.



Type: String

Length Constraints: Maximum length of 10240.

#### **Name (p. 87)**

A user-supplied name or description of the `DataSource`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

#### **NumberOfFiles (p. 87)**

The number of data files referenced by the `DataSource`.

Type: Long

#### **RDSMetadata (p. 87)**

The datasource details that are specific to Amazon RDS.

Type: [RDSMetadata \(p. 144\)](#) object

#### **RedshiftMetadata (p. 87)**

Describes the `DataSource` details specific to Amazon Redshift.

Type: [RedshiftMetadata \(p. 154\)](#) object

#### **RoleARN (p. 87)**

The Amazon Resource Name (ARN) of an [AWS IAM Role](#), such as the following:  
`arn:aws:iam::account:role/rolename`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 110.

#### **StartedAt (p. 87)**

The epoch time when Amazon Machine Learning marked the `DataSource` as `INPROGRESS`.  
`StartedAt` isn't available if the `DataSource` is in the `PENDING` state.

Type: Timestamp

#### **Status (p. 87)**

The current status of the `DataSource`. This element can have one of the following values:

- `PENDING` - Amazon ML submitted a request to create a `DataSource`.
- `INPROGRESS` - The creation process is underway.
- `FAILED` - The request to create a `DataSource` did not run to completion. It is not usable.
- `COMPLETED` - The creation process completed successfully.
- `DELETED` - The `DataSource` is marked as deleted. It is not usable.

Type: String

Valid Values: `PENDING` | `INPROGRESS` | `FAILED` | `COMPLETED` | `DELETED`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### InternalServerErrorException

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### ResourceNotFoundException

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `GetDataSource` operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.GetDataSource
{"DataSourceId": "17SdAv6WC6r5vACAx7U", "Verbose": true}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  {
    "CreatedAt":141045168.275,
    "CreatedByIamUser":"arn:aws:iam::<awsAccountId>:user/testuser",
    "DataLocationS3":"s3://eml-test-EXAMPLE /data.csv",
    "DataRearrangement": "{ \"splitting\": { \"percentBegin\":10, \"percentEnd\":60 } }",
    "DataSizeInBytes":0, "DataSourceId": "17SdAv6WC6r5vACAx7U",
    "DataSourceSchema": "
    {
      \"version\": \"1.0\",
      \"recordAnnotationFieldName\": null,
      \"recordWeightFieldName\": \"weight\",
      \"targetFieldName\": \"label\",
      \"dataFormat\": \"CSV\",
      \"dataFileContainsHeader\": false,
```

```
    \"attributes\":  
    [  
      {\"attributeName\": \"obsId\", \"attributeType\": \"NUMERIC\"},  
      {\"attributeName\": \"label\", \"attributeType\": \"BINARY\"},  
      {\"attributeName\": \"weight\", \"attributeType\": \"NUMERIC\"},  
      {\"attributeName\": \"x\", \"attributeType\": \"TEXT\"}  
    ],  
    \"excludedAttributeNames\": []  
  },  
  \"DataStatisticsStatus\": \"COMPLETED\",  
  \"LastUpdatedAt\": 141045168.275,  
  \"LogUri\": \"https://s3bucket/locationToLogs/logname.tar.gz\",  
  \"Name\": \"EXAMPLE\",  
  \"Status\": \"COMPLETED\",  
  \"ComputeTime\": \"185200\",  
  \"FinishedAt\": 141045168.275,  
  \"StartedAt\": 141045168.275  
}  
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# GetEvaluation

Returns an `Evaluation` that includes metadata as well as the current status of the `Evaluation`.

## Request Syntax

```
{  
  "EvaluationId": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### EvaluationId (p. 93)

The ID of the `Evaluation` to retrieve. The evaluation of each `MLModel` is recorded and cataloged. The ID provides the means to access the information.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

## Response Syntax

```
{  
  "ComputeTime": number,  
  "CreatedAt": number,  
  "CreatedByIamUser": "string",  
  "EvaluationDataSourceId": "string",  
  "EvaluationId": "string",  
  "FinishedAt": number,  
  "InputDataLocationS3": "string",  
  "LastUpdatedAt": number,  
  "LogUri": "string",  
  "Message": "string",  
  "MLModelId": "string",  
  "Name": "string",  
  "PerformanceMetrics": {  
    "Properties": {  
      "string": "string"  
    }  
  },  
  "StartedAt": number,  
  "Status": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### **ComputeTime (p. 93)**

The approximate CPU time in milliseconds that Amazon Machine Learning spent processing the `Evaluation`, normalized and scaled on computation resources. `ComputeTime` is only available if the `Evaluation` is in the `COMPLETED` state.

Type: Long

#### **CreatedAt (p. 93)**

The time that the `Evaluation` was created. The time is expressed in epoch time.

Type: Timestamp

#### **CreatedByIamUser (p. 93)**

The AWS user account that invoked the evaluation. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam::[0-9]+:((user/.+)|(root))`

#### **EvaluationDataSourceId (p. 93)**

The `DataSource` used for this evaluation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

#### **EvaluationId (p. 93)**

The evaluation ID which is same as the `EvaluationId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

#### **FinishedAt (p. 93)**

The epoch time when Amazon Machine Learning marked the `Evaluation` as `COMPLETED` or `FAILED`. `FinishedAt` is only available when the `Evaluation` is in the `COMPLETED` or `FAILED` state.

Type: Timestamp

#### **InputDataLocationS3 (p. 93)**

The location of the data file or directory in Amazon Simple Storage Service (Amazon S3).

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s/]+)(/.*)?`

#### **LastUpdatedAt (p. 93)**

The time of the most recent edit to the `Evaluation`. The time is expressed in epoch time.

Type: Timestamp

### LogUri (p. 93)

A link to the file that contains logs of the `CreateEvaluation` operation.

Type: String

### Message (p. 93)

A description of the most recent details about evaluating the `MLModel`.

Type: String

Length Constraints: Maximum length of 10240.

### MLModelId (p. 93)

The ID of the `MLModel` that was the focus of the evaluation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

### Name (p. 93)

A user-supplied name or description of the `Evaluation`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

### PerformanceMetrics (p. 93)

Measurements of how well the `MLModel` performed using observations referenced by the `DataSource`. One of the following metric is returned based on the type of the `MLModel`:

- **BinaryAUC**: A binary `MLModel` uses the Area Under the Curve (AUC) technique to measure performance.
- **RegressionRMSE**: A regression `MLModel` uses the Root Mean Square Error (RMSE) technique to measure performance. RMSE measures the difference between predicted and actual values for a single variable.
- **MulticlassAvgFScore**: A multiclass `MLModel` uses the F1 score technique to measure performance.

For more information about performance metrics, please see the [Amazon Machine Learning Developer Guide](#).

Type: [PerformanceMetrics \(p. 135\)](#) object

### StartedAt (p. 93)

The epoch time when Amazon Machine Learning marked the `Evaluation` as `INPROGRESS`. `StartedAt` isn't available if the `Evaluation` is in the `PENDING` state.

Type: Timestamp

### Status (p. 93)

The status of the evaluation. This element can have one of the following values:

- `PENDING` - Amazon Machine Language (Amazon ML) submitted a request to evaluate an `MLModel`.
- `INPROGRESS` - The evaluation is underway.
- `FAILED` - The request to evaluate an `MLModel` did not run to completion. It is not usable.

- **COMPLETED** - The evaluation process completed successfully.
- **DELETED** - The Evaluation is marked as deleted. It is not usable.

Type: String

Valid Values: **PENDING** | **INPROGRESS** | **FAILED** | **COMPLETED** | **DELETED**

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the **GetEvaluation** operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.GetEvaluation
{"EvaluationId": "ev-2014-09-12-15-14-04-924"}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
```

```
"CreatedAt":1410560805.669,
"CreatedByIamUser":"arn:aws:iam::<awsAccountId>:user/user",
"EvaluationDataSourceId":"EXAMPLE-ev-ds-2014-09-12-15-14-04-411",
"EvaluationId":"ev-2014-09-12-15-14-04-924",
"InputDataLocationS3": "s3://eml-test-EXAMPLE/example.csv",
"LastUpdatedAt":1410560805.669,
"LogUri": "https://s3bucket/locationToLogs/logname.tar.gz",
"Name":"EXAMPLE",
"PerformanceMetrics":{"Properties":{}},
"MLModelId":"EXAMPLE-pr-2014-09-12-15-14-04-924",
"Status":"COMPLETED",
"ComputeTime":"185200",
"FinishedAt":1410560805.669,
"StartedAt":1410560805.669
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)



# GetMLModel

Returns an `MLModel` that includes detailed metadata, data source information, and the current status of the `MLModel`.

`GetMLModel` provides results in normal or verbose format.

## Request Syntax

```
{  
  "MLModelId": "string",  
  "Verbose": boolean  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### MLModelId (p. 98)

The ID assigned to the `MLModel` at creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### Verbose (p. 98)

Specifies whether the `GetMLModel` operation should return `Recipe`.

If true, `Recipe` is returned.

If false, `Recipe` is not returned.

Type: Boolean

Required: No

## Response Syntax

```
{  
  "ComputeTime": number,  
  "CreatedAt": number,  
  "CreatedByIamUser": "string",  
  "EndpointInfo": {  
    "CreatedAt": number,  
    "EndpointStatus": "string",  
    "EndpointUrl": "string",  
    "PeakRequestsPerSecond": number  
  }  
}
```

```
},
"FinishedAt": number,
"InputDataLocationS3": "string",
"LastUpdatedAt": number,
"LogUri": "string",
"Message": "string",
"MLModelId": "string",
"MLModelType": "string",
"Name": "string",
"Recipe": "string",
"Schema": "string",
"ScoreThreshold": number,
"ScoreThresholdLastUpdatedAt": number,
"SizeInBytes": number,
"StartedAt": number,
"Status": "string",
"TrainingDataSourceId": "string",
"TrainingParameters": {
  "string" : "string"
}
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### ComputeTime (p. 98)

The approximate CPU time in milliseconds that Amazon Machine Learning spent processing the `MLModel`, normalized and scaled on computation resources. `ComputeTime` is only available if the `MLModel` is in the `COMPLETED` state.

Type: Long

### CreatedAt (p. 98)

The time that the `MLModel` was created. The time is expressed in epoch time.

Type: Timestamp

### CreatedByIamUser (p. 98)

The AWS user account from which the `MLModel` was created. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam:[0-9]+:((user/.+)|(root))`

### EndpointInfo (p. 98)

The current endpoint of the `MLModel`

Type: [RealtimeEndpointInfo \(p. 146\)](#) object

### FinishedAt (p. 98)

The epoch time when Amazon Machine Learning marked the `MLModel` as `COMPLETED` or `FAILED`. `FinishedAt` is only available when the `MLModel` is in the `COMPLETED` or `FAILED` state.

Type: Timestamp

#### **InputDataLocationS3 (p. 98)**

The location of the data file or directory in Amazon Simple Storage Service (Amazon S3).

Type: String

Length Constraints: Maximum length of 2048.

Pattern: s3://([ ^/ ]+)(/.\*)?

#### **LastUpdatedAt (p. 98)**

The time of the most recent edit to the `MLModel`. The time is expressed in epoch time.

Type: Timestamp

#### **LogUri (p. 98)**

A link to the file that contains logs of the `CreateMLModel` operation.

Type: String

#### **Message (p. 98)**

A description of the most recent details about accessing the `MLModel`.

Type: String

Length Constraints: Maximum length of 10240.

#### **MLModelId (p. 98)**

The `MLModel` ID, which is same as the `MLModelId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

#### **MLModelType (p. 98)**

Identifies the `MLModel` category. The following are the available types:

- REGRESSION -- Produces a numeric result. For example, "What price should a house be listed at?"
- BINARY -- Produces one of two possible results. For example, "Is this an e-commerce website?"
- MULTICLASS -- Produces one of several possible results. For example, "Is this a HIGH, LOW or MEDIUM risk trade?"

Type: String

Valid Values: REGRESSION | BINARY | MULTICLASS

#### **Name (p. 98)**

A user-supplied name or description of the `MLModel`.

Type: String

Length Constraints: Maximum length of 1024.

#### **Recipe (p. 98)**

The recipe to use when training the `MLModel`. The `Recipe` provides detailed information about the observation data to use during training, and manipulations to perform on the observation data during training.

**Note:** This parameter is provided as part of the verbose format.

Type: String

Length Constraints: Maximum length of 131071.

#### **Schema (p. 98)**

The schema used by all of the data files referenced by the `DataSource`.

**Note:** This parameter is provided as part of the verbose format.

Type: String

Length Constraints: Maximum length of 131071.

#### **ScoreThreshold (p. 98)**

The scoring threshold is used in binary classification `MLModel` models. It marks the boundary between a positive prediction and a negative prediction.

Output values greater than or equal to the threshold receive a positive result from the `MLModel`, such as `true`. Output values less than the threshold receive a negative response from the `MLModel`, such as `false`.

Type: Float

#### **ScoreThresholdLastUpdatedAt (p. 98)**

The time of the most recent edit to the `ScoreThreshold`. The time is expressed in epoch time.

Type: Timestamp

#### **SizeInBytes (p. 98)**

Long integer type that is a 64-bit signed number.

Type: Long

#### **StartedAt (p. 98)**

The epoch time when Amazon Machine Learning marked the `MLModel` as `INPROGRESS`. `StartedAt` isn't available if the `MLModel` is in the `PENDING` state.

Type: Timestamp

#### **Status (p. 98)**

The current status of the `MLModel`. This element can have one of the following values:

- `PENDING` - Amazon Machine Learning (Amazon ML) submitted a request to describe a `MLModel`.
- `INPROGRESS` - The request is processing.
- `FAILED` - The request did not run to completion. The ML model isn't usable.
- `COMPLETED` - The request completed successfully.
- `DELETED` - The `MLModel` is marked as deleted. It isn't usable.

Type: String

Valid Values: `PENDING` | `INPROGRESS` | `FAILED` | `COMPLETED` | `DELETED`

#### **TrainingDataSourceId (p. 98)**

The ID of the training `DataSource`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

### TrainingParameters (p. 98)

A list of the training parameters in the `MLModel`. The list is implemented as a map of key-value pairs.

The following is the current set of training parameters:

- `sgd.maxMLModelSizeInBytes` - The maximum allowed size of the model. Depending on the input data, the size of the model might affect its performance.

The value is an integer that ranges from 100000 to 2147483648. The default value is 33554432.

- `sgd.maxPasses` - The number of times that the training process traverses the observations to build the `MLModel`. The value is an integer that ranges from 1 to 100. The default value is 10.
- `sgd.shuffleType` - Whether Amazon ML shuffles the training data. Shuffling data improves a model's ability to find the optimal solution for a variety of data types. The valid values are `auto` and `none`. The default value is `none`. We strongly recommend that you shuffle your data.
- `sgd.l1RegularizationAmount` - The coefficient regularization L1 norm. It controls overfitting the data by penalizing large coefficients. This tends to drive coefficients to zero, resulting in a sparse feature set. If you use this parameter, start by specifying a small value, such as `1.0E-08`.

The value is a double that ranges from 0 to `MAX_DOUBLE`. The default is to not use L1 normalization. This parameter can't be used when L2 is specified. Use this parameter sparingly.

- `sgd.l2RegularizationAmount` - The coefficient regularization L2 norm. It controls overfitting the data by penalizing large coefficients. This tends to drive coefficients to small, nonzero values. If you use this parameter, start by specifying a small value, such as `1.0E-08`.

The value is a double that ranges from 0 to `MAX_DOUBLE`. The default is to not use L2 normalization. This parameter can't be used when L1 is specified. Use this parameter sparingly.

Type: String to string map

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### InternalServerErrorException

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### ResourceNotFoundException

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the GetMLModel operation.

### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.GetMLModel
{ "MLModelId": "EXAMPLE-pr-2014-09-12-15-14-04-924", "Verbose": true }
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "CreatedAt": 1410560408.264,
  "CreatedByIamUser": "arn:aws:iam::<awsAccountId>:user/user",
  "HasCalibration": false,
  "LastUpdatedAt": 1410560416.338,
  "LogUri": "https://s3bucket/locationToLogs/logname.tar.gz",
  "Name": "Name-ml-model",
  "Algorithm": "sgd",
  "MLModelId": "ml-model",
  "EndpointInfo": {
    "CreatedAt": 1424378682.266,
    "EndpointStatus": "READY",
    "EndpointUrl": "<realtime endpoint from Amazon Machine Learning for ml-model>",
    "PeakRequestsPerSecond": 200
  },
  "MLModelType": "BINARY",
  "Recipe": {
    "groups": {},
    "assignments": {},
    "dependencies": {},
    "outputs": [ \n    \\'x\' \n ]
  } \n,
  "Schema": {
    "version": "1.0",
    "rowId": null,
    "rowWeight": null,
    "targetAttributeName": "y",
    "dataFormat": "CSV",
    "dataFileContainsHeader": false,
    "attributes": [ { "attributeName": "age",
    "attributeType": "NUMERIC" },
    { "attributeName": "job",
    "attributeType": "CATEGORICAL" },
    { "attributeName": "contact",
```

```
\ "attributeType\":"CATEGORICAL\"},
{\ "attributeName\":"month\ ",
\ "attributeType\":"CATEGORICAL\"},
{\ "attributeName\":"day_of_week\ ",
\ "attributeType\":"CATEGORICAL\"},
{\ "attributeName\":"duration\ ",
\ "attributeType\":"NUMERIC\"},
{\ "attributeName\":"poutcome\ ",
\ "attributeType\":"CATEGORICAL\"},
{\ "attributeName\":"nr_employed\ ",
\ "attributeType\":"NUMERIC\"},
{\ "attributeName\":"y\ ",
\ "attributeType\":"BINARY\"}],
\ "excludedAttributeNames\":[ ]}"
"SizeInBytes": 400374,
"Status":"COMPLETED",
"ComputeTime":"185200",
"FinishedAt":1410560416.338,
"StartedAt":1410560409.264,
"TrainingDataSourceId":"EXAMPLE-tr-ds-2014-09-12-15-14-04-989",
"TrainingParameters":{
  "algorithm":"sgd",
  "sgd.l1":"0.0",
  "sgd.l2":"0.0",
  "sgd.likelihood":"logreg",
  "sgd.passes":"1"
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# Predict

Generates a prediction for the observation using the specified `MLModel`.

**Note:** Not all response parameters will be populated. Whether a response parameter is populated depends on the type of model requested.

## Request Syntax

```
{
  "MLModelId": "string",
  "PredictEndpoint": "string",
  "Record": {
    "string" : "string"
  }
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### **MLModelId** (p. 105)

A unique identifier of the `MLModel`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### **PredictEndpoint** (p. 105)

The predicted endpoint for the input.

Type: String

Required: Yes

### **Record** (p. 105)

A map of variable name-value pairs that represent an observation.

Type: String to string map

Required: Yes

## Response Syntax

```
{
  "Prediction": {
    "details": {
```



```
    "string" : "string"
  },
  "predictedLabel": "string",
  "predictedScores": {
    "string" : number
  },
  "predictedValue": number
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### Prediction (p. 105)

The output from a Predict operation:

- Details - Contains the following attributes: DetailsAttributes.PREDICTIVE\_MODEL\_TYPE - REGRESSION | BINARY | MULTICLASS DetailsAttributes.ALGORITHM - SGD
- PredictedLabel - Present for either a BINARY or MULTICLASS MLModel request.
- PredictedScores - Contains the raw classification score corresponding to each label.
- PredictedValue - Present for a REGRESSION MLModel request.

Type: [Prediction \(p. 136\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### InternalServerErrorException

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### LimitExceededException

The subscriber exceeded the maximum number of operations. This exception can occur when listing objects such as DataSource.

HTTP Status Code: 400

### PredictorNotMountedException

The exception is thrown when a predict request is made to an unmounted MLModel.

HTTP Status Code: 400

### ResourceNotFoundException

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the Predict operation.

### Sample Request

```
POST / HTTP/1.1
Host: <hostname from the GetMLModel response EndpointUrl object>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.Predict
{"MLModelId" : "exampleMLModelId",
  "Record" : {
    "ExampleData" : "exampleValue"
  },
  "PredictEndpoint" : "<realtime endpoint from Amazon Machine Learning for
  exampleMLModelId>"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"PredictedLabel" : "0"
  "PredictedScores" : {
    "0" : "0.446588516"
  },
  "Details" : {
    "PredictiveModelType" : "BINARY",
    "Algorithm" : "SGD"
  }
}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)

- [AWS SDK for Ruby V3](#)

# UpdateBatchPrediction

Updates the BatchPredictionName of a BatchPrediction.

You can use the GetBatchPrediction operation to view the contents of the updated data element.

## Request Syntax

```
{  
  "BatchPredictionId": "string",  
  "BatchPredictionName": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### BatchPredictionId (p. 109)

The ID assigned to the BatchPrediction during creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### BatchPredictionName (p. 109)

A new user-supplied name or description of the BatchPrediction.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: .\*\\S.\*|^\$

Required: Yes

## Response Syntax

```
{  
  "BatchPredictionId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### **BatchPredictionId (p. 109)**

The ID assigned to the `BatchPrediction` during creation. This value should be identical to the value of the `BatchPredictionId` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

#### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

#### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

#### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `UpdateBatchPrediction` operation.

#### **Sample Request**

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.UpdateBatchPrediction
{
  "BatchPredictionId": "bp-exampleBatchPredictionId",
  "BatchPredictionName": "bp-exampleBatchPredictionName"
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"BatchPredictionId": "bp-exampleBatchPredictionId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# UpdateDataSource

Updates the DataSourceName of a DataSource.

You can use the GetDataSource operation to view the contents of the updated data element.

## Request Syntax

```
{  
  "DataSourceId": "string",  
  "DataSourceName": "string"  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### DataSourceId (p. 112)

The ID assigned to the DataSource during creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: Yes

### DataSourceName (p. 112)

A new user-supplied name or description of the DataSource that will replace the current description.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: .\*\S.\*|^\$

Required: Yes

## Response Syntax

```
{  
  "DataSourceId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### **DataSourceId (p. 112)**

The ID assigned to the `DataSource` during creation. This value should be identical to the value of the `DataSourceID` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

#### **InternalServerErrorException**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

#### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

#### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `UpdateDataSource` operation.

#### **Sample Request**

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.UpdateDataSource
{
  "DataSourceId": "ds-exampleDataSourceId",
  "DataSourceName": "ds-exampleDataSourceName"
}
```



## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"DataSourceId": "ds-exampleDataSourceId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# UpdateEvaluation

Updates the `EvaluationName` of an `Evaluation`.

You can use the `GetEvaluation` operation to view the contents of the updated data element.

## Request Syntax

```
{
  "EvaluationId": "string",
  "EvaluationName": "string"
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters \(p. 159\)](#).

The request accepts the following data in JSON format.

### **EvaluationId (p. 115)**

The ID assigned to the `Evaluation` during creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

### **EvaluationName (p. 115)**

A new user-supplied name or description of the `Evaluation` that will replace the current content.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: Yes

## Response Syntax

```
{
  "EvaluationId": "string"
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

#### EvaluationId (p. 115)

The ID assigned to the `Evaluation` during creation. This value should be identical to the value of the `Evaluation` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

#### InternalServerError

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

#### InvalidInputException

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

#### ResourceNotFoundException

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `UpdateEvaluation` operation.

#### Sample Request

```
POST / HTTP/1.1
Host: machinelearning.<region>.<domain>
x-amz-Date: <Date>
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
  requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.UpdateEvaluation
{
  "EvaluationId": "ev-exampleEvaluationId",
  "EvaluationName": "ev-exampleEvaluationName"
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"EvaluationId": "ev-exampleEvaluationId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# UpdateMLModel

Updates the `MLModelName` and the `ScoreThreshold` of an `MLModel`.

You can use the `GetMLModel` operation to view the contents of the updated data element.

## Request Syntax

```
{  
  "MLModelId": "string",  
  "MLModelName": "string",  
  "ScoreThreshold": number  
}
```

## Request Parameters

For information about the parameters that are common to all actions, see [Common Parameters](#) (p. 159).

The request accepts the following data in JSON format.

### **MLModelId** (p. 118)

The ID assigned to the `MLModel` during creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: Yes

### **MLModelName** (p. 118)

A user-supplied name or description of the `MLModel`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: `.*\S.*|^$`

Required: No

### **ScoreThreshold** (p. 118)

The `ScoreThreshold` used in binary classification `MLModel` that marks the boundary between a positive prediction and a negative prediction.

Output values greater than or equal to the `ScoreThreshold` receive a positive result from the `MLModel`, such as `true`. Output values less than the `ScoreThreshold` receive a negative response from the `MLModel`, such as `false`.

Type: Float

Required: No

## Response Syntax

```
{  
  "MLModelId": "string"  
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 200 response.

The following data is returned in JSON format by the service.

### **MLModelId** (p. 119)

The ID assigned to the `MLModel` during creation. This value should be identical to the value of the `MLModelID` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 161\)](#).

### **InternalServerError**

An error on the server occurred when trying to process a request.

HTTP Status Code: 500

### **InvalidInputException**

An error on the client occurred. Typically, the cause is an invalid input value.

HTTP Status Code: 400

### **ResourceNotFoundException**

A specified resource cannot be located.

HTTP Status Code: 400

## Example

The following is a sample request and response of the `UpdateMLModel` operation.

### Sample Request

```
POST / HTTP/1.1  
Host: machinelearning.<region>.<domain>  
x-amz-Date: <Date>
```

```
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>,
  SignedHeaders=contenttype;date;host;user-agent;x-amz-date;x-amz-target;x-amzn-
requestid,Signature=<Signature>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
X-Amz-Target: AmazonML_20141212.UpdateMLModel
{
  "MLModelId": "ml-exampleModelId",
  "MLModelName": "ml-exampleModelName",
  "ScoreThreshold": 0.8
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
Content-Type: application/x-amz-json-1.1
Content-Length: <PayloadSizeBytes>
Date: <Date>
{"MLModelId": "pr-exampleModelId"}
```

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS Command Line Interface](#)
- [AWS SDK for .NET](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for JavaScript](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

# Data Types

The Amazon Machine Learning API contains several data types that various actions use. This section describes each data type in detail.

**Note**

The order of each element in a data type structure is not guaranteed. Applications should not assume a particular order.

The following data types are supported:

- [BatchPrediction](#) (p. 122)
- [DataSource](#) (p. 125)
- [Evaluation](#) (p. 128)
- [MLModel](#) (p. 131)
- [PerformanceMetrics](#) (p. 135)
- [Prediction](#) (p. 136)
- [RDSDatabase](#) (p. 138)
- [RDSDatabaseCredentials](#) (p. 139)
- [RDSDataSpec](#) (p. 140)
- [RDSMetadata](#) (p. 144)
- [RealtimeEndpointInfo](#) (p. 146)
- [RedshiftDatabase](#) (p. 148)
- [RedshiftDatabaseCredentials](#) (p. 149)
- [RedshiftDataSpec](#) (p. 150)
- [RedshiftMetadata](#) (p. 154)
- [S3DataSpec](#) (p. 155)
- [Tag](#) (p. 158)



# BatchPrediction

Represents the output of a `GetBatchPrediction` operation.

The content consists of the detailed metadata, the status, and the data file information of a `BatchPrediction`.

## Contents

### **BatchPredictionDataSourceId**

The ID of the `DataSource` that points to the group of observations to predict.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.- ]+`

Required: No

### **BatchPredictionId**

The ID assigned to the `BatchPrediction` at creation. This value should be identical to the value of the `BatchPredictionID` in the request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.- ]+`

Required: No

### **ComputeTime**

Long integer type that is a 64-bit signed number.

Type: Long

Required: No

### **CreatedAt**

The time that the `BatchPrediction` was created. The time is expressed in epoch time.

Type: Timestamp

Required: No

### **CreatedByIamUser**

The AWS user account that invoked the `BatchPrediction`. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam:[0-9]+:((user/.+)|(root))`

Required: No

### **FinishedAt**

A timestamp represented in epoch time.

Type: Timestamp

Required: No

**InputDataLocationS3**

The location of the data file or directory in Amazon Simple Storage Service (Amazon S3).

Type: String

Length Constraints: Maximum length of 2048.

Pattern: s3://([ ^/ ]+)(/.\*)?

Required: No

**InvalidRecordCount**

Long integer type that is a 64-bit signed number.

Type: Long

Required: No

**LastUpdatedAt**

The time of the most recent edit to the `BatchPrediction`. The time is expressed in epoch time.

Type: Timestamp

Required: No

**Message**

A description of the most recent details about processing the batch prediction request.

Type: String

Length Constraints: Maximum length of 10240.

Required: No

**MLModelId**

The ID of the `MLModel` that generated predictions for the `BatchPrediction` request.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.- ]+

Required: No

**Name**

A user-supplied name or description of the `BatchPrediction`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: .\*\S.\*|^\$

Required: No

### OutputUri

The location of an Amazon S3 bucket or directory to receive the operation results. The following substrings are not allowed in the `s3` key portion of the `outputURI` field: `:', '//' , './', '/../`.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s/]+)(/.*)?`

Required: No

### StartedAt

A timestamp represented in epoch time.

Type: Timestamp

Required: No

### Status

The status of the `BatchPrediction`. This element can have one of the following values:

- `PENDING` - Amazon Machine Learning (Amazon ML) submitted a request to generate predictions for a batch of observations.
- `INPROGRESS` - The process is underway.
- `FAILED` - The request to perform a batch prediction did not run to completion. It is not usable.
- `COMPLETED` - The batch prediction process completed successfully.
- `DELETED` - The `BatchPrediction` is marked as deleted. It is not usable.

Type: String

Valid Values: `PENDING` | `INPROGRESS` | `FAILED` | `COMPLETED` | `DELETED`

Required: No

### TotalRecordCount

Long integer type that is a 64-bit signed number.

Type: Long

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# DataSource

Represents the output of the `GetDataSource` operation.

The content consists of the detailed metadata and data file information and the current status of the `DataSource`.

## Contents

### **ComputeStatistics**

The parameter is `true` if statistics need to be generated from the observation data.

Type: Boolean

Required: No

### **ComputeTime**

Long integer type that is a 64-bit signed number.

Type: Long

Required: No

### **CreatedAt**

The time that the `DataSource` was created. The time is expressed in epoch time.

Type: Timestamp

Required: No

### **CreatedByIamUser**

The AWS user account from which the `DataSource` was created. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam::[0-9]+:((user/.+)|(root))`

Required: No

### **DataLocationS3**

The location and name of the data in Amazon Simple Storage Service (Amazon S3) that is used by a `DataSource`.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s]+)(/.*)?`

Required: No

### **DataRearrangement**

A JSON string that represents the splitting and rearrangement requirement used when this `DataSource` was created.

Type: String

Required: No

**DataSourceInBytes**

The total number of observations contained in the data files that the `DataSource` references.

Type: Long

Required: No

**DataSourceId**

The ID that is assigned to the `DataSource` during creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: No

**FinishedAt**

A timestamp represented in epoch time.

Type: Timestamp

Required: No

**LastUpdatedAt**

The time of the most recent edit to the `BatchPrediction`. The time is expressed in epoch time.

Type: Timestamp

Required: No

**Message**

A description of the most recent details about creating the `DataSource`.

Type: String

Length Constraints: Maximum length of 10240.

Required: No

**Name**

A user-supplied name or description of the `DataSource`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: .\*\.S.\*|^\$

Required: No

**NumberOfFiles**

The number of data files referenced by the `DataSource`.

Type: Long

Required: No

### **RDSMetadata**

The datasource details that are specific to Amazon RDS.

Type: [RDSMetadata](#) (p. 144) object

Required: No

### **RedshiftMetadata**

Describes the DataSource details specific to Amazon Redshift.

Type: [RedshiftMetadata](#) (p. 154) object

Required: No

### **RoleARN**

The Amazon Resource Name (ARN) of an [AWS IAM Role](#), such as the following:  
arn:aws:iam::account:role/rolename.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 110.

Required: No

### **StartedAt**

A timestamp represented in epoch time.

Type: Timestamp

Required: No

### **Status**

The current status of the DataSource. This element can have one of the following values:

- PENDING - Amazon Machine Learning (Amazon ML) submitted a request to create a DataSource.
- INPROGRESS - The creation process is underway.
- FAILED - The request to create a DataSource did not run to completion. It is not usable.
- COMPLETED - The creation process completed successfully.
- DELETED - The DataSource is marked as deleted. It is not usable.

Type: String

Valid Values: PENDING | INPROGRESS | FAILED | COMPLETED | DELETED

Required: No

## **See Also**

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# Evaluation

Represents the output of `GetEvaluation` operation.

The content consists of the detailed metadata and data file information and the current status of the `Evaluation`.

## Contents

### **ComputeTime**

Long integer type that is a 64-bit signed number.

Type: Long

Required: No

### **CreatedAt**

The time that the `Evaluation` was created. The time is expressed in epoch time.

Type: Timestamp

Required: No

### **CreatedByIamUser**

The AWS user account that invoked the evaluation. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam::[0-9]+:((user/.+)|(root))`

Required: No

### **EvaluationDataSourceId**

The ID of the `DataSource` that is used to evaluate the `MLModel`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: No

### **EvaluationId**

The ID that is assigned to the `Evaluation` at creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: No

### **FinishedAt**

A timestamp represented in epoch time.

Type: Timestamp

Required: No

**InputDataLocationS3**

The location and name of the data in Amazon Simple Storage Server (Amazon S3) that is used in the evaluation.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: s3://([^\s/]+)(/.\*)?

Required: No

**LastUpdatedAt**

The time of the most recent edit to the `Evaluation`. The time is expressed in epoch time.

Type: Timestamp

Required: No

**Message**

A description of the most recent details about evaluating the `MLModel`.

Type: String

Length Constraints: Maximum length of 10240.

Required: No

**MLModelId**

The ID of the `MLModel` that is the focus of the evaluation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: [a-zA-Z0-9\_.-]+

Required: No

**Name**

A user-supplied name or description of the `Evaluation`.

Type: String

Length Constraints: Maximum length of 1024.

Pattern: .\*\S.\*|^\$

Required: No

**PerformanceMetrics**

Measurements of how well the `MLModel` performed, using observations referenced by the `DataSource`. One of the following metrics is returned, based on the type of the `MLModel`:

- **BinaryAUC:** A binary `MLModel` uses the Area Under the Curve (AUC) technique to measure performance.



- **RegressionRMSE**: A regression `MLModel` uses the Root Mean Square Error (RMSE) technique to measure performance. RMSE measures the difference between predicted and actual values for a single variable.
- **MulticlassAvgFScore**: A multiclass `MLModel` uses the F1 score technique to measure performance.

For more information about performance metrics, please see the [Amazon Machine Learning Developer Guide](#).

Type: [PerformanceMetrics](#) (p. 135) object

Required: No

#### **StartedAt**

A timestamp represented in epoch time.

Type: Timestamp

Required: No

#### **Status**

The status of the evaluation. This element can have one of the following values:

- **PENDING** - Amazon Machine Learning (Amazon ML) submitted a request to evaluate an `MLModel`.
- **INPROGRESS** - The evaluation is underway.
- **FAILED** - The request to evaluate an `MLModel` did not run to completion. It is not usable.
- **COMPLETED** - The evaluation process completed successfully.
- **DELETED** - The Evaluation is marked as deleted. It is not usable.

Type: String

Valid Values: `PENDING` | `INPROGRESS` | `FAILED` | `COMPLETED` | `DELETED`

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# MLModel

Represents the output of a `GetMLModel` operation.

The content consists of the detailed metadata and the current status of the `MLModel`.

## Contents

### Algorithm

The algorithm used to train the `MLModel`. The following algorithm is supported:

- `SGD` -- Stochastic gradient descent. The goal of `SGD` is to minimize the gradient of the loss function.

Type: String

Valid Values: `sgd`

Required: No

### ComputeTime

Long integer type that is a 64-bit signed number.

Type: Long

Required: No

### CreatedAt

The time that the `MLModel` was created. The time is expressed in epoch time.

Type: Timestamp

Required: No

### CreatedByIamUser

The AWS user account from which the `MLModel` was created. The account type can be either an AWS root account or an AWS Identity and Access Management (IAM) user account.

Type: String

Pattern: `arn:aws:iam:[0-9]+:(user/.+)|(root)`

Required: No

### EndpointInfo

The current endpoint of the `MLModel`.

Type: [RealtimeEndpointInfo](#) (p. 146) object

Required: No

### FinishedAt

A timestamp represented in epoch time.

Type: Timestamp

Required: No

**InputDataLocationS3**

The location of the data file or directory in Amazon Simple Storage Service (Amazon S3).

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s]+)(/.*)?`

Required: No

**LastUpdatedAt**

The time of the most recent edit to the `MLModel`. The time is expressed in epoch time.

Type: Timestamp

Required: No

**Message**

A description of the most recent details about accessing the `MLModel`.

Type: String

Length Constraints: Maximum length of 10240.

Required: No

**MLModelId**

The ID assigned to the `MLModel` at creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: No

**MLModelType**

Identifies the `MLModel` category. The following are the available types:

- `REGRESSION` - Produces a numeric result. For example, "What price should a house be listed at?"
- `BINARY` - Produces one of two possible results. For example, "Is this a child-friendly web site?"
- `MULTICLASS` - Produces one of several possible results. For example, "Is this a HIGH-, LOW-, or MEDIUM-risk trade?"

Type: String

Valid Values: `REGRESSION | BINARY | MULTICLASS`

Required: No

**Name**

A user-supplied name or description of the `MLModel`.

Type: String

Length Constraints: Maximum length of 1024.

Required: No

### **ScoreThreshold**

The score threshold for the `MLModel`.

Type: Float

Required: No

### **ScoreThresholdLastUpdatedAt**

The time of the most recent edit to the `ScoreThreshold`. The time is expressed in epoch time.

Type: Timestamp

Required: No

### **SizeInBytes**

Long integer type that is a 64-bit signed number.

Type: Long

Required: No

### **StartedAt**

A timestamp represented in epoch time.

Type: Timestamp

Required: No

### **Status**

The current status of an `MLModel`. This element can have one of the following values:

- `PENDING` - Amazon Machine Learning (Amazon ML) submitted a request to create an `MLModel`.
- `INPROGRESS` - The creation process is underway.
- `FAILED` - The request to create an `MLModel` didn't run to completion. The model isn't usable.
- `COMPLETED` - The creation process completed successfully.
- `DELETED` - The `MLModel` is marked as deleted. It isn't usable.

Type: String

Valid Values: `PENDING` | `INPROGRESS` | `FAILED` | `COMPLETED` | `DELETED`

Required: No

### **TrainingDataSourceId**

The ID of the training `DataSource`. The `CreateMLModel` operation uses the `TrainingDataSourceId`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Pattern: `[a-zA-Z0-9_.-]+`

Required: No

### **TrainingParameters**

A list of the training parameters in the `MLModel`. The list is implemented as a map of key-value pairs.

The following is the current set of training parameters:

- `sgd.maxMLModelSizeInBytes` - The maximum allowed size of the model. Depending on the input data, the size of the model might affect its performance.

The value is an integer that ranges from 100000 to 2147483648. The default value is 33554432.

- `sgd.maxPasses` - The number of times that the training process traverses the observations to build the `MLModel`. The value is an integer that ranges from 1 to 100. The default value is 10.
- `sgd.shuffleType` - Whether Amazon ML shuffles the training data. Shuffling the data improves a model's ability to find the optimal solution for a variety of data types. The valid values are `auto` and `none`. The default value is `none`.
- `sgd.l1RegularizationAmount` - The coefficient regularization L1 norm, which controls overfitting the data by penalizing large coefficients. This parameter tends to drive coefficients to zero, resulting in sparse feature set. If you use this parameter, start by specifying a small value, such as `1.0E-08`.

The value is a double that ranges from 0 to `MAX_DOUBLE`. The default is to not use L1 normalization. This parameter can't be used when `L2` is specified. Use this parameter sparingly.

- `sgd.l2RegularizationAmount` - The coefficient regularization L2 norm, which controls overfitting the data by penalizing large coefficients. This tends to drive coefficients to small, nonzero values. If you use this parameter, start by specifying a small value, such as `1.0E-08`.

The value is a double that ranges from 0 to `MAX_DOUBLE`. The default is to not use L2 normalization. This parameter can't be used when `L1` is specified. Use this parameter sparingly.

Type: String to string map

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

## PerformanceMetrics

Measurements of how well the `MLModel` performed on known observations. One of the following metrics is returned, based on the type of the `MLModel`:

- **BinaryAUC**: The binary `MLModel` uses the Area Under the Curve (AUC) technique to measure performance.
- **RegressionRMSE**: The regression `MLModel` uses the Root Mean Square Error (RMSE) technique to measure performance. RMSE measures the difference between predicted and actual values for a single variable.
- **MulticlassAvgFScore**: The multiclass `MLModel` uses the F1 score technique to measure performance.

For more information about performance metrics, please see the [Amazon Machine Learning Developer Guide](#).

## Contents

### Properties

Specific performance metric information.

Type: String to string map

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

## Prediction

The output from a `Predict` operation:

- `Details` - Contains the following attributes: `DetailsAttributes.PREDICTIVE_MODEL_TYPE` - REGRESSION | BINARY | MULTICLASS `DetailsAttributes.ALGORITHM` - SGD
- `PredictedLabel` - Present for either a BINARY or MULTICLASS `MLModel` request.
- `PredictedScores` - Contains the raw classification score corresponding to each label.
- `PredictedValue` - Present for a REGRESSION `MLModel` request.

## Contents

### **details**

Provides any additional details regarding the prediction.

Type: String to string map

Valid Keys: `PredictiveModelType` | `Algorithm`

Value Length Constraints: Minimum length of 1.

Required: No

### **predictedLabel**

The prediction label for either a BINARY or MULTICLASS `MLModel`.

Type: String

Length Constraints: Minimum length of 1.

Required: No

### **predictedScores**

Provides the raw classification score corresponding to each label.

Type: String to float map

Key Length Constraints: Minimum length of 1.

Required: No

### **predictedValue**

The prediction value for REGRESSION `MLModel`.

Type: Float

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)

- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)



# RDSDatabase

The database details of an Amazon RDS database.

## Contents

### **DatabaseName**

The name of a database hosted on an RDS DB instance.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Required: Yes

### **InstanceIdentifier**

The ID of an RDS DB instance.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 63.

Required: Yes

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# RDSDatabaseCredentials

The database credentials to connect to a database on an RDS DB instance.

## Contents

### Password

The password to be used by Amazon ML to connect to a database on an RDS DB instance. The password should have sufficient permissions to execute the `RDSSelectQuery` query.

Type: String

Length Constraints: Minimum length of 8. Maximum length of 128.

Required: Yes

### Username

The username to be used by Amazon ML to connect to database on an Amazon RDS instance. The username should have sufficient permissions to execute an `RDSSelectSqlQuery` query.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 128.

Required: Yes

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# RDSDataSpec

The data specification of an Amazon Relational Database Service (Amazon RDS) DataSource.

## Contents

### DatabaseCredentials

The AWS Identity and Access Management (IAM) credentials that are used connect to the Amazon RDS database.

Type: [RDSDatabaseCredentials \(p. 139\)](#) object

Required: Yes

### DatabaseInformation

Describes the DatabaseName and InstanceIdentifier of an Amazon RDS database.

Type: [RDSDatabase \(p. 138\)](#) object

Required: Yes

### DataRearrangement

A JSON string that represents the splitting and rearrangement processing to be applied to a DataSource. If the DataRearrangement parameter is not provided, all of the input data is used to create the DataSource.

There are multiple parameters that control what data is used to create a datasource:

- **percentBegin**

Use percentBegin to indicate the beginning of the range of the data used to create the DataSource. If you do not include percentBegin and percentEnd, Amazon ML includes all of the data when creating the datasource.

- **percentEnd**

Use percentEnd to indicate the end of the range of the data used to create the DataSource. If you do not include percentBegin and percentEnd, Amazon ML includes all of the data when creating the datasource.

- **complement**

The complement parameter instructs Amazon ML to use the data that is not included in the range of percentBegin to percentEnd to create a datasource. The complement parameter is useful if you need to create complementary datasources for training and evaluation. To create a complementary datasource, use the same values for percentBegin and percentEnd, along with the complement parameter.

For example, the following two datasources do not share any data, and can be used to train and evaluate a model. The first datasource has 25 percent of the data, and the second one has 75 percent of the data.

Datasource for evaluation: {"splitting":{"percentBegin":0, "percentEnd":25}}

Datasource for training: {"splitting":{"percentBegin":0, "percentEnd":25, "complement":"true"}}

- **strategy**

To change how Amazon ML splits the data for a datasource, use the strategy parameter.

The default value for the `strategy` parameter is `sequential`, meaning that Amazon ML takes all of the data records between the `percentBegin` and `percentEnd` parameters for the `datasource`, in the order that the records appear in the input data.

The following two `DataRearrangement` lines are examples of sequentially ordered training and evaluation `datasources`:

```
Datasource for evaluation: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"sequential"}}
```

```
Datasource for training: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"sequential", "complement":"true"}}
```

To randomly split the input data into the proportions indicated by the `percentBegin` and `percentEnd` parameters, set the `strategy` parameter to `random` and provide a string that is used as the seed value for the random data splitting (for example, you can use the S3 path to your data as the random seed string). If you choose the random split strategy, Amazon ML assigns each row of data a pseudo-random number between 0 and 100, and then selects the rows that have an assigned number between `percentBegin` and `percentEnd`. Pseudo-random numbers are assigned using both the input seed string value and the byte offset as a seed, so changing the data results in a different split. Any existing ordering is preserved. The random splitting strategy ensures that variables in the training and evaluation data are distributed similarly. It is useful in the cases where the input data may have an implicit sort order, which would otherwise result in training and evaluation `datasources` containing non-similar data records.

The following two `DataRearrangement` lines are examples of non-sequentially ordered training and evaluation `datasources`:

```
Datasource for evaluation: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"random", "strategyParams": {"randomSeed":"RANDOMSEED"}}
```

```
Datasource for training: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"random", "strategyParams": {"randomSeed":"RANDOMSEED"},
"complement":"true"}}
```

Type: String

Required: No

### DataSchema

A JSON string that represents the schema for an Amazon RDS `DataSource`. The `DataSchema` defines the structure of the observation data in the data file(s) referenced in the `DataSource`.

A `DataSchema` is not required if you specify a `DataSchemaUri`

Define your `DataSchema` as a series of key-value pairs. `attributes` and `excludedAttributeNames` have an array of key-value pairs for their value. Use the following format to define your `DataSchema`.

```
{ "version": "1.0",
  "recordAnnotationFieldName": "F1",
  "recordWeightFieldName": "F2",
  "targetAttributeName": "F3",
  "dataFormat": "CSV",
  "dataFileContainsHeader": true,
```

```
"attributes": [  
  { "attributeName": "F1", "attributeType": "TEXT" }, { "attributeName": "F2", "attributeType":  
    "NUMERIC" }, { "attributeName": "F3", "attributeType": "CATEGORICAL" }, { "attributeName":  
    "F4", "attributeType": "NUMERIC" }, { "attributeName": "F5", "attributeType":  
    "CATEGORICAL" }, { "attributeName": "F6", "attributeType": "TEXT" }, { "attributeName": "F7",  
    "attributeType": "WEIGHTED_INT_SEQUENCE" }, { "attributeName": "F8", "attributeType":  
    "WEIGHTED_STRING_SEQUENCE" } ],  
"excludedAttributeNames": [ "F6" ] }
```

Type: String

Length Constraints: Maximum length of 131071.

Required: No

#### **DataSchemaUri**

The Amazon S3 location of the DataSchema.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: s3://([^/]+)(/.\*)?

Required: No

#### **ResourceRole**

The role (DataPipelineDefaultResourceRole) assumed by an Amazon Elastic Compute Cloud (Amazon EC2) instance to carry out the copy operation from Amazon RDS to an Amazon S3 task. For more information, see [Role templates](#) for data pipelines.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Required: Yes

#### **S3StagingLocation**

The Amazon S3 location for staging Amazon RDS data. The data retrieved from Amazon RDS using `SelectSqlQuery` is stored in this location.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: s3://([^/]+)(/.\*)?

Required: Yes

#### **SecurityGroupIds**

The security group IDs to be used to access a VPC-based RDS DB instance. Ensure that there are appropriate ingress rules set up to allow access to the RDS DB instance. This attribute is used by Data Pipeline to carry out the copy operation from Amazon RDS to an Amazon S3 task.

Type: Array of strings

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: Yes

### SelectSqlQuery

The query that is used to retrieve the observation data for the `DataSource`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 16777216.

Required: Yes

### ServiceRole

The role (`DataPipelineDefaultRole`) assumed by AWS Data Pipeline service to monitor the progress of the copy task from Amazon RDS to Amazon S3. For more information, see [Role templates](#) for data pipelines.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Required: Yes

### SubnetId

The subnet ID to be used to access a VPC-based RDS DB instance. This attribute is used by Data Pipeline to carry out the copy task from Amazon RDS to Amazon S3.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: Yes

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# RDSMetadata

The datasource details that are specific to Amazon RDS.

## Contents

### Database

The database details required to connect to an Amazon RDS.

Type: [RDSDatabase](#) (p. 138) object

Required: No

### DatabaseUserName

The username to be used by Amazon ML to connect to database on an Amazon RDS instance. The username should have sufficient permissions to execute an `RDSSelectSqlQuery` query.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 128.

Required: No

### DataPipelineId

The ID of the Data Pipeline instance that is used to carry to copy data from Amazon RDS to Amazon S3. You can use the ID to find details about the instance in the Data Pipeline console.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 1024.

Required: No

### ResourceRole

The role (`DataPipelineDefaultResourceRole`) assumed by an Amazon EC2 instance to carry out the copy task from Amazon RDS to Amazon S3. For more information, see [Role templates](#) for data pipelines.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Required: No

### SelectSqlQuery

The SQL query that is supplied during [CreateDataSourceFromRDS](#) (p. 11). Returns only if `Verbose` is true in `GetDataSourceInput`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 16777216.

Required: No

### ServiceRole

The role (`DataPipelineDefaultRole`) assumed by the Data Pipeline service to monitor the progress of the copy task from Amazon RDS to Amazon S3. For more information, see [Role templates](#) for data pipelines.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 64.

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)



# RealtimeEndpointInfo

Describes the real-time endpoint information for an `MLModel`.

## Contents

### CreatedAt

The time that the request to create the real-time endpoint for the `MLModel` was received. The time is expressed in epoch time.

Type: Timestamp

Required: No

### EndpointStatus

The current status of the real-time endpoint for the `MLModel`. This element can have one of the following values:

- `NONE` - Endpoint does not exist or was previously deleted.
- `READY` - Endpoint is ready to be used for real-time predictions.
- `UPDATING` - Updating/creating the endpoint.

Type: String

Valid Values: `NONE` | `READY` | `UPDATING` | `FAILED`

Required: No

### EndpointUrl

The URI that specifies where to send real-time prediction requests for the `MLModel`.

**Note:** The application must wait until the real-time endpoint is ready before using this URI.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `https://[a-zA-Z0-9-]*\.amazon(aws)?\.com[/]?`

Required: No

### PeakRequestsPerSecond

The maximum processing rate for the real-time endpoint for `MLModel`, measured in incoming requests per second.

Type: Integer

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)

- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# RedshiftDatabase

Describes the database details required to connect to an Amazon Redshift database.

## Contents

### **ClusterIdentifier**

The ID of an Amazon Redshift cluster.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 63.

Required: Yes

### **DatabaseName**

The name of a database hosted on an Amazon Redshift cluster.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 127.

Required: Yes

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# RedshiftDatabaseCredentials

Describes the database credentials for connecting to a database on an Amazon Redshift cluster.

## Contents

### Password

A password to be used by Amazon ML to connect to a database on an Amazon Redshift cluster. The password should have sufficient permissions to execute a `RedshiftSelectSqlQuery` query. The password should be valid for an Amazon Redshift [USER](#).

Type: String

Length Constraints: Minimum length of 8. Maximum length of 64.

Required: Yes

### Username

A username to be used by Amazon Machine Learning (Amazon ML) to connect to a database on an Amazon Redshift cluster. The username should have sufficient permissions to execute the `RedshiftSelectSqlQuery` query. The username should be valid for an Amazon Redshift [USER](#).

Type: String

Length Constraints: Minimum length of 1. Maximum length of 128.

Required: Yes

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# RedshiftDataSpec

Describes the data specification of an Amazon Redshift DataSource.

## Contents

### DatabaseCredentials

Describes AWS Identity and Access Management (IAM) credentials that are used connect to the Amazon Redshift database.

Type: [RedshiftDatabaseCredentials \(p. 149\)](#) object

Required: Yes

### DatabaseInformation

Describes the DatabaseName and ClusterIdentifier for an Amazon Redshift DataSource.

Type: [RedshiftDatabase \(p. 148\)](#) object

Required: Yes

### DataRearrangement

A JSON string that represents the splitting and rearrangement processing to be applied to a DataSource. If the DataRearrangement parameter is not provided, all of the input data is used to create the DataSource.

There are multiple parameters that control what data is used to create a datasource:

- **percentBegin**

Use percentBegin to indicate the beginning of the range of the data used to create the DataSource. If you do not include percentBegin and percentEnd, Amazon ML includes all of the data when creating the datasource.

- **percentEnd**

Use percentEnd to indicate the end of the range of the data used to create the DataSource. If you do not include percentBegin and percentEnd, Amazon ML includes all of the data when creating the datasource.

- **complement**

The complement parameter instructs Amazon ML to use the data that is not included in the range of percentBegin to percentEnd to create a datasource. The complement parameter is useful if you need to create complementary datasources for training and evaluation. To create a complementary datasource, use the same values for percentBegin and percentEnd, along with the complement parameter.

For example, the following two datasources do not share any data, and can be used to train and evaluate a model. The first datasource has 25 percent of the data, and the second one has 75 percent of the data.

Datasource for evaluation: {"splitting":{"percentBegin":0, "percentEnd":25}}

Datasource for training: {"splitting":{"percentBegin":0, "percentEnd":25, "complement":"true"}}

- **strategy**

To change how Amazon ML splits the data for a datasource, use the strategy parameter.

The default value for the `strategy` parameter is `sequential`, meaning that Amazon ML takes all of the data records between the `percentBegin` and `percentEnd` parameters for the `datasource`, in the order that the records appear in the input data.

The following two `DataRearrangement` lines are examples of sequentially ordered training and evaluation `datasources`:

```
Datasource for evaluation: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"sequential"}}
```

```
Datasource for training: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"sequential", "complement":"true"}}
```

To randomly split the input data into the proportions indicated by the `percentBegin` and `percentEnd` parameters, set the `strategy` parameter to `random` and provide a string that is used as the seed value for the random data splitting (for example, you can use the S3 path to your data as the random seed string). If you choose the random split strategy, Amazon ML assigns each row of data a pseudo-random number between 0 and 100, and then selects the rows that have an assigned number between `percentBegin` and `percentEnd`. Pseudo-random numbers are assigned using both the input seed string value and the byte offset as a seed, so changing the data results in a different split. Any existing ordering is preserved. The random splitting strategy ensures that variables in the training and evaluation data are distributed similarly. It is useful in the cases where the input data may have an implicit sort order, which would otherwise result in training and evaluation `datasources` containing non-similar data records.

The following two `DataRearrangement` lines are examples of non-sequentially ordered training and evaluation `datasources`:

```
Datasource for evaluation: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"random", "strategyParams": {"randomSeed":"RANDOMSEED"}}
```

```
Datasource for training: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"random", "strategyParams": {"randomSeed":"RANDOMSEED"},
"complement":"true"}}
```

Type: String

Required: No

### **DataSchema**

A JSON string that represents the schema for an Amazon Redshift `DataSource`. The `DataSchema` defines the structure of the observation data in the data file(s) referenced in the `DataSource`.

A `DataSchema` is not required if you specify a `DataSchemaUri`.

Define your `DataSchema` as a series of key-value pairs. `attributes` and `excludedAttributeNames` have an array of key-value pairs for their value. Use the following format to define your `DataSchema`.

```
{ "version": "1.0",
  "recordAnnotationFieldName": "F1",
  "recordWeightFieldName": "F2",
  "targetAttributeName": "F3",
  "dataFormat": "CSV",
  "dataFileContainsHeader": true,
```

```
"attributes": [  
  { "attributeName": "F1", "attributeType": "TEXT" }, { "attributeName": "F2", "attributeType":  
    "NUMERIC" }, { "attributeName": "F3", "attributeType": "CATEGORICAL" }, { "attributeName":  
    "F4", "attributeType": "NUMERIC" }, { "attributeName": "F5", "attributeType":  
    "CATEGORICAL" }, { "attributeName": "F6", "attributeType": "TEXT" }, { "attributeName": "F7",  
    "attributeType": "WEIGHTED_INT_SEQUENCE" }, { "attributeName": "F8", "attributeType":  
    "WEIGHTED_STRING_SEQUENCE" } ],  
"excludedAttributeNames": [ "F6" ] }
```

Type: String

Length Constraints: Maximum length of 131071.

Required: No

#### **DataSchemaUri**

Describes the schema location for an Amazon Redshift `DataSource`.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([ ^/ ]+)(/.*)?`

Required: No

#### **S3StagingLocation**

Describes an Amazon S3 location to store the result set of the `SelectSqlQuery` query.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([ ^/ ]+)(/.*)?`

Required: Yes

#### **SelectSqlQuery**

Describes the SQL Query to execute on an Amazon Redshift database for an Amazon Redshift `DataSource`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 16777216.

Required: Yes

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)





# RedshiftMetadata

Describes the DataSource details specific to Amazon Redshift.

## Contents

### DatabaseUserName

A username to be used by Amazon Machine Learning (Amazon ML) to connect to a database on an Amazon Redshift cluster. The username should have sufficient permissions to execute the `RedshiftSelectSqlQuery` query. The username should be valid for an Amazon Redshift [USER](#).

Type: String

Length Constraints: Minimum length of 1. Maximum length of 128.

Required: No

### RedshiftDatabase

Describes the database details required to connect to an Amazon Redshift database.

Type: [RedshiftDatabase \(p. 148\)](#) object

Required: No

### SelectSqlQuery

The SQL query that is specified during [CreateDataSourceFromRedshift \(p. 16\)](#). Returns only if `Verbose` is true in `GetDataSourceInput`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 16777216.

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# S3DataSpec

Describes the data specification of a `DataSource`.

## Contents

### DataLocationS3

The location of the data file(s) used by a `DataSource`. The URI specifies a data file or an Amazon Simple Storage Service (Amazon S3) directory or bucket containing data files.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s]+)(/.*)?`

Required: Yes

### DataRearrangement

A JSON string that represents the splitting and rearrangement processing to be applied to a `DataSource`. If the `DataRearrangement` parameter is not provided, all of the input data is used to create the `Datasource`.

There are multiple parameters that control what data is used to create a `datasource`:

- **percentBegin**

Use `percentBegin` to indicate the beginning of the range of the data used to create the `Datasource`. If you do not include `percentBegin` and `percentEnd`, Amazon ML includes all of the data when creating the `datasource`.

- **percentEnd**

Use `percentEnd` to indicate the end of the range of the data used to create the `Datasource`. If you do not include `percentBegin` and `percentEnd`, Amazon ML includes all of the data when creating the `datasource`.

- **complement**

The `complement` parameter instructs Amazon ML to use the data that is not included in the range of `percentBegin` to `percentEnd` to create a `datasource`. The `complement` parameter is useful if you need to create complementary `datasources` for training and evaluation. To create a complementary `datasource`, use the same values for `percentBegin` and `percentEnd`, along with the `complement` parameter.

For example, the following two `datasources` do not share any data, and can be used to train and evaluate a model. The first `datasource` has 25 percent of the data, and the second one has 75 percent of the data.

Datasource for evaluation: `{"splitting":{"percentBegin":0, "percentEnd":25}}`

Datasource for training: `{"splitting":{"percentBegin":0, "percentEnd":25, "complement":"true"}}`

- **strategy**

To change how Amazon ML splits the data for a `datasource`, use the `strategy` parameter.

The default value for the `strategy` parameter is `sequential`, meaning that Amazon ML takes all of the data records between the `percentBegin` and `percentEnd` parameters for the `datasource`, in the order that the records appear in the input data.

The following two `DataRearrangement` lines are examples of sequentially ordered training and evaluation datasources:

```
Datasource for evaluation: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"sequential"}}
```

```
Datasource for training: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"sequential", "complement":"true"}}
```

To randomly split the input data into the proportions indicated by the `percentBegin` and `percentEnd` parameters, set the `strategy` parameter to `random` and provide a string that is used as the seed value for the random data splitting (for example, you can use the S3 path to your data as the random seed string). If you choose the random split strategy, Amazon ML assigns each row of data a pseudo-random number between 0 and 100, and then selects the rows that have an assigned number between `percentBegin` and `percentEnd`. Pseudo-random numbers are assigned using both the input seed string value and the byte offset as a seed, so changing the data results in a different split. Any existing ordering is preserved. The random splitting strategy ensures that variables in the training and evaluation data are distributed similarly. It is useful in the cases where the input data may have an implicit sort order, which would otherwise result in training and evaluation datasources containing non-similar data records.

The following two `DataRearrangement` lines are examples of non-sequentially ordered training and evaluation datasources:

```
Datasource for evaluation: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"random", "strategyParams": { "randomSeed":"RANDOMSEED"}}}
```

```
Datasource for training: {"splitting":{"percentBegin":70, "percentEnd":100,
"strategy":"random", "strategyParams": {"randomSeed":"RANDOMSEED"},
"complement":"true"}}
```

Type: String

Required: No

### DataSchema

A JSON string that represents the schema for an Amazon S3 `DataSource`. The `DataSchema` defines the structure of the observation data in the data file(s) referenced in the `DataSource`.

You must provide either the `DataSchema` or the `DataSchemaLocationS3`.

Define your `DataSchema` as a series of key-value pairs. `attributes` and `excludedAttributeNames` have an array of key-value pairs for their value. Use the following format to define your `DataSchema`.

```
{ "version": "1.0",
  "recordAnnotationFieldName": "F1",
  "recordWeightFieldName": "F2",
  "targetAttributeName": "F3",
  "dataFormat": "CSV",
  "dataFileContainsHeader": true,
  "attributes": [
```

```
{ "attributeName": "F1", "attributeType": "TEXT" }, { "attributeName": "F2", "attributeType":  
"NUMERIC" }, { "attributeName": "F3", "attributeType": "CATEGORICAL" }, { "attributeName":  
"F4", "attributeType": "NUMERIC" }, { "attributeName": "F5", "attributeType":  
"CATEGORICAL" }, { "attributeName": "F6", "attributeType": "TEXT" }, { "attributeName": "F7",  
"attributeType": "WEIGHTED_INT_SEQUENCE" }, { "attributeName": "F8", "attributeType":  
"WEIGHTED_STRING_SEQUENCE" } ],
```

```
"excludedAttributeNames": [ "F6" ] }
```

Type: String

Length Constraints: Maximum length of 131071.

Required: No

### **DataSchemaLocationS3**

Describes the schema location in Amazon S3. You must provide either the `DataSchema` or the `DataSchemaLocationS3`.

Type: String

Length Constraints: Maximum length of 2048.

Pattern: `s3://([^\s/]+)(/.*)?`

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# Tag

A custom key-value pair associated with an ML object, such as an ML model.

## Contents

### Key

A unique identifier for the tag. Valid characters include Unicode letters, digits, white space, `_`, `.`, `/`, `=`, `+`, `-`, `%`, and `@`.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 128.

Pattern: `^([\p{L}\p{Z}\p{N}_.: /=-\@]*)$`

Required: No

### Value

An optional string, typically used to describe or define the tag. Valid characters include Unicode letters, digits, white space, `_`, `.`, `/`, `=`, `+`, `-`, `%`, and `@`.

Type: String

Length Constraints: Minimum length of 0. Maximum length of 256.

Pattern: `^([\p{L}\p{Z}\p{N}_.: /=-\@]*)$`

Required: No

## See Also

For more information about using this API in one of the language-specific AWS SDKs, see the following:

- [AWS SDK for C++](#)
- [AWS SDK for Go](#)
- [AWS SDK for Java](#)
- [AWS SDK for Ruby V3](#)

# Common Parameters

The following list contains the parameters that all actions use for signing Signature Version 4 requests with a query string. Any action-specific parameters are listed in the topic for that action. For more information about Signature Version 4, see [Signature Version 4 Signing Process](#) in the *Amazon Web Services General Reference*.

## Action

The action to be performed.

Type: string

Required: Yes

## Version

The API version that the request is written for, expressed in the format YYYY-MM-DD.

Type: string

Required: Yes

## X-Amz-Algorithm

The hash algorithm that you used to create the request signature.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Valid Values: `AWS4-HMAC-SHA256`

Required: Conditional

## X-Amz-Credential

The credential scope value, which is a string that includes your access key, the date, the region you are targeting, the service you are requesting, and a termination string ("aws4\_request"). The value is expressed in the following format: `access_key/YYYYMMDD/region/service/aws4_request`.

For more information, see [Task 2: Create a String to Sign for Signature Version 4](#) in the *Amazon Web Services General Reference*.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Required: Conditional

## X-Amz-Date

The date that is used to create the signature. The format must be ISO 8601 basic format (YYYYMMDD'THHMMSS'Z'). For example, the following date time is a valid X-Amz-Date value: `20120325T120000Z`.

Condition: X-Amz-Date is optional for all requests; it can be used to override the date used for signing requests. If the Date header is specified in the ISO 8601 basic format, X-Amz-Date is

not required. When X-Amz-Date is used, it always overrides the value of the Date header. For more information, see [Handling Dates in Signature Version 4](#) in the *Amazon Web Services General Reference*.

Type: string

Required: Conditional

#### **X-Amz-Security-Token**

The temporary security token that was obtained through a call to AWS Security Token Service (AWS STS). For a list of services that support temporary security credentials from AWS Security Token Service, go to [AWS Services That Work with IAM](#) in the *IAM User Guide*.

Condition: If you're using temporary security credentials from the AWS Security Token Service, you must include the security token.

Type: string

Required: Conditional

#### **X-Amz-Signature**

Specifies the hex-encoded signature that was calculated from the string to sign and the derived signing key.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Required: Conditional

#### **X-Amz-SignedHeaders**

Specifies all the HTTP headers that were included as part of the canonical request. For more information about specifying signed headers, see [Task 1: Create a Canonical Request For Signature Version 4](#) in the *Amazon Web Services General Reference*.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Required: Conditional

# Common Errors

This section lists the errors common to the API actions of all AWS services. For errors specific to an API action for this service, see the topic for that API action.

**AccessDeniedException**

You do not have sufficient access to perform this action.

HTTP Status Code: 400

**IncompleteSignature**

The request signature does not conform to AWS standards.

HTTP Status Code: 400

**InternalFailure**

The request processing has failed because of an unknown error, exception or failure.

HTTP Status Code: 500

**InvalidAction**

The action or operation requested is invalid. Verify that the action is typed correctly.

HTTP Status Code: 400

**InvalidClientTokenId**

The X.509 certificate or AWS access key ID provided does not exist in our records.

HTTP Status Code: 403

**InvalidParameterCombination**

Parameters that must not be used together were used together.

HTTP Status Code: 400

**InvalidParameterValue**

An invalid or out-of-range value was supplied for the input parameter.

HTTP Status Code: 400

**InvalidQueryParameter**

The AWS query string is malformed or does not adhere to AWS standards.

HTTP Status Code: 400

**MalformedQueryString**

The query string contains a syntax error.

HTTP Status Code: 404

**MissingAction**

The request is missing an action or a required parameter.

HTTP Status Code: 400



**MissingAuthenticationToken**

The request must contain either a valid (registered) AWS access key ID or X.509 certificate.

HTTP Status Code: 403

**MissingParameter**

A required parameter for the specified action is not supplied.

HTTP Status Code: 400

**OptInRequired**

The AWS access key ID needs a subscription for the service.

HTTP Status Code: 403

**RequestExpired**

The request reached the service more than 15 minutes after the date stamp on the request or more than 15 minutes after the request expiration date (such as for pre-signed URLs), or the date stamp on the request is more than 15 minutes in the future.

HTTP Status Code: 400

**ServiceUnavailable**

The request has failed due to a temporary failure of the server.

HTTP Status Code: 503

**ThrottlingException**

The request was denied due to request throttling.

HTTP Status Code: 400

**ValidationError**

The input fails to satisfy the constraints specified by an AWS service.

HTTP Status Code: 400