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# Amazon DynamoDB

## API Reference



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# Table of Contents

Welcome .....	1
Actions .....	2
Amazon DynamoDB .....	3
BatchGetItem .....	5
BatchWriteItem .....	13
CreateBackup .....	22
CreateGlobalTable .....	25
CreateTable .....	28
DeleteBackup .....	37
DeleteItem .....	40
DeleteTable .....	49
DescribeBackup .....	54
DescribeContinuousBackups .....	57
DescribeGlobalTable .....	59
DescribeGlobalTableSettings .....	61
DescribeLimits .....	64
DescribeTable .....	67
DescribeTimeToLive .....	72
GetItem .....	74
ListBackups .....	80
ListGlobalTables .....	83
ListTables .....	85
ListTagsOfResource .....	88
PutItem .....	90
Query .....	99
RestoreTableFromBackup .....	112
RestoreTableToPointInTime .....	116
Scan .....	121
TagResource .....	134
UntagResource .....	136
UpdateContinuousBackups .....	138
UpdateGlobalTable .....	140
UpdateGlobalTableSettings .....	143
UpdateItem .....	149
UpdateTable .....	161
UpdateTimeToLive .....	168
Amazon DynamoDB Accelerator .....	170
CreateCluster .....	171
CreateParameterGroup .....	177
CreateSubnetGroup .....	179
DecreaseReplicationFactor .....	182
DeleteCluster .....	185
DeleteParameterGroup .....	188
DeleteSubnetGroup .....	190
DescribeClusters .....	192
DescribeDefaultParameters .....	195
DescribeEvents .....	198
DescribeParameterGroups .....	201
DescribeParameters .....	204
DescribeSubnetGroups .....	207
IncreaseReplicationFactor .....	210
ListTags .....	213
RebootNode .....	215
TagResource .....	218

UntagResource .....	221
UpdateCluster .....	223
UpdateParameterGroup .....	227
UpdateSubnetGroup .....	229
Amazon DynamoDB Streams .....	231
DescribeStream .....	232
GetRecords .....	236
GetShardIterator .....	241
ListStreams .....	245
Data Types .....	249
Amazon DynamoDB .....	251
AttributeDefinition .....	253
AttributeValue .....	254
AttributeValueUpdate .....	257
AutoScalingPolicyDescription .....	259
AutoScalingPolicyUpdate .....	260
AutoScalingSettingsDescription .....	261
AutoScalingSettingsUpdate .....	263
AutoScalingTargetTrackingScalingPolicyConfigurationDescription .....	265
AutoScalingTargetTrackingScalingPolicyConfigurationUpdate .....	267
BackupDescription .....	269
BackupDetails .....	270
BackupSummary .....	272
Capacity .....	274
Condition .....	275
ConsumedCapacity .....	278
ContinuousBackupsDescription .....	280
CreateGlobalSecondaryIndexAction .....	281
CreateReplicaAction .....	283
DeleteGlobalSecondaryIndexAction .....	284
DeleteReplicaAction .....	285
DeleteRequest .....	286
ExpectedAttributeValue .....	287
GlobalSecondaryIndex .....	291
GlobalSecondaryIndexDescription .....	293
GlobalSecondaryIndexInfo .....	296
GlobalSecondaryIndexUpdate .....	298
GlobalTable .....	299
GlobalTableDescription .....	300
GlobalTableGlobalSecondaryIndexSettingsUpdate .....	302
ItemCollectionMetrics .....	303
KeysAndAttributes .....	304
KeySchemaElement .....	306
LocalSecondaryIndex .....	308
LocalSecondaryIndexDescription .....	310
LocalSecondaryIndexInfo .....	312
PointInTimeRecoveryDescription .....	314
PointInTimeRecoverySpecification .....	315
Projection .....	316
ProvisionedThroughput .....	317
ProvisionedThroughputDescription .....	318
PutRequest .....	320
Replica .....	321
ReplicaDescription .....	322
ReplicaGlobalSecondaryIndexSettingsDescription .....	323
ReplicaGlobalSecondaryIndexSettingsUpdate .....	325
ReplicaSettingsDescription .....	326

ReplicaSettingsUpdate .....	328
ReplicaUpdate .....	329
RestoreSummary .....	330
SourceTableDetails .....	331
SourceTableFeatureDetails .....	333
SSEDescription .....	335
SSESpecification .....	336
StreamSpecification .....	337
TableDescription .....	338
Tag .....	343
TimeToLiveDescription .....	344
TimeToLiveSpecification .....	345
UpdateGlobalSecondaryIndexAction .....	346
WriteRequest .....	347
Amazon DynamoDB Accelerator .....	347
Cluster .....	349
Endpoint .....	352
Event .....	353
Node .....	354
NodeTypeSpecificValue .....	356
NotificationConfiguration .....	357
Parameter .....	358
ParameterGroup .....	360
ParameterGroupStatus .....	361
ParameterNameValue .....	362
SecurityGroupMembership .....	363
SSEDescription .....	364
SSESpecification .....	365
Subnet .....	366
SubnetGroup .....	367
Tag .....	368
Amazon DynamoDB Streams .....	368
AttributeValue .....	370
Identity .....	372
KeySchemaElement .....	373
Record .....	374
SequenceNumberRange .....	376
Shard .....	377
Stream .....	378
StreamDescription .....	379
StreamRecord .....	382
Common Errors .....	384

# Welcome

Amazon DynamoDB provides low-level API actions for managing database tables and indexes, and for creating, reading, updating and deleting data. DynamoDB also provides API actions for accessing and processing stream records.

**Note**

This API Reference describes the low-level API for Amazon DynamoDB. Instead of making requests to the low-level API directly from your application, we recommend that you use one of the AWS Software Development Kits (SDKs) for your programming language. The AWS SDKs take care of request authentication, serialization, and connection management. For more information, see [Overview of AWS SDK Support for DynamoDB](#) in the Amazon DynamoDB Developer Guide.

At the end of each API action description there are links to the equivalent CLI command and programming-specific language method. Similarly, at the end of each API datatype description, there are links to the equivalent programming-specific language type.

# Actions

The following actions are supported by Amazon DynamoDB:

- [BatchGetItem](#) (p. 5)
- [BatchWriteItem](#) (p. 13)
- [CreateBackup](#) (p. 22)
- [CreateGlobalTable](#) (p. 25)
- [CreateTable](#) (p. 28)
- [DeleteBackup](#) (p. 37)
- [DeleteItem](#) (p. 40)
- [DeleteTable](#) (p. 49)
- [DescribeBackup](#) (p. 54)
- [DescribeContinuousBackups](#) (p. 57)
- [DescribeGlobalTable](#) (p. 59)
- [DescribeGlobalTableSettings](#) (p. 61)
- [DescribeLimits](#) (p. 64)
- [DescribeTable](#) (p. 67)
- [DescribeTimeToLive](#) (p. 72)
- [GetItem](#) (p. 74)
- [ListBackups](#) (p. 80)
- [ListGlobalTables](#) (p. 83)
- [ListTables](#) (p. 85)
- [ListTagsOfResource](#) (p. 88)
- [PutItem](#) (p. 90)
- [Query](#) (p. 99)
- [RestoreTableFromBackup](#) (p. 112)
- [RestoreTableToPointInTime](#) (p. 116)
- [Scan](#) (p. 121)
- [TagResource](#) (p. 134)
- [UntagResource](#) (p. 136)
- [UpdateContinuousBackups](#) (p. 138)
- [UpdateGlobalTable](#) (p. 140)
- [UpdateGlobalTableSettings](#) (p. 143)
- [UpdateItem](#) (p. 149)
- [UpdateTable](#) (p. 161)
- [UpdateTimeToLive](#) (p. 168)

The following actions are supported by Amazon DynamoDB Accelerator:

- [CreateCluster](#) (p. 171)
- [CreateParameterGroup](#) (p. 177)
- [CreateSubnetGroup](#) (p. 179)
- [DecreaseReplicationFactor](#) (p. 182)

- [DeleteCluster](#) (p. 185)
- [DeleteParameterGroup](#) (p. 188)
- [DeleteSubnetGroup](#) (p. 190)
- [DescribeClusters](#) (p. 192)
- [DescribeDefaultParameters](#) (p. 195)
- [DescribeEvents](#) (p. 198)
- [DescribeParameterGroups](#) (p. 201)
- [DescribeParameters](#) (p. 204)
- [DescribeSubnetGroups](#) (p. 207)
- [IncreaseReplicationFactor](#) (p. 210)
- [ListTags](#) (p. 213)
- [RebootNode](#) (p. 215)
- [TagResource](#) (p. 218)
- [UntagResource](#) (p. 221)
- [UpdateCluster](#) (p. 223)
- [UpdateParameterGroup](#) (p. 227)
- [UpdateSubnetGroup](#) (p. 229)

The following actions are supported by Amazon DynamoDB Streams:

- [DescribeStream](#) (p. 232)
- [GetRecords](#) (p. 236)
- [GetShardIterator](#) (p. 241)
- [ListStreams](#) (p. 245)

## Amazon DynamoDB

The following actions are supported by Amazon DynamoDB:

- [BatchGetItem](#) (p. 5)
- [BatchWriteItem](#) (p. 13)
- [CreateBackup](#) (p. 22)
- [CreateGlobalTable](#) (p. 25)
- [CreateTable](#) (p. 28)
- [DeleteBackup](#) (p. 37)
- [DeleteItem](#) (p. 40)
- [DeleteTable](#) (p. 49)
- [DescribeBackup](#) (p. 54)
- [DescribeContinuousBackups](#) (p. 57)
- [DescribeGlobalTable](#) (p. 59)
- [DescribeGlobalTableSettings](#) (p. 61)
- [DescribeLimits](#) (p. 64)
- [DescribeTable](#) (p. 67)
- [DescribeTimeToLive](#) (p. 72)
- [GetItem](#) (p. 74)
- [ListBackups](#) (p. 80)



- [ListGlobalTables](#) (p. 83)
- [ListTables](#) (p. 85)
- [ListTagsOfResource](#) (p. 88)
- [PutItem](#) (p. 90)
- [Query](#) (p. 99)
- [RestoreTableFromBackup](#) (p. 112)
- [RestoreTableToPointInTime](#) (p. 116)
- [Scan](#) (p. 121)
- [TagResource](#) (p. 134)
- [UntagResource](#) (p. 136)
- [UpdateContinuousBackups](#) (p. 138)
- [UpdateGlobalTable](#) (p. 140)
- [UpdateGlobalTableSettings](#) (p. 143)
- [UpdateItem](#) (p. 149)
- [UpdateTable](#) (p. 161)
- [UpdateTimeToLive](#) (p. 168)

# BatchGetItem

Service: Amazon DynamoDB

The `BatchGetItem` operation returns the attributes of one or more items from one or more tables. You identify requested items by primary key.

A single operation can retrieve up to 16 MB of data, which can contain as many as 100 items. `BatchGetItem` will return a partial result if the response size limit is exceeded, the table's provisioned throughput is exceeded, or an internal processing failure occurs. If a partial result is returned, the operation returns a value for `UnprocessedKeys`. You can use this value to retry the operation starting with the next item to get.

## Important

If you request more than 100 items `BatchGetItem` will return a `ValidationException` with the message "Too many items requested for the BatchGetItem call".

For example, if you ask to retrieve 100 items, but each individual item is 300 KB in size, the system returns 52 items (so as not to exceed the 16 MB limit). It also returns an appropriate `UnprocessedKeys` value so you can get the next page of results. If desired, your application can include its own logic to assemble the pages of results into one data set.

If *none* of the items can be processed due to insufficient provisioned throughput on all of the tables in the request, then `BatchGetItem` will return a `ProvisionedThroughputExceededException`. If *at least one* of the items is successfully processed, then `BatchGetItem` completes successfully, while returning the keys of the unread items in `UnprocessedKeys`.

## Important

If DynamoDB returns any unprocessed items, you should retry the batch operation on those items. However, *we strongly recommend that you use an exponential backoff algorithm*. If you retry the batch operation immediately, the underlying read or write requests can still fail due to throttling on the individual tables. If you delay the batch operation using exponential backoff, the individual requests in the batch are much more likely to succeed.

For more information, see [Batch Operations and Error Handling](#) in the *Amazon DynamoDB Developer Guide*.

By default, `BatchGetItem` performs eventually consistent reads on every table in the request. If you want strongly consistent reads instead, you can set `ConsistentRead` to `true` for any or all tables.

In order to minimize response latency, `BatchGetItem` retrieves items in parallel.

When designing your application, keep in mind that DynamoDB does not return items in any particular order. To help parse the response by item, include the primary key values for the items in your request in the `ProjectionExpression` parameter.

If a requested item does not exist, it is not returned in the result. Requests for nonexistent items consume the minimum read capacity units according to the type of read. For more information, see [Capacity Units Calculations](#) in the *Amazon DynamoDB Developer Guide*.

## Request Syntax

```
{
  "RequestItems": {
    "string": {
      "AttributesToGet": [ "string" ],
      "ConsistentRead": boolean,
      "ExpressionAttributeNames": {
        "string": "string"
      },
      "Keys": [
```

```
{
  "string" : {
    "B": blob,
    "BOOL": boolean,
    "BS": [ blob ],
    "L": [
      "AttributeValue"
    ],
    "M": {
      "string" : "AttributeValue"
    },
    "N": "string",
    "NS": [ "string" ],
    "NULL": boolean,
    "S": "string",
    "SS": [ "string" ]
  }
},
"ProjectionExpression": "string"
}
"ReturnConsumedCapacity": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

### RequestItems (p. 5)

A map of one or more table names and, for each table, a map that describes one or more items to retrieve from that table. Each table name can be used only once per `BatchGetItem` request.

Each element in the map of items to retrieve consists of the following:

- `ConsistentRead` - If `true`, a strongly consistent read is used; if `false` (the default), an eventually consistent read is used.
- `ExpressionAttributeNames` - One or more substitution tokens for attribute names in the `ProjectionExpression` parameter. The following are some use cases for using `ExpressionAttributeNames`:
  - To access an attribute whose name conflicts with a DynamoDB reserved word.
  - To create a placeholder for repeating occurrences of an attribute name in an expression.
  - To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the `#` character in an expression to dereference an attribute name. For example, consider the following attribute name:

- `Percentile`

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- `{"#P": "Percentile"}`

You could then use this substitution in an expression, as in this example:

- `#P = :val`

### Note

Tokens that begin with the `:` character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

- **Keys** - An array of primary key attribute values that define specific items in the table. For each primary key, you must provide *all* of the key attributes. For example, with a simple primary key, you only need to provide the partition key value. For a composite key, you must provide *both* the partition key value and the sort key value.
- **ProjectionExpression** - A string that identifies one or more attributes to retrieve from the table. These attributes can include scalars, sets, or elements of a JSON document. The attributes in the expression must be separated by commas.

If no attribute names are specified, then all attributes will be returned. If any of the requested attributes are not found, they will not appear in the result.

For more information, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

- **AttributesToGet** - This is a legacy parameter. Use **ProjectionExpression** instead. For more information, see [AttributesToGet](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [KeysAndAttributes \(p. 304\)](#) object map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### ReturnConsumedCapacity (p. 5)

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- **INDEXES** - The response includes the aggregate **ConsumedCapacity** for the operation, together with **ConsumedCapacity** for each table and secondary index that was accessed.

Note that some operations, such as **GetItem** and **BatchGetItem**, do not access any indexes at all. In these cases, specifying **INDEXES** will only return **ConsumedCapacity** information for table(s).

- **TOTAL** - The response includes only the aggregate **ConsumedCapacity** for the operation.
- **NONE** - No **ConsumedCapacity** details are included in the response.

Type: String

Valid Values: `INDEXES` | `TOTAL` | `NONE`

Required: No

## Response Syntax

```
{
  "ConsumedCapacity": [
    {
      "CapacityUnits": number,
      "GlobalSecondaryIndexes": {
        "string": {
```

```

        "CapacityUnits": number
    }
},
"LocalSecondaryIndexes": {
    "string" : {
        "CapacityUnits": number
    }
},
"Table": {
    "CapacityUnits": number
},
"TableName": "string"
}
],
"Responses": {
    "string" : [
        {
            "string" : {
                "B": blob,
                "BOOL": boolean,
                "BS": [ blob ],
                "L": [
                    "AttributeValue"
                ],
                "M": {
                    "string" : "AttributeValue"
                },
                "N": "string",
                "NS": [ "string" ],
                "NULL": boolean,
                "S": "string",
                "SS": [ "string" ]
            }
        }
    ]
},
"UnprocessedKeys": {
    "string" : {
        "AttributesToGet": [ "string" ],
        "ConsistentRead": boolean,
        "ExpressionAttributeNames": {
            "string" : "string"
        },
        "Keys": [
            {
                "string" : {
                    "B": blob,
                    "BOOL": boolean,
                    "BS": [ blob ],
                    "L": [
                        "AttributeValue"
                    ],
                    "M": {
                        "string" : "AttributeValue"
                    },
                    "N": "string",
                    "NS": [ "string" ],
                    "NULL": boolean,
                    "S": "string",
                    "SS": [ "string" ]
                }
            }
        ],
        "ProjectionExpression": "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.

### ConsumedCapacity (p. 7)

The read capacity units consumed by the entire `BatchGetItem` operation.

Each element consists of:

- `TableName` - The table that consumed the provisioned throughput.
- `CapacityUnits` - The total number of capacity units consumed.

Type: Array of [ConsumedCapacity \(p. 278\)](#) objects

### Responses (p. 7)

A map of table name to a list of items. Each object in `Responses` consists of a table name, along with a map of attribute data consisting of the data type and attribute value.

Type: String to array of string to [AttributeValue \(p. 254\)](#) object maps map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

Key Length Constraints: Maximum length of 65535.

### UnprocessedKeys (p. 7)

A map of tables and their respective keys that were not processed with the current response. The `UnprocessedKeys` value is in the same form as `RequestItems`, so the value can be provided directly to a subsequent `BatchGetItem` operation. For more information, see `RequestItems` in the Request Parameters section.

Each element consists of:

- `Keys` - An array of primary key attribute values that define specific items in the table.
- `ProjectionExpression` - One or more attributes to be retrieved from the table or index. By default, all attributes are returned. If a requested attribute is not found, it does not appear in the result.
- `ConsistentRead` - The consistency of a read operation. If set to `true`, then a strongly consistent read is used; otherwise, an eventually consistent read is used.

If there are no unprocessed keys remaining, the response contains an empty `UnprocessedKeys` map.

Type: String to [KeysAndAttributes \(p. 304\)](#) object map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### ProvisionedThroughputExceededException

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### ResourceNotFoundException

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Example

### Retrieve Items From Multiple Tables

The following sample requests attributes from two different tables.

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.BatchGetItem

{
  "RequestItems": {
    "Forum": {
      "Keys": [
        {
          "Name": {"S": "Amazon DynamoDB"}
        },
        {
          "Name": {"S": "Amazon RDS"}
        },
        {
          "Name": {"S": "Amazon Redshift"}
        }
      ],
      "ProjectionExpression": "Name, Threads, Messages, Views"
    },
    "Thread": {
      "Keys": [
        {
          "ForumName": {"S": "Amazon DynamoDB"},
          "Subject": {"S": "Concurrent reads"}
        }
      ]
    }
  }
}
```

```

    }
    ],
    "ProjectionExpression": "Tags, Message"
  }
},
"ReturnConsumedCapacity": "TOTAL"
}

```

## Sample Response

```

HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "Responses": {
    "Forum": [
      {
        "Name": {
          "S": "Amazon DynamoDB"
        },
        "Threads": {
          "N": "5"
        },
        "Messages": {
          "N": "19"
        },
        "Views": {
          "N": "35"
        }
      },
      {
        "Name": {
          "S": "Amazon RDS"
        },
        "Threads": {
          "N": "8"
        },
        "Messages": {
          "N": "32"
        },
        "Views": {
          "N": "38"
        }
      },
      {
        "Name": {
          "S": "Amazon Redshift"
        },
        "Threads": {
          "N": "12"
        },
        "Messages": {
          "N": "55"
        },
        "Views": {
          "N": "47"
        }
      }
    ]
  }
}

```



```
    "Thread": [
      {
        "Tags": {
          "SS": ["Reads", "MultipleUsers"]
        },
        "Message": {
          "S": "How many users can read a single data item at a time? Are there
any limits?"
        }
      }
    ],
    "UnprocessedKeys": {
    },
    "ConsumedCapacity": [
      {
        "TableName": "Forum",
        "CapacityUnits": 3
      },
      {
        "TableName": "Thread",
        "CapacityUnits": 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 V2](#)

## BatchWriteItem

Service: Amazon DynamoDB

The `BatchWriteItem` operation puts or deletes multiple items in one or more tables. A single call to `BatchWriteItem` can write up to 16 MB of data, which can comprise as many as 25 put or delete requests. Individual items to be written can be as large as 400 KB.

### Note

`BatchWriteItem` cannot update items. To update items, use the `UpdateItem` action.

The individual `PutItem` and `DeleteItem` operations specified in `BatchWriteItem` are atomic; however `BatchWriteItem` as a whole is not. If any requested operations fail because the table's provisioned throughput is exceeded or an internal processing failure occurs, the failed operations are returned in the `UnprocessedItems` response parameter. You can investigate and optionally resend the requests. Typically, you would call `BatchWriteItem` in a loop. Each iteration would check for unprocessed items and submit a new `BatchWriteItem` request with those unprocessed items until all items have been processed.

Note that if *none* of the items can be processed due to insufficient provisioned throughput on all of the tables in the request, then `BatchWriteItem` will return a `ProvisionedThroughputExceededException`.

### Important

If DynamoDB returns any unprocessed items, you should retry the batch operation on those items. However, *we strongly recommend that you use an exponential backoff algorithm*. If you retry the batch operation immediately, the underlying read or write requests can still fail due to throttling on the individual tables. If you delay the batch operation using exponential backoff, the individual requests in the batch are much more likely to succeed.

For more information, see [Batch Operations and Error Handling](#) in the *Amazon DynamoDB Developer Guide*.

With `BatchWriteItem`, you can efficiently write or delete large amounts of data, such as from Amazon Elastic MapReduce (EMR), or copy data from another database into DynamoDB. In order to improve performance with these large-scale operations, `BatchWriteItem` does not behave in the same way as individual `PutItem` and `DeleteItem` calls would. For example, you cannot specify conditions on individual put and delete requests, and `BatchWriteItem` does not return deleted items in the response.

If you use a programming language that supports concurrency, you can use threads to write items in parallel. Your application must include the necessary logic to manage the threads. With languages that don't support threading, you must update or delete the specified items one at a time. In both situations, `BatchWriteItem` performs the specified put and delete operations in parallel, giving you the power of the thread pool approach without having to introduce complexity into your application.

Parallel processing reduces latency, but each specified put and delete request consumes the same number of write capacity units whether it is processed in parallel or not. Delete operations on nonexistent items consume one write capacity unit.

If one or more of the following is true, DynamoDB rejects the entire batch write operation:

- One or more tables specified in the `BatchWriteItem` request does not exist.
- Primary key attributes specified on an item in the request do not match those in the corresponding table's primary key schema.
- You try to perform multiple operations on the same item in the same `BatchWriteItem` request. For example, you cannot put and delete the same item in the same `BatchWriteItem` request.
- Your request contains at least two items with identical hash and range keys (which essentially is two put operations).
- There are more than 25 requests in the batch.

- Any individual item in a batch exceeds 400 KB.
- The total request size exceeds 16 MB.

## Request Syntax

```
{
  "RequestItems": {
    "string" : [
      {
        "DeleteRequest": {
          "Key": {
            "string" : {
              "B": blob,
              "BOOL": boolean,
              "BS": [ blob ],
              "L": [
                "AttributeValue"
              ],
              "M": {
                "string" : "AttributeValue"
              },
              "N": "string",
              "NS": [ "string" ],
              "NULL": boolean,
              "S": "string",
              "SS": [ "string" ]
            }
          }
        },
        "PutRequest": {
          "Item": {
            "string" : {
              "B": blob,
              "BOOL": boolean,
              "BS": [ blob ],
              "L": [
                "AttributeValue"
              ],
              "M": {
                "string" : "AttributeValue"
              },
              "N": "string",
              "NS": [ "string" ],
              "NULL": boolean,
              "S": "string",
              "SS": [ "string" ]
            }
          }
        }
      ]
    },
    "ReturnConsumedCapacity": "string",
    "ReturnItemCollectionMetrics": "string"
  }
}
```

## Request Parameters

The request accepts the following data in JSON format.

**Note**

In the following list, the required parameters are described first.

### RequestItems (p. 14)

A map of one or more table names and, for each table, a list of operations to be performed (`DeleteRequest` or `PutRequest`). Each element in the map consists of the following:

- `DeleteRequest` - Perform a `DeleteItem` operation on the specified item. The item to be deleted is identified by a `Key` subelement:
  - `Key` - A map of primary key attribute values that uniquely identify the item. Each entry in this map consists of an attribute name and an attribute value. For each primary key, you must provide *all* of the key attributes. For example, with a simple primary key, you only need to provide a value for the partition key. For a composite primary key, you must provide values for *both* the partition key and the sort key.
- `PutRequest` - Perform a `PutItem` operation on the specified item. The item to be put is identified by an `Item` subelement:
  - `Item` - A map of attributes and their values. Each entry in this map consists of an attribute name and an attribute value. Attribute values must not be null; string and binary type attributes must have lengths greater than zero; and set type attributes must not be empty. Requests that contain empty values will be rejected with a `ValidationException` exception.

If you specify any attributes that are part of an index key, then the data types for those attributes must match those of the schema in the table's attribute definition.

Type: String to array of [WriteRequest \(p. 347\)](#) objects map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

Array Members: Minimum number of 1 item. Maximum number of 25 items.

Required: Yes

### ReturnConsumedCapacity (p. 14)

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- `INDEXES` - The response includes the aggregate `ConsumedCapacity` for the operation, together with `ConsumedCapacity` for each table and secondary index that was accessed.

Note that some operations, such as `GetItem` and `BatchGetItem`, do not access any indexes at all. In these cases, specifying `INDEXES` will only return `ConsumedCapacity` information for table(s).

- `TOTAL` - The response includes only the aggregate `ConsumedCapacity` for the operation.
- `NONE` - No `ConsumedCapacity` details are included in the response.

Type: String

Valid Values: `INDEXES` | `TOTAL` | `NONE`

Required: No

### ReturnItemCollectionMetrics (p. 14)

Determines whether item collection metrics are returned. If set to `SIZE`, the response includes statistics about item collections, if any, that were modified during the operation are returned in the response. If set to `NONE` (the default), no statistics are returned.

Type: String

Valid Values: SIZE | NONE

Required: No

## Response Syntax

```
{
  "ConsumedCapacity": [
    {
      "CapacityUnits": number,
      "GlobalSecondaryIndexes": {
        "string": {
          "CapacityUnits": number
        }
      },
      "LocalSecondaryIndexes": {
        "string": {
          "CapacityUnits": number
        }
      },
      "Table": {
        "CapacityUnits": number
      },
      "TableName": "string"
    }
  ],
  "ItemCollectionMetrics": {
    "string": [
      {
        "ItemCollectionKey": {
          "string": {
            "B": blob,
            "BOOL": boolean,
            "BS": [ blob ],
            "L": [
              "AttributeValue"
            ],
            "M": {
              "string": "AttributeValue"
            },
            "N": "string",
            "NS": [ "string" ],
            "NULL": boolean,
            "S": "string",
            "SS": [ "string" ]
          }
        },
        "SizeEstimateRangeGB": [ number ]
      }
    ]
  },
  "UnprocessedItems": {
    "string": [
      {
        "DeleteRequest": {
          "Key": {
            "string": {
              "B": blob,
              "BOOL": boolean,
              "BS": [ blob ],
              "L": [
                "AttributeValue"
              ],

```

```

        "M": {
            "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
}
},
"PutRequest": {
    "Item": {
        "string" : {
            "B": blob,
            "BOOL": boolean,
            "BS": [ blob ],
            "L": [
                "AttributeValue"
            ],
            "M": {
                "string" : "AttributeValue"
            },
            "N": "string",
            "NS": [ "string" ],
            "NULL": boolean,
            "S": "string",
            "SS": [ "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.

### ConsumedCapacity (p. 16)

The capacity units consumed by the entire `BatchWriteItem` operation.

Each element consists of:

- `TableName` - The table that consumed the provisioned throughput.
- `CapacityUnits` - The total number of capacity units consumed.

Type: Array of [ConsumedCapacity \(p. 278\)](#) objects

### ItemCollectionMetrics (p. 16)

A list of tables that were processed by `BatchWriteItem` and, for each table, information about any item collections that were affected by individual `DeleteItem` or `PutItem` operations.

Each entry consists of the following subelements:

- `ItemCollectionKey` - The partition key value of the item collection. This is the same as the partition key value of the item.
- `SizeEstimateRangeGB` - An estimate of item collection size, expressed in GB. This is a two-element array containing a lower bound and an upper bound for the estimate. The estimate

includes the size of all the items in the table, plus the size of all attributes projected into all of the local secondary indexes on the table. Use this estimate to measure whether a local secondary index is approaching its size limit.

The estimate is subject to change over time; therefore, do not rely on the precision or accuracy of the estimate.

Type: String to array of [ItemCollectionMetrics \(p. 303\)](#) objects map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

### UnprocessedItems (p. 16)

A map of tables and requests against those tables that were not processed. The `UnprocessedItems` value is in the same form as `RequestItems`, so you can provide this value directly to a subsequent `BatchGetItem` operation. For more information, see `RequestItems` in the Request Parameters section.

Each `UnprocessedItems` entry consists of a table name and, for that table, a list of operations to perform (`DeleteRequest` or `PutRequest`).

- `DeleteRequest` - Perform a `DeleteItem` operation on the specified item. The item to be deleted is identified by a `Key` subelement:
  - `Key` - A map of primary key attribute values that uniquely identify the item. Each entry in this map consists of an attribute name and an attribute value.
- `PutRequest` - Perform a `PutItem` operation on the specified item. The item to be put is identified by an `Item` subelement:
  - `Item` - A map of attributes and their values. Each entry in this map consists of an attribute name and an attribute value. Attribute values must not be null; string and binary type attributes must have lengths greater than zero; and set type attributes must not be empty. Requests that contain empty values will be rejected with a `ValidationException` exception.

If you specify any attributes that are part of an index key, then the data types for those attributes must match those of the schema in the table's attribute definition.

If there are no unprocessed items remaining, the response contains an empty `UnprocessedItems` map.

Type: String to array of [WriteRequest \(p. 347\)](#) objects map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

Array Members: Minimum number of 1 item. Maximum number of 25 items.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### ItemCollectionSizeLimitExceededException

An item collection is too large. This exception is only returned for tables that have one or more local secondary indexes.

HTTP Status Code: 400

#### **ProvisionedThroughputExceededException**

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

#### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Example

### Multiple Operations on One Table

This example writes several items to the Forum table. The response shows that the final put operation failed, possibly because the application exceeded the provisioned throughput on the table. The `UnprocessedItems` object shows the unsuccessful put request. The application can call `BatchWriteItem` again to address such unprocessed requests.

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.BatchWriteItem

{
  "RequestItems": {
    "Forum": [
      {
        "PutRequest": {
          "Item": {
            "Name": {
              "S": "Amazon DynamoDB"
            },
            "Category": {
              "S": "Amazon Web Services"
            }
          }
        }
      },
      {
        "PutRequest": {
          "Item": {
            "Name": {
              "S": "Amazon RDS"
            }
          }
        }
      }
    ]
  }
}
```



```

        "Category": {
            "S": "Amazon Web Services"
        }
    },
    {
        "PutRequest": {
            "Item": {
                "Name": {
                    "S": "Amazon Redshift"
                },
                "Category": {
                    "S": "Amazon Web Services"
                }
            }
        }
    },
    {
        "PutRequest": {
            "Item": {
                "Name": {
                    "S": "Amazon ElastiCache"
                },
                "Category": {
                    "S": "Amazon Web Services"
                }
            }
        }
    }
],
"ReturnConsumedCapacity": "TOTAL"
}

```

## Sample Response

```

HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
    "UnprocessedItems": {
        "Forum": [
            {
                "PutRequest": {
                    "Item": {
                        "Name": {
                            "S": "Amazon ElastiCache"
                        },
                        "Category": {
                            "S": "Amazon Web Services"
                        }
                    }
                }
            }
        ]
    },
    "ConsumedCapacity": [
        {

```

```
        "TableName": "Forum",  
        "CapacityUnits": 3  
    }  
]  
}
```

## 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 V2](#)

# CreateBackup

Service: Amazon DynamoDB

Creates a backup for an existing table.

Each time you create an On-Demand Backup, the entire table data is backed up. There is no limit to the number of on-demand backups that can be taken.

When you create an On-Demand Backup, a time marker of the request is cataloged, and the backup is created asynchronously, by applying all changes until the time of the request to the last full table snapshot. Backup requests are processed instantaneously and become available for restore within minutes.

You can call `CreateBackup` at a maximum rate of 50 times per second.

All backups in DynamoDB work without consuming any provisioned throughput on the table.

If you submit a backup request on 2018-12-14 at 14:25:00, the backup is guaranteed to contain all data committed to the table up to 14:24:00, and data committed after 14:26:00 will not be. The backup may or may not contain data modifications made between 14:24:00 and 14:26:00. On-Demand Backup does not support causal consistency.

Along with data, the following are also included on the backups:

- Global secondary indexes (GSIs)
- Local secondary indexes (LSIs)
- Streams
- Provisioned read and write capacity

## Request Syntax

```
{  
  "BackupName": "string",  
  "TableName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### BackupName (p. 22)

Specified name for the backup.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### TableName (p. 22)

The name of the table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{
  "BackupDetails": {
    "BackupArn": "string",
    "BackupCreationDateTime": number,
    "BackupExpiryDateTime": number,
    "BackupName": "string",
    "BackupSizeBytes": number,
    "BackupStatus": "string",
    "BackupType": "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.

### BackupDetails (p. 23)

Contains the details of the backup created for the table.

Type: [BackupDetails \(p. 270\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### BackupInUseException

There is another ongoing conflicting backup control plane operation on the table. The backups is either being created, deleted or restored to a table.

HTTP Status Code: 400

### ContinuousBackupsUnavailableException

Backups have not yet been enabled for this table.

HTTP Status Code: 400

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### LimitExceededException

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

#### **TableInUseException**

A target table with the specified name is either being created or deleted.

HTTP Status Code: 400

#### **TableNotFoundException**

A source table with the name `TableName` does not currently exist within the subscriber's account.

HTTP Status Code: 400

## 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 V2](#)

# CreateGlobalTable

Service: Amazon DynamoDB

Creates a global table from an existing table. A global table creates a replication relationship between two or more DynamoDB tables with the same table name in the provided regions.

If you want to add a new replica table to a global table, each of the following conditions must be true:

- The table must have the same primary key as all of the other replicas.
- The table must have the same name as all of the other replicas.
- The table must have DynamoDB Streams enabled, with the stream containing both the new and the old images of the item.
- None of the replica tables in the global table can contain any data.

If global secondary indexes are specified, then the following conditions must also be met:

- The global secondary indexes must have the same name.
- The global secondary indexes must have the same hash key and sort key (if present).

## Important

Write capacity settings should be set consistently across your replica tables and secondary indexes. DynamoDB strongly recommends enabling auto scaling to manage the write capacity settings for all of your global tables replicas and indexes.

If you prefer to manage write capacity settings manually, you should provision equal replicated write capacity units to your replica tables. You should also provision equal replicated write capacity units to matching secondary indexes across your global table.

## Request Syntax

```
{
  "GlobalTableName": "string",
  "ReplicationGroup": [
    {
      "RegionName": "string"
    }
  ]
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### GlobalTableName (p. 25)

The global table name.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### ReplicationGroup (p. 25)

The regions where the global table needs to be created.

Type: Array of [Replica \(p. 321\)](#) objects

Required: Yes

## Response Syntax

```
{
  "GlobalTableDescription": {
    "CreationDateTime": number,
    "GlobalTableArn": "string",
    "GlobalTableName": "string",
    "GlobalTableStatus": "string",
    "ReplicationGroup": [
      {
        "RegionName": "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.

### GlobalTableDescription (p. 26)

Contains the details of the global table.

Type: [GlobalTableDescription \(p. 300\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### GlobalTableAlreadyExistsException

The specified global table already exists.

HTTP Status Code: 400

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### LimitExceededException

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include CreateTable, UpdateTable, DeleteTable, UpdateTimeToLive, RestoreTableFromBackup, and RestoreTableToPointInTime.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

**TableNotFoundException**

A source table with the name `TableName` does not currently exist within the subscriber's account.

HTTP Status Code: 400

## 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 V2](#)



# CreateTable

Service: Amazon DynamoDB

The CreateTable operation adds a new table to your account. In an AWS account, table names must be unique within each region. That is, you can have two tables with same name if you create the tables in different regions.

CreateTable is an asynchronous operation. Upon receiving a CreateTable request, DynamoDB immediately returns a response with a TableStatus of CREATING. After the table is created, DynamoDB sets the TableStatus to ACTIVE. You can perform read and write operations only on an ACTIVE table.

You can optionally define secondary indexes on the new table, as part of the CreateTable operation. If you want to create multiple tables with secondary indexes on them, you must create the tables sequentially. Only one table with secondary indexes can be in the CREATING state at any given time.

You can use the DescribeTable action to check the table status.

## Request Syntax

```
{
  "AttributeDefinitions": [
    {
      "AttributeName": "string",
      "AttributeType": "string"
    }
  ],
  "GlobalSecondaryIndexes": [
    {
      "IndexName": "string",
      "KeySchema": [
        {
          "AttributeName": "string",
          "KeyType": "string"
        }
      ],
      "Projection": {
        "NonKeyAttributes": [ "string" ],
        "ProjectionType": "string"
      },
      "ProvisionedThroughput": {
        "ReadCapacityUnits": number,
        "WriteCapacityUnits": number
      }
    }
  ],
  "KeySchema": [
    {
      "AttributeName": "string",
      "KeyType": "string"
    }
  ],
  "LocalSecondaryIndexes": [
    {
      "IndexName": "string",
      "KeySchema": [
        {
          "AttributeName": "string",
          "KeyType": "string"
        }
      ],
      "Projection": {
```

```
        "NonKeyAttributes": [ "string" ],
        "ProjectionType": "string"
    }
},
"ProvisionedThroughput": {
    "ReadCapacityUnits": number,
    "WriteCapacityUnits": number
},
"SSESpecification": {
    "Enabled": boolean,
    "KMSMasterKeyId": "string",
    "SSEType": "string"
},
"StreamSpecification": {
    "StreamEnabled": boolean,
    "StreamViewType": "string"
},
"TableName": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### AttributeDefinitions (p. 28)

An array of attributes that describe the key schema for the table and indexes.

Type: Array of [AttributeDefinition](#) (p. 253) objects

Required: Yes

#### KeySchema (p. 28)

Specifies the attributes that make up the primary key for a table or an index. The attributes in `KeySchema` must also be defined in the `AttributeDefinitions` array. For more information, see [Data Model](#) in the *Amazon DynamoDB Developer Guide*.

Each `KeySchemaElement` in the array is composed of:

- `AttributeName` - The name of this key attribute.
- `KeyType` - The role that the key attribute will assume:
  - `HASH` - partition key
  - `RANGE` - sort key

### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

For a simple primary key (partition key), you must provide exactly one element with a `KeyType` of `HASH`.

For a composite primary key (partition key and sort key), you must provide exactly two elements, in this order: The first element must have a `KeyType` of `HASH`, and the second element must have a `KeyType` of `RANGE`.

For more information, see [Specifying the Primary Key](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: Yes

#### [ProvisionedThroughput](#) (p. 28)

Represents the provisioned throughput settings for a specified table or index. The settings can be modified using the `UpdateTable` operation.

For current minimum and maximum provisioned throughput values, see [Limits](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ProvisionedThroughput](#) (p. 317) object

Required: Yes

#### [TableName](#) (p. 28)

The name of the table to create.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### [GlobalSecondaryIndexes](#) (p. 28)

One or more global secondary indexes (the maximum is five) to be created on the table. Each global secondary index in the array includes the following:

- `IndexName` - The name of the global secondary index. Must be unique only for this table.
- `KeySchema` - Specifies the key schema for the global secondary index.
- `Projection` - Specifies attributes that are copied (projected) from the table into the index. These are in addition to the primary key attributes and index key attributes, which are automatically projected. Each attribute specification is composed of:
  - `ProjectionType` - One of the following:
    - `KEYS_ONLY` - Only the index and primary keys are projected into the index.
    - `INCLUDE` - Only the specified table attributes are projected into the index. The list of projected attributes are in `NonKeyAttributes`.
    - `ALL` - All of the table attributes are projected into the index.
  - `NonKeyAttributes` - A list of one or more non-key attribute names that are projected into the secondary index. The total count of attributes provided in `NonKeyAttributes`, summed across all of the secondary indexes, must not exceed 20. If you project the same attribute into two different indexes, this counts as two distinct attributes when determining the total.
- `ProvisionedThroughput` - The provisioned throughput settings for the global secondary index, consisting of read and write capacity units.

Type: Array of [GlobalSecondaryIndex](#) (p. 291) objects

Required: No

#### [LocalSecondaryIndexes](#) (p. 28)

One or more local secondary indexes (the maximum is five) to be created on the table. Each index is scoped to a given partition key value. There is a 10 GB size limit per partition key value; otherwise, the size of a local secondary index is unconstrained.

Each local secondary index in the array includes the following:

- **IndexName** - The name of the local secondary index. Must be unique only for this table.
- **KeySchema** - Specifies the key schema for the local secondary index. The key schema must begin with the same partition key as the table.
- **Projection** - Specifies attributes that are copied (projected) from the table into the index. These are in addition to the primary key attributes and index key attributes, which are automatically projected. Each attribute specification is composed of:
  - **ProjectionType** - One of the following:
    - **KEYS\_ONLY** - Only the index and primary keys are projected into the index.
    - **INCLUDE** - Only the specified table attributes are projected into the index. The list of projected attributes are in **NonKeyAttributes**.
    - **ALL** - All of the table attributes are projected into the index.
  - **NonKeyAttributes** - A list of one or more non-key attribute names that are projected into the secondary index. The total count of attributes provided in **NonKeyAttributes**, summed across all of the secondary indexes, must not exceed 20. If you project the same attribute into two different indexes, this counts as two distinct attributes when determining the total.

Type: Array of [LocalSecondaryIndex](#) (p. 308) objects

Required: No

### **SSSEncryptionSpecification** (p. 28)

Represents the settings used to enable server-side encryption.

Type: [SSSEncryptionSpecification](#) (p. 336) object

Required: No

### **StreamSpecification** (p. 28)

The settings for DynamoDB Streams on the table. These settings consist of:

- **StreamEnabled** - Indicates whether Streams is to be enabled (true) or disabled (false).
- **StreamViewType** - When an item in the table is modified, **StreamViewType** determines what information is written to the table's stream. Valid values for **StreamViewType** are:
  - **KEYS\_ONLY** - Only the key attributes of the modified item are written to the stream.
  - **NEW\_IMAGE** - The entire item, as it appears after it was modified, is written to the stream.
  - **OLD\_IMAGE** - The entire item, as it appeared before it was modified, is written to the stream.
  - **NEW\_AND\_OLD\_IMAGES** - Both the new and the old item images of the item are written to the stream.

Type: [StreamSpecification](#) (p. 337) object

Required: No

## Response Syntax

```
{
  "TableDescription": {
    "AttributeDefinitions": [
      {
        "AttributeName": "string",
        "AttributeType": "string"
      }
    ],
    ...
  }
}
```

```

"CreationDateTime": number,
"GlobalSecondaryIndexes": [
  {
    "Backfilling": boolean,
    "IndexArn": "string",
    "IndexName": "string",
    "IndexSizeBytes": number,
    "IndexStatus": "string",
    "ItemCount": number,
    "KeySchema": [
      {
        "AttributeName": "string",
        "KeyType": "string"
      }
    ],
    "Projection": {
      "NonKeyAttributes": [ "string" ],
      "ProjectionType": "string"
    },
    "ProvisionedThroughput": {
      "LastDecreaseDateTime": number,
      "LastIncreaseDateTime": number,
      "NumberOfDecreasesToday": number,
      "ReadCapacityUnits": number,
      "WriteCapacityUnits": number
    }
  }
],
"ItemCount": number,
"KeySchema": [
  {
    "AttributeName": "string",
    "KeyType": "string"
  }
],
"LatestStreamArn": "string",
"LatestStreamLabel": "string",
"LocalSecondaryIndexes": [
  {
    "IndexArn": "string",
    "IndexName": "string",
    "IndexSizeBytes": number,
    "ItemCount": number,
    "KeySchema": [
      {
        "AttributeName": "string",
        "KeyType": "string"
      }
    ],
    "Projection": {
      "NonKeyAttributes": [ "string" ],
      "ProjectionType": "string"
    }
  }
],
"ProvisionedThroughput": {
  "LastDecreaseDateTime": number,
  "LastIncreaseDateTime": number,
  "NumberOfDecreasesToday": number,
  "ReadCapacityUnits": number,
  "WriteCapacityUnits": number
},
"RestoreSummary": {
  "RestoreDateTime": number,
  "RestoreInProgress": boolean,
  "SourceBackupArn": "string",

```

```
    "SourceTableArn": "string"
  },
  "SSEDescription": {
    "KMSMasterKeyArn": "string",
    "SSEType": "string",
    "Status": "string"
  },
  "StreamSpecification": {
    "StreamEnabled": boolean,
    "StreamViewType": "string"
  },
  "TableArn": "string",
  "TableId": "string",
  "TableName": "string",
  "TableSizeBytes": number,
  "TableStatus": "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.

### TableDescription (p. 31)

Represents the properties of the table.

Type: [TableDescription](#) (p. 338) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### LimitExceededException

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

### ResourceInUseException

The operation conflicts with the resource's availability. For example, you attempted to recreate an existing table, or tried to delete a table currently in the `CREATING` state.

HTTP Status Code: 400

## Example

### Create a Table

This example creates a table named Thread. The table primary key consists of ForumName (partition key) and Subject (sort key). A local secondary index is also created; its key consists of ForumName (partition key) and LastPostDateTime (sort key).

### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.CreateTable

{
  "AttributeDefinitions": [
    {
      "AttributeName": "ForumName",
      "AttributeType": "S"
    },
    {
      "AttributeName": "Subject",
      "AttributeType": "S"
    },
    {
      "AttributeName": "LastPostDateTime",
      "AttributeType": "S"
    }
  ],
  "TableName": "Thread",
  "KeySchema": [
    {
      "AttributeName": "ForumName",
      "KeyType": "HASH"
    },
    {
      "AttributeName": "Subject",
      "KeyType": "RANGE"
    }
  ],
  "LocalSecondaryIndexes": [
    {
      "IndexName": "LastPostIndex",
      "KeySchema": [
        {
          "AttributeName": "ForumName",
          "KeyType": "HASH"
        },
        {
          "AttributeName": "LastPostDateTime",
          "KeyType": "RANGE"
        }
      ],
      "Projection": {
        "ProjectionType": "KEYS_ONLY"
      }
    }
  ]
}
```

```
    }
  ],
  "ProvisionedThroughput": {
    "ReadCapacityUnits": 5,
    "WriteCapacityUnits": 5
  }
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "TableDescription": {
    "TableArn": "arn:aws:dynamodb:us-west-2:123456789012:table/Thread",
    "AttributeDefinitions": [
      {
        "AttributeName": "ForumName",
        "AttributeType": "S"
      },
      {
        "AttributeName": "LastPostDateTime",
        "AttributeType": "S"
      },
      {
        "AttributeName": "Subject",
        "AttributeType": "S"
      }
    ],
    "CreationDateTime": 1.36372808007E9,
    "ItemCount": 0,
    "KeySchema": [
      {
        "AttributeName": "ForumName",
        "KeyType": "HASH"
      },
      {
        "AttributeName": "Subject",
        "KeyType": "RANGE"
      }
    ],
    "LocalSecondaryIndexes": [
      {
        "IndexArn": "arn:aws:dynamodb:us-west-2:123456789012:table/Thread/index/LastPostIndex",
        "IndexName": "LastPostIndex",
        "IndexSizeBytes": 0,
        "ItemCount": 0,
        "KeySchema": [
          {
            "AttributeName": "ForumName",
            "KeyType": "HASH"
          },
          {
            "AttributeName": "LastPostDateTime",
            "KeyType": "RANGE"
          }
        ]
      }
    ]
  }
}
```



```
        "Projection": {
            "ProjectionType": "KEYS_ONLY"
        }
    },
    "ProvisionedThroughput": {
        "NumberOfDecreasesToday": 0,
        "ReadCapacityUnits": 5,
        "WriteCapacityUnits": 5
    },
    "TableName": "Thread",
    "TableSizeBytes": 0,
    "TableStatus": "CREATING"
}
}
```

## 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 V2](#)

# DeleteBackup

Service: Amazon DynamoDB

Deletes an existing backup of a table.

You can call DeleteBackup at a maximum rate of 10 times per second.

## Request Syntax

```
{  
  "BackupArn": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### BackupArn (p. 37)

The ARN associated with the backup.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: Yes

## Response Syntax

```
{  
  "BackupDescription": {  
    "BackupDetails": {  
      "BackupArn": "string",  
      "BackupCreationDateTime": number,  
      "BackupExpiryDateTime": number,  
      "BackupName": "string",  
      "BackupSizeBytes": number,  
      "BackupStatus": "string",  
      "BackupType": "string"  
    },  
    "SourceTableDetails": {  
      "ItemCount": number,  
      "KeySchema": [  
        {  
          "AttributeName": "string",  
          "KeyType": "string"  
        }  
      ],  
      "ProvisionedThroughput": {  
        "ReadCapacityUnits": number,  
        "WriteCapacityUnits": number  
      },  
      "TableArn": "string",  
      "TableCreationDateTime": number,  
      "TableId": "string",  
    }  
  }  
}
```

```

    "TableName": "string",
    "TableSizeBytes": number
  },
  "SourceTableFeatureDetails": {
    "GlobalSecondaryIndexes": [
      {
        "IndexName": "string",
        "KeySchema": [
          {
            "AttributeName": "string",
            "KeyType": "string"
          }
        ],
        "Projection": {
          "NonKeyAttributes": [ "string" ],
          "ProjectionType": "string"
        },
        "ProvisionedThroughput": {
          "ReadCapacityUnits": number,
          "WriteCapacityUnits": number
        }
      }
    ],
    "LocalSecondaryIndexes": [
      {
        "IndexName": "string",
        "KeySchema": [
          {
            "AttributeName": "string",
            "KeyType": "string"
          }
        ],
        "Projection": {
          "NonKeyAttributes": [ "string" ],
          "ProjectionType": "string"
        }
      }
    ],
    "SSEDescription": {
      "KMSEMasterKeyArn": "string",
      "SSEType": "string",
      "Status": "string"
    },
    "StreamDescription": {
      "StreamEnabled": boolean,
      "StreamViewType": "string"
    },
    "TimeToLiveDescription": {
      "AttributeName": "string",
      "TimeToLiveStatus": "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.

### BackupDescription (p. 37)

Contains the description of the backup created for the table.

Type: [BackupDescription](#) (p. 269) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **BackupInUseException**

There is another ongoing conflicting backup control plane operation on the table. The backup is either being created, deleted or restored to a table.

HTTP Status Code: 400

### **BackupNotFoundException**

Backup not found for the given BackupARN.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **LimitExceededException**

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

## 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 V2](#)

# DeleteItem

Service: Amazon DynamoDB

Deletes a single item in a table by primary key. You can perform a conditional delete operation that deletes the item if it exists, or if it has an expected attribute value.

In addition to deleting an item, you can also return the item's attribute values in the same operation, using the `ReturnValues` parameter.

Unless you specify conditions, the `DeleteItem` is an idempotent operation; running it multiple times on the same item or attribute does *not* result in an error response.

Conditional deletes are useful for deleting items only if specific conditions are met. If those conditions are met, DynamoDB performs the delete. Otherwise, the item is not deleted.

## Request Syntax

```
{
  "ConditionalOperator": "string",
  "ConditionExpression": "string",
  "Expected": {
    "string": {
      "AttributeValueList": [
        {
          "B": blob,
          "BOOL": boolean,
          "BS": [ blob ],
          "L": [
            "AttributeValue"
          ],
          "M": {
            "string": "AttributeValue"
          },
          "N": "string",
          "NS": [ "string" ],
          "NULL": boolean,
          "S": "string",
          "SS": [ "string" ]
        }
      ],
      "ComparisonOperator": "string",
      "Exists": boolean,
      "Value": {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
          "AttributeValue"
        ],
        "M": {
          "string": "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
      }
    }
  },
  "ExpressionAttributeNames": {
    "string": "string"
  }
}
```

```

    },
    "ExpressionAttributeValues": {
      "string": {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
          "AttributeValue"
        ],
        "M": {
          "string": "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
      }
    },
    "Key": {
      "string": {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
          "AttributeValue"
        ],
        "M": {
          "string": "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
      }
    },
    "ReturnConsumedCapacity": "string",
    "ReturnItemCollectionMetrics": "string",
    "ReturnValues": "string",
    "TableName": "string"
  }
}

```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

### Key (p. 40)

A map of attribute names to `AttributeValue` objects, representing the primary key of the item to delete.

For the primary key, you must provide all of the attributes. For example, with a simple primary key, you only need to provide a value for the partition key. For a composite primary key, you must provide values for both the partition key and the sort key.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: Yes

### TableName (p. 40)

The name of the table from which to delete the item.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### ConditionalOperator (p. 40)

This is a legacy parameter. Use `ConditionExpression` instead. For more information, see [ConditionalOperator](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Valid Values: AND | OR

Required: No

### ConditionExpression (p. 40)

A condition that must be satisfied in order for a conditional `DeleteItem` to succeed.

An expression can contain any of the following:

- Functions: `attribute_exists` | `attribute_not_exists` | `attribute_type` | `contains` | `begins_with` | `size`

These function names are case-sensitive.

- Comparison operators: `=` | `<>` | `<` | `>` | `<=` | `>=` | `BETWEEN` | `IN`
- Logical operators: AND | OR | NOT

For more information on condition expressions, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

### Expected (p. 40)

This is a legacy parameter. Use `ConditionExpression` instead. For more information, see [Expected](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [ExpectedAttributeValue \(p. 287\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### ExpressionAttributeNames (p. 40)

One or more substitution tokens for attribute names in an expression. The following are some use cases for using `ExpressionAttributeNames`:

- To access an attribute whose name conflicts with a DynamoDB reserved word.
- To create a placeholder for repeating occurrences of an attribute name in an expression.
- To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the # character in an expression to dereference an attribute name. For example, consider the following attribute name:

- Percentile

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- { "#P": "Percentile" }

You could then use this substitution in an expression, as in this example:

- #P = :val

**Note**

Tokens that begin with the : character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to string map

Value Length Constraints: Maximum length of 65535.

Required: No

**[ExpressionAttributeValues \(p. 40\)](#)**

One or more values that can be substituted in an expression.

Use the : (colon) character in an expression to dereference an attribute value. For example, suppose that you wanted to check whether the value of the *ProductStatus* attribute was one of the following:

Available | Backordered | Discontinued

You would first need to specify `ExpressionAttributeValues` as follows:

```
{ ":avail":{"S":"Available"}, ":back":{"S":"Backordered"}, ":disc":  
{"S":"Discontinued"} }
```

You could then use these values in an expression, such as this:

```
ProductStatus IN (:avail, :back, :disc)
```

For more information on expression attribute values, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [AttributeValue \(p. 254\)](#) object map

Required: No

**[ReturnConsumedCapacity \(p. 40\)](#)**

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- **INDEXES** - The response includes the aggregate `ConsumedCapacity` for the operation, together with `ConsumedCapacity` for each table and secondary index that was accessed.

Note that some operations, such as `GetItem` and `BatchGetItem`, do not access any indexes at all. In these cases, specifying **INDEXES** will only return `ConsumedCapacity` information for table(s).



- **TOTAL** - The response includes only the aggregate `ConsumedCapacity` for the operation.
- **NONE** - No `ConsumedCapacity` details are included in the response.

Type: String

Valid Values: `INDEXES` | `TOTAL` | `NONE`

Required: No

#### **ReturnItemCollectionMetrics (p. 40)**

Determines whether item collection metrics are returned. If set to `SIZE`, the response includes statistics about item collections, if any, that were modified during the operation are returned in the response. If set to `NONE` (the default), no statistics are returned.

Type: String

Valid Values: `SIZE` | `NONE`

Required: No

#### **ReturnValues (p. 40)**

Use `ReturnValues` if you want to get the item attributes as they appeared before they were deleted. For `DeleteItem`, the valid values are:

- **NONE** - If `ReturnValues` is not specified, or if its value is `NONE`, then nothing is returned. (This setting is the default for `ReturnValues`.)
- **ALL\_OLD** - The content of the old item is returned.

##### **Note**

The `ReturnValues` parameter is used by several DynamoDB operations; however, `DeleteItem` does not recognize any values other than `NONE` or `ALL_OLD`.

Type: String

Valid Values: `NONE` | `ALL_OLD` | `UPDATED_OLD` | `ALL_NEW` | `UPDATED_NEW`

Required: No

## **Response Syntax**

```
{
  "Attributes": {
    "string": {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string": "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  },
}
```

```

"ConsumedCapacity": {
  "CapacityUnits": number,
  "GlobalSecondaryIndexes": {
    "string" : {
      "CapacityUnits": number
    }
  },
  "LocalSecondaryIndexes": {
    "string" : {
      "CapacityUnits": number
    }
  },
  "Table": {
    "CapacityUnits": number
  },
  "TableName": "string"
},
"ItemCollectionMetrics": {
  "ItemCollectionKey": {
    "string" : {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string" : "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  },
  "SizeEstimateRangeGB": [ 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.

### Attributes (p. 44)

A map of attribute names to `AttributeValue` objects, representing the item as it appeared before the `DeleteItem` operation. This map appears in the response only if `ReturnValues` was specified as `ALL_OLD` in the request.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

### ConsumedCapacity (p. 44)

The capacity units consumed by the `DeleteItem` operation. The data returned includes the total provisioned throughput consumed, along with statistics for the table and any indexes involved in the operation. `ConsumedCapacity` is only returned if the `ReturnConsumedCapacity` parameter was specified. For more information, see [Provisioned Throughput](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ConsumedCapacity](#) (p. 278) object

**ItemCollectionMetrics** (p. 44)

Information about item collections, if any, that were affected by the `DeleteItem` operation. `ItemCollectionMetrics` is only returned if the `ReturnItemCollectionMetrics` parameter was specified. If the table does not have any local secondary indexes, this information is not returned in the response.

Each `ItemCollectionMetrics` element consists of:

- `ItemCollectionKey` - The partition key value of the item collection. This is the same as the partition key value of the item itself.
- `SizeEstimateRangeGB` - An estimate of item collection size, in gigabytes. This value is a two-element array containing a lower bound and an upper bound for the estimate. The estimate includes the size of all the items in the table, plus the size of all attributes projected into all of the local secondary indexes on that table. Use this estimate to measure whether a local secondary index is approaching its size limit.

The estimate is subject to change over time; therefore, do not rely on the precision or accuracy of the estimate.

Type: [ItemCollectionMetrics](#) (p. 303) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **ConditionalCheckFailedException**

A condition specified in the operation could not be evaluated.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **ItemCollectionSizeLimitExceededException**

An item collection is too large. This exception is only returned for tables that have one or more local secondary indexes.

HTTP Status Code: 400

### **ProvisionedThroughputExceededException**

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Example

### Delete an Item

The following example deletes an item from the Thread table, but only if that item does not already have an attribute named *Replies*. Because ReturnValues is set to ALL\_OLD, the response contains the item as it appeared before the delete.

### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.DeleteItem

{
  "TableName": "Thread",
  "Key": {
    "ForumName": {
      "S": "Amazon DynamoDB"
    },
    "Subject": {
      "S": "How do I update multiple items?"
    }
  },
  "ConditionExpression": "attribute_not_exists(Replies)",
  "ReturnValues": "ALL_OLD"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
  "Attributes": {
    "LastPostedBy": {
      "S": "fred@example.com"
    },
    "ForumName": {
      "S": "Amazon DynamoDB"
    },
    "LastPostDateTime": {
      "S": "201303201023"
    },
    "Tags": {
      "SS": ["Update", "Multiple Items", "HelpMe"]
    },
    "Subject": {
      "S": "How do I update multiple items?"
    }
  }
}
```

```
    },  
    "Message": {  
      "S": "I want to update multiple items in a single call. What's the best way to  
do that?"  
    }  
  }  
}
```

## 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](#)
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- [AWS SDK for Ruby V2](#)

# DeleteTable

Service: Amazon DynamoDB

The DeleteTable operation deletes a table and all of its items. After a DeleteTable request, the specified table is in the `DELETING` state until DynamoDB completes the deletion. If the table is in the `ACTIVE` state, you can delete it. If a table is in `CREATING` or `UPDATING` states, then DynamoDB returns a `ResourceInUseException`. If the specified table does not exist, DynamoDB returns a `ResourceNotFoundException`. If table is already in the `DELETING` state, no error is returned.

## Note

DynamoDB might continue to accept data read and write operations, such as `GetItem` and `PutItem`, on a table in the `DELETING` state until the table deletion is complete.

When you delete a table, any indexes on that table are also deleted.

If you have DynamoDB Streams enabled on the table, then the corresponding stream on that table goes into the `DISABLED` state, and the stream is automatically deleted after 24 hours.

Use the `DescribeTable` action to check the status of the table.

## Request Syntax

```
{
  "TableName": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

## Note

In the following list, the required parameters are described first.

### TableName (p. 49)

The name of the table to delete.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{
  "TableDescription": {
    "AttributeDefinitions": [
      {
        "AttributeName": "string",
        "AttributeType": "string"
      }
    ],
    "CreationDateTime": number,
    "GlobalSecondaryIndexes": [
```

```

{
  "Backfilling": boolean,
  "IndexArn": "string",
  "IndexName": "string",
  "IndexSizeBytes": number,
  "IndexStatus": "string",
  "ItemCount": number,
  "KeySchema": [
    {
      "AttributeName": "string",
      "KeyType": "string"
    }
  ],
  "Projection": {
    "NonKeyAttributes": [ "string " ],
    "ProjectionType": "string"
  },
  "ProvisionedThroughput": {
    "LastDecreaseDateTime": number,
    "LastIncreaseDateTime": number,
    "NumberOfDecreasesToday": number,
    "ReadCapacityUnits": number,
    "WriteCapacityUnits": number
  }
},
"ItemCount": number,
"KeySchema": [
  {
    "AttributeName": "string",
    "KeyType": "string"
  }
],
"LatestStreamArn": "string",
"LatestStreamLabel": "string",
"LocalSecondaryIndexes": [
  {
    "IndexArn": "string",
    "IndexName": "string",
    "IndexSizeBytes": number,
    "ItemCount": number,
    "KeySchema": [
      {
        "AttributeName": "string",
        "KeyType": "string"
      }
    ],
    "Projection": {
      "NonKeyAttributes": [ "string " ],
      "ProjectionType": "string"
    }
  }
],
"ProvisionedThroughput": {
  "LastDecreaseDateTime": number,
  "LastIncreaseDateTime": number,
  "NumberOfDecreasesToday": number,
  "ReadCapacityUnits": number,
  "WriteCapacityUnits": number
},
"RestoreSummary": {
  "RestoreDateTime": number,
  "RestoreInProgress": boolean,
  "SourceBackupArn": "string",
  "SourceTableArn": "string"
},
},

```

```
    "SSEDescription": {
      "KMSMasterKeyArn": "string",
      "SSEType": "string",
      "Status": "string"
    },
    "StreamSpecification": {
      "StreamEnabled": boolean,
      "StreamViewType": "string"
    },
    "TableArn": "string",
    "TableId": "string",
    "TableName": "string",
    "TableSizeBytes": number,
    "TableStatus": "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.

### TableDescription (p. 49)

Represents the properties of a table.

Type: [TableDescription \(p. 338\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### LimitExceededException

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

### ResourceInUseException

The operation conflicts with the resource's availability. For example, you attempted to recreate an existing table, or tried to delete a table currently in the `CREATING` state.

HTTP Status Code: 400



### ResourceNotFoundException

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Example

### Delete a Table

This example deletes the Reply table.

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.DeleteTable

{
  "TableName": "Reply"
}
```

#### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  {
    "TableDescription": {
      "TableArn": "arn:aws:dynamodb:us-west-2:123456789012:table/Reply",
      "ItemCount": 0,
      "ProvisionedThroughput": {
        "NumberOfDecreasesToday": 0,
        "ReadCapacityUnits": 5,
        "WriteCapacityUnits": 5
      },
      "TableName": "Reply",
      "TableSizeBytes": 0,
      "TableStatus": "DELETING"
    }
  }
}
```

## 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 V2](#)

# DescribeBackup

Service: Amazon DynamoDB

Describes an existing backup of a table.

You can call `DescribeBackup` at a maximum rate of 10 times per second.

## Request Syntax

```
{  
  "BackupArn": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### BackupArn (p. 54)

The ARN associated with the backup.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: Yes

## Response Syntax

```
{  
  "BackupDescription": {  
    "BackupDetails": {  
      "BackupArn": "string",  
      "BackupCreationDateTime": number,  
      "BackupExpiryDateTime": number,  
      "BackupName": "string",  
      "BackupSizeBytes": number,  
      "BackupStatus": "string",  
      "BackupType": "string"  
    },  
    "SourceTableDetails": {  
      "ItemCount": number,  
      "KeySchema": [  
        {  
          "AttributeName": "string",  
          "KeyType": "string"  
        }  
      ],  
      "ProvisionedThroughput": {  
        "ReadCapacityUnits": number,  
        "WriteCapacityUnits": number  
      },  
      "TableArn": "string",  
      "TableCreationDateTime": number,  
      "TableId": "string",  
    }  
  }  
}
```

```

    "TableName": "string",
    "TableSizeBytes": number
  },
  "SourceTableFeatureDetails": {
    "GlobalSecondaryIndexes": [
      {
        "IndexName": "string",
        "KeySchema": [
          {
            "AttributeName": "string",
            "KeyType": "string"
          }
        ],
        "Projection": {
          "NonKeyAttributes": [ "string" ],
          "ProjectionType": "string"
        },
        "ProvisionedThroughput": {
          "ReadCapacityUnits": number,
          "WriteCapacityUnits": number
        }
      }
    ],
    "LocalSecondaryIndexes": [
      {
        "IndexName": "string",
        "KeySchema": [
          {
            "AttributeName": "string",
            "KeyType": "string"
          }
        ],
        "Projection": {
          "NonKeyAttributes": [ "string" ],
          "ProjectionType": "string"
        }
      }
    ],
    "SSEDescription": {
      "KMSEMasterKeyArn": "string",
      "SSEType": "string",
      "Status": "string"
    },
    "StreamDescription": {
      "StreamEnabled": boolean,
      "StreamViewType": "string"
    },
    "TimeToLiveDescription": {
      "AttributeName": "string",
      "TimeToLiveStatus": "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.

### BackupDescription (p. 54)

Contains the description of the backup created for the table.

Type: [BackupDescription](#) (p. 269) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **BackupNotFoundException**

Backup not found for the given BackupARN.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

## 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 V2](#)

# DescribeContinuousBackups

Service: Amazon DynamoDB

Checks the status of continuous backups and point in time recovery on the specified table. Continuous backups are **ENABLED** on all tables at table creation. If point in time recovery is enabled, **PointInTimeRecoveryStatus** will be set to **ENABLED**.

Once continuous backups and point in time recovery are enabled, you can restore to any point in time within **EarliestRestorableDateTime** and **LatestRestorableDateTime**.

**LatestRestorableDateTime** is typically 5 minutes before the current time. You can restore your table to any point in time during the last 35 days.

You can call **DescribeContinuousBackups** at a maximum rate of 10 times per second.

## Request Syntax

```
{
  "TableName": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### TableName (p. 57)

Name of the table for which the customer wants to check the continuous backups and point in time recovery settings.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{
  "ContinuousBackupsDescription": {
    "ContinuousBackupsStatus": "string",
    "PointInTimeRecoveryDescription": {
      "EarliestRestorableDateTime": number,
      "LatestRestorableDateTime": number,
      "PointInTimeRecoveryStatus": "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.

#### **ContinuousBackupsDescription (p. 57)**

Represents the continuous backups and point in time recovery settings on the table.

Type: [ContinuousBackupsDescription \(p. 280\)](#) object

## **Errors**

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

#### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

#### **TableNotFoundException**

A source table with the name `TableName` does not currently exist within the subscriber's account.

HTTP Status Code: 400

## **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 V2](#)

# DescribeGlobalTable

Service: Amazon DynamoDB

Returns information about the specified global table.

## Request Syntax

```
{  
  "GlobalTableName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### GlobalTableName (p. 59)

The name of the global table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{  
  "GlobalTableDescription": {  
    "CreationDateTime": number,  
    "GlobalTableArn": "string",  
    "GlobalTableName": "string",  
    "GlobalTableStatus": "string",  
    "ReplicationGroup": [  
      {  
        "RegionName": "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.

#### GlobalTableDescription (p. 59)

Contains the details of the global table.

Type: [GlobalTableDescription \(p. 300\)](#) object



## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **GlobalTableNotFoundException**

The specified global table does not exist.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

## 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 V2](#)

# DescribeGlobalTableSettings

Service: Amazon DynamoDB

Describes region specific settings for a global table.

## Request Syntax

```
{  
  "GlobalTableName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### GlobalTableName (p. 61)

The name of the global table to describe.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{  
  "GlobalTableName": "string",  
  "ReplicaSettings": [  
    {  
      "RegionName": "string",  
      "ReplicaGlobalSecondaryIndexSettings": [  
        {  
          "IndexName": "string",  
          "IndexStatus": "string",  
          "ProvisionedReadCapacityAutoScalingSettings": {  
            "AutoScalingDisabled": boolean,  
            "AutoScalingRoleArn": "string",  
            "MaximumUnits": number,  
            "MinimumUnits": number,  
            "ScalingPolicies": [  
              {  
                "PolicyName": "string",  
                "TargetTrackingScalingPolicyConfiguration": {  
                  "DisableScaleIn": boolean,  
                  "ScaleInCooldown": number,  
                  "ScaleOutCooldown": number,  
                  "TargetValue": number  
                }  
              }  
            ]  
          }  
        }  
      ]  
    },  
    "ProvisionedReadCapacityUnits": number,  
  ]  
}
```

```

        "ProvisionedWriteCapacityAutoScalingSettings": {
            "AutoScalingDisabled": boolean,
            "AutoScalingRoleArn": "string",
            "MaximumUnits": number,
            "MinimumUnits": number,
            "ScalingPolicies": [
                {
                    "PolicyName": "string",
                    "TargetTrackingScalingPolicyConfiguration": {
                        "DisableScaleIn": boolean,
                        "ScaleInCooldown": number,
                        "ScaleOutCooldown": number,
                        "TargetValue": number
                    }
                }
            ]
        },
        "ProvisionedWriteCapacityUnits": number
    },
    "ReplicaProvisionedReadCapacityAutoScalingSettings": {
        "AutoScalingDisabled": boolean,
        "AutoScalingRoleArn": "string",
        "MaximumUnits": number,
        "MinimumUnits": number,
        "ScalingPolicies": [
            {
                "PolicyName": "string",
                "TargetTrackingScalingPolicyConfiguration": {
                    "DisableScaleIn": boolean,
                    "ScaleInCooldown": number,
                    "ScaleOutCooldown": number,
                    "TargetValue": number
                }
            }
        ]
    },
    "ReplicaProvisionedReadCapacityUnits": number,
    "ReplicaProvisionedWriteCapacityAutoScalingSettings": {
        "AutoScalingDisabled": boolean,
        "AutoScalingRoleArn": "string",
        "MaximumUnits": number,
        "MinimumUnits": number,
        "ScalingPolicies": [
            {
                "PolicyName": "string",
                "TargetTrackingScalingPolicyConfiguration": {
                    "DisableScaleIn": boolean,
                    "ScaleInCooldown": number,
                    "ScaleOutCooldown": number,
                    "TargetValue": number
                }
            }
        ]
    },
    "ReplicaProvisionedWriteCapacityUnits": number,
    "ReplicaStatus": "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.

**GlobalTableName (p. 61)**

The name of the global table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

**ReplicaSettings (p. 61)**

The region specific settings for the global table.

Type: Array of [ReplicaSettingsDescription \(p. 326\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

**GlobalTableNotFoundException**

The specified global table does not exist.

HTTP Status Code: 400

**InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

## 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 V2](#)

## DescribeLimits

Service: Amazon DynamoDB

Returns the current provisioned-capacity limits for your AWS account in a region, both for the region as a whole and for any one DynamoDB table that you create there.

When you establish an AWS account, the account has initial limits on the maximum read capacity units and write capacity units that you can provision across all of your DynamoDB tables in a given region. Also, there are per-table limits that apply when you create a table there. For more information, see [Limits](#) page in the *Amazon DynamoDB Developer Guide*.

Although you can increase these limits by filing a case at [AWS Support Center](#), obtaining the increase is not instantaneous. The `DescribeLimits` action lets you write code to compare the capacity you are currently using to those limits imposed by your account so that you have enough time to apply for an increase before you hit a limit.

For example, you could use one of the AWS SDKs to do the following:

1. Call `DescribeLimits` for a particular region to obtain your current account limits on provisioned capacity there.
2. Create a variable to hold the aggregate read capacity units provisioned for all your tables in that region, and one to hold the aggregate write capacity units. Zero them both.
3. Call `ListTables` to obtain a list of all your DynamoDB tables.
4. For each table name listed by `ListTables`, do the following:
  - Call `DescribeTable` with the table name.
  - Use the data returned by `DescribeTable` to add the read capacity units and write capacity units provisioned for the table itself to your variables.
  - If the table has one or more global secondary indexes (GSIs), loop over these GSIs and add their provisioned capacity values to your variables as well.
5. Report the account limits for that region returned by `DescribeLimits`, along with the total current provisioned capacity levels you have calculated.

This will let you see whether you are getting close to your account-level limits.

The per-table limits apply only when you are creating a new table. They restrict the sum of the provisioned capacity of the new table itself and all its global secondary indexes.

For existing tables and their GSIs, DynamoDB will not let you increase provisioned capacity extremely rapidly, but the only upper limit that applies is that the aggregate provisioned capacity over all your tables and GSIs cannot exceed either of the per-account limits.

### Note

`DescribeLimits` should only be called periodically. You can expect throttling errors if you call it more than once in a minute.

The `DescribeLimits` Request element has no content.

## Response Syntax

```
{
  "AccountMaxReadCapacityUnits": number,
  "AccountMaxWriteCapacityUnits": number,
  "TableMaxReadCapacityUnits": number,
  "TableMaxWriteCapacityUnits": 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.

### **AccountMaxReadCapacityUnits** (p. 64)

The maximum total read capacity units that your account allows you to provision across all of your tables in this region.

Type: Long

Valid Range: Minimum value of 1.

### **AccountMaxWriteCapacityUnits** (p. 64)

The maximum total write capacity units that your account allows you to provision across all of your tables in this region.

Type: Long

Valid Range: Minimum value of 1.

### **TableMaxReadCapacityUnits** (p. 64)

The maximum read capacity units that your account allows you to provision for a new table that you are creating in this region, including the read capacity units provisioned for its global secondary indexes (GSIs).

Type: Long

Valid Range: Minimum value of 1.

### **TableMaxWriteCapacityUnits** (p. 64)

The maximum write capacity units that your account allows you to provision for a new table that you are creating in this region, including the write capacity units provisioned for its global secondary indexes (GSIs).

Type: Long

Valid Range: Minimum value of 1.

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

## Example

### DescribeLimits

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.DescribeLimits
{ }
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "AccountMaxReadCapacityUnits": 20000,
  "AccountMaxWriteCapacityUnits": 20000,
  "TableMaxReadCapacityUnits": 10000,
  "TableMaxWriteCapacityUnits": 10000
}
```

### 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 V2](#)

# DescribeTable

Service: Amazon DynamoDB

Returns information about the table, including the current status of the table, when it was created, the primary key schema, and any indexes on the table.

## Note

If you issue a `DescribeTable` request immediately after a `CreateTable` request, DynamoDB might return a `ResourceNotFoundException`. This is because `DescribeTable` uses an eventually consistent query, and the metadata for your table might not be available at that moment. Wait for a few seconds, and then try the `DescribeTable` request again.

## Request Syntax

```
{
  "TableName": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

## Note

In the following list, the required parameters are described first.

### TableName (p. 67)

The name of the table to describe.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{
  "Table": {
    "AttributeDefinitions": [
      {
        "AttributeName": "string",
        "AttributeType": "string"
      }
    ],
    "CreationDateTime": number,
    "GlobalSecondaryIndexes": [
      {
        "Backfilling": boolean,
        "IndexArn": "string",
        "IndexName": "string",
        "IndexSizeBytes": number,
        "IndexStatus": "string",
        "ItemCount": number,
        "KeySchema": [
          {
            "AttributeName": "string",
```



```

        "KeyType": "string"
    }
],
"Projection": {
    "NonKeyAttributes": [ "string" ],
    "ProjectionType": "string"
},
"ProvisionedThroughput": {
    "LastDecreaseDateTime": number,
    "LastIncreaseDateTime": number,
    "NumberOfDecreasesToday": number,
    "ReadCapacityUnits": number,
    "WriteCapacityUnits": number
}
},
"ItemCount": number,
"KeySchema": [
    {
        "AttributeName": "string",
        "KeyType": "string"
    }
],
"LatestStreamArn": "string",
"LatestStreamLabel": "string",
"LocalSecondaryIndexes": [
    {
        "IndexArn": "string",
        "IndexName": "string",
        "IndexSizeBytes": number,
        "ItemCount": number,
        "KeySchema": [
            {
                "AttributeName": "string",
                "KeyType": "string"
            }
        ],
        "Projection": {
            "NonKeyAttributes": [ "string" ],
            "ProjectionType": "string"
        }
    }
],
"ProvisionedThroughput": {
    "LastDecreaseDateTime": number,
    "LastIncreaseDateTime": number,
    "NumberOfDecreasesToday": number,
    "ReadCapacityUnits": number,
    "WriteCapacityUnits": number
},
"RestoreSummary": {
    "RestoreDateTime": number,
    "RestoreInProgress": boolean,
    "SourceBackupArn": "string",
    "SourceTableArn": "string"
},
"SSEDescription": {
    "KMSMasterKeyArn": "string",
    "SSEType": "string",
    "Status": "string"
},
"StreamSpecification": {
    "StreamEnabled": boolean,
    "StreamViewType": "string"
},
"TableArn": "string",

```

```
"TableId": "string",  
"TableName": "string",  
"TableSizeBytes": number,  
"TableStatus": "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.

### Table (p. 67)

The properties of the table.

Type: [TableDescription](#) (p. 338) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### ResourceNotFoundException

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Example

### Describe a Table

This example describes the Thread table.

#### Sample Request

```
POST / HTTP/1.1  
Host: dynamodb.<region>.<domain>;  
Accept-Encoding: identity  
Content-Length: <PayloadSizeBytes>  
User-Agent: <UserAgentString>  
Content-Type: application/x-amz-json-1.0  
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,  
  Signature=<Signature>  
X-Amz-Date: <Date>  
X-Amz-Target: DynamoDB_20120810.DescribeTable  
  
{  
  "TableName": "Thread"  
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "Table": {
    "TableArn": "arn:aws:dynamodb:us-west-2:123456789012:table/Thread",
    "AttributeDefinitions": [
      {
        "AttributeName": "ForumName",
        "AttributeType": "S"
      },
      {
        "AttributeName": "LastPostDateTime",
        "AttributeType": "S"
      },
      {
        "AttributeName": "Subject",
        "AttributeType": "S"
      }
    ],
    "CreationDateTime": 1.363729002358E9,
    "ItemCount": 0,
    "KeySchema": [
      {
        "AttributeName": "ForumName",
        "KeyType": "HASH"
      },
      {
        "AttributeName": "Subject",
        "KeyType": "RANGE"
      }
    ],
    "LocalSecondaryIndexes": [
      {
        "IndexArn": "arn:aws:dynamodb:us-west-2:123456789012:table/Thread/index/LastPostIndex",
        "IndexName": "LastPostIndex",
        "IndexSizeBytes": 0,
        "ItemCount": 0,
        "KeySchema": [
          {
            "AttributeName": "ForumName",
            "KeyType": "HASH"
          },
          {
            "AttributeName": "LastPostDateTime",
            "KeyType": "RANGE"
          }
        ],
        "Projection": {
          "ProjectionType": "KEYS_ONLY"
        }
      }
    ],
    "ProvisionedThroughput": {
      "NumberOfDecreasesToday": 0,
      "ReadCapacityUnits": 5,
      "WriteCapacityUnits": 5
    }
  },
}
```

```
    "TableName": "Thread",  
    "TableSizeBytes": 0,  
    "TableStatus": "ACTIVE"  
  }  
}
```

## 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 V2](#)

# DescribeTimeToLive

Service: Amazon DynamoDB

Gives a description of the Time to Live (TTL) status on the specified table.

## Request Syntax

```
{  
  "TableName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### TableName (p. 72)

The name of the table to be described.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{  
  "TimeToLiveDescription": {  
    "AttributeName": "string",  
    "TimeToLiveStatus": "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.

#### TimeToLiveDescription (p. 72)

Type: [TimeToLiveDescription](#) (p. 344) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## 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 V2](#)

# GetItem

Service: Amazon DynamoDB

The `GetItem` operation returns a set of attributes for the item with the given primary key. If there is no matching item, `GetItem` does not return any data and there will be no `Item` element in the response.

`GetItem` provides an eventually consistent read by default. If your application requires a strongly consistent read, set `ConsistentRead` to `true`. Although a strongly consistent read might take more time than an eventually consistent read, it always returns the last updated value.

## Request Syntax

```
{
  "AttributesToGet": [ "string" ],
  "ConsistentRead": boolean,
  "ExpressionAttributeNames": {
    "string" : "string"
  },
  "Key": {
    "string" : {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string" : "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  },
  "ProjectionExpression": "string",
  "ReturnConsumedCapacity": "string",
  "TableName": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

### Key (p. 74)

A map of attribute names to `AttributeValue` objects, representing the primary key of the item to retrieve.

For the primary key, you must provide all of the attributes. For example, with a simple primary key, you only need to provide a value for the partition key. For a composite primary key, you must provide values for both the partition key and the sort key.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: Yes

**TableName (p. 74)**

The name of the table containing the requested item.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

**AttributesToGet (p. 74)**

This is a legacy parameter. Use `ProjectionExpression` instead. For more information, see [AttributesToGet](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of strings

Array Members: Minimum number of 1 item.

Length Constraints: Maximum length of 65535.

Required: No

**ConsistentRead (p. 74)**

Determines the read consistency model: If set to `true`, then the operation uses strongly consistent reads; otherwise, the operation uses eventually consistent reads.

Type: Boolean

Required: No

**ExpressionAttributeNames (p. 74)**

One or more substitution tokens for attribute names in an expression. The following are some use cases for using `ExpressionAttributeNames`:

- To access an attribute whose name conflicts with a DynamoDB reserved word.
- To create a placeholder for repeating occurrences of an attribute name in an expression.
- To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the `#` character in an expression to dereference an attribute name. For example, consider the following attribute name:

- `Percentile`

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- `{"#P": "Percentile"}`

You could then use this substitution in an expression, as in this example:

- `#P = :val`

**Note**

Tokens that begin with the `:` character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.



Type: String to string map

Value Length Constraints: Maximum length of 65535.

Required: No

#### ProjectionExpression (p. 74)

A string that identifies one or more attributes to retrieve from the table. These attributes can include scalars, sets, or elements of a JSON document. The attributes in the expression must be separated by commas.

If no attribute names are specified, then all attributes will be returned. If any of the requested attributes are not found, they will not appear in the result.

For more information, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

#### ReturnConsumedCapacity (p. 74)

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- **INDEXES** - The response includes the aggregate `ConsumedCapacity` for the operation, together with `ConsumedCapacity` for each table and secondary index that was accessed.

Note that some operations, such as `GetItem` and `BatchGetItem`, do not access any indexes at all. In these cases, specifying **INDEXES** will only return `ConsumedCapacity` information for table(s).

- **TOTAL** - The response includes only the aggregate `ConsumedCapacity` for the operation.
- **NONE** - No `ConsumedCapacity` details are included in the response.

Type: String

Valid Values: **INDEXES** | **TOTAL** | **NONE**

Required: No

## Response Syntax

```
{
  "ConsumedCapacity": {
    "CapacityUnits": number,
    "GlobalSecondaryIndexes": {
      "string" : {
        "CapacityUnits": number
      }
    },
    "LocalSecondaryIndexes": {
      "string" : {
        "CapacityUnits": number
      }
    },
    "Table": {
      "CapacityUnits": number
    },
    "TableName": "string"
  },
  "Item": {
```

```

    "string" : {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string" : "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "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.

### ConsumedCapacity (p. 76)

The capacity units consumed by the `GetItem` operation. The data returned includes the total provisioned throughput consumed, along with statistics for the table and any indexes involved in the operation. `ConsumedCapacity` is only returned if the `ReturnConsumedCapacity` parameter was specified. For more information, see [Provisioned Throughput](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ConsumedCapacity \(p. 278\)](#) object

### Item (p. 76)

A map of attribute names to `AttributeValue` objects, as specified by `ProjectionExpression`.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### ProvisionedThroughputExceededException

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### ResourceNotFoundException

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Example

### Retrieve Item Attributes

The following example retrieves three attributes from the `Thread` table. In the response, the `ConsumedCapacityUnits` value is 1, because `ConsistentRead` is set to `true`. If `ConsistentRead` had been set to `false` (or not specified) for the same request, an eventually consistent read would have been used and `ConsumedCapacityUnits` would have been 0.5.

### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.GetItem

{
  "TableName": "Thread",
  "Key": {
    "ForumName": {
      "S": "Amazon DynamoDB"
    },
    "Subject": {
      "S": "How do I update multiple items?"
    }
  },
  "ProjectionExpression": "LastPostDateTime, Message, Tags",
  "ConsistentRead": true,
  "ReturnConsumedCapacity": "TOTAL"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
  "ConsumedCapacity": {
    "CapacityUnits": 1,
    "TableName": "Thread"
  },
  "Item": {
```

```
    "Tags": {
      "SS": ["Update", "Multiple Items", "HelpMe"]
    },
    "LastPostDateTime": {
      "S": "201303190436"
    },
    "Message": {
      "S": "I want to update multiple items in a single call. What's the best way to
do that?"
    }
  }
}
```

## 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 V2](#)

## ListBackups

Service: Amazon DynamoDB

List backups associated with an AWS account. To list backups for a given table, specify `TableName`. `ListBackups` returns a paginated list of results with at most 1MB worth of items in a page. You can also specify a limit for the maximum number of entries to be returned in a page.

In the request, start time is inclusive but end time is exclusive. Note that these limits are for the time at which the original backup was requested.

You can call `ListBackups` a maximum of 5 times per second.

## Request Syntax

```
{  
  "BackupType": "string",  
  "ExclusiveStartBackupArn": "string",  
  "Limit": number,  
  "TableName": "string",  
  "TimeRangeLowerBound": number,  
  "TimeRangeUpperBound": number  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

### BackupType (p. 80)

The backups from the table specified by `BackupType` are listed.

Where `BackupType` can be:

- `USER` - On-demand backup created by you.
- `SYSTEM` - On-demand backup automatically created by DynamoDB.
- `ALL` - All types of on-demand backups (`USER` and `SYSTEM`).

Type: String

Valid Values: `USER` | `SYSTEM` | `ALL`

Required: No

### ExclusiveStartBackupArn (p. 80)

`LastEvaluatedBackupArn` is the ARN of the backup last evaluated when the current page of results was returned, inclusive of the current page of results. This value may be specified as the `ExclusiveStartBackupArn` of a new `ListBackups` operation in order to fetch the next page of results.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: No

### Limit (p. 80)

Maximum number of backups to return at once.

Type: Integer

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

Required: No

### TableName (p. 80)

The backups from the table specified by `TableName` are listed.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### TimeRangeLowerBound (p. 80)

Only backups created after this time are listed. `TimeRangeLowerBound` is inclusive.

Type: Timestamp

Required: No

### TimeRangeUpperBound (p. 80)

Only backups created before this time are listed. `TimeRangeUpperBound` is exclusive.

Type: Timestamp

Required: No

## Response Syntax

```
{
  "BackupSummaries": [
    {
      "BackupArn": "string",
      "BackupCreationDateTime": number,
      "BackupExpiryDateTime": number,
      "BackupName": "string",
      "BackupSizeBytes": number,
      "BackupStatus": "string",
      "BackupType": "string",
      "TableArn": "string",
      "TableId": "string",
      "TableName": "string"
    }
  ],
  "LastEvaluatedBackupArn": "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.

#### **BackupSummaries (p. 81)**

List of BackupSummary objects.

Type: Array of BackupSummary (p. 272) objects

#### **LastEvaluatedBackupArn (p. 81)**

The ARN of the backup last evaluated when the current page of results was returned, inclusive of the current page of results. This value may be specified as the ExclusiveStartBackupArn of a new ListBackups operation in order to fetch the next page of results.

If LastEvaluatedBackupArn is empty, then the last page of results has been processed and there are no more results to be retrieved.

If LastEvaluatedBackupArn is not empty, this may or may not indicate there is more data to be returned. All results are guaranteed to have been returned if and only if no value for LastEvaluatedBackupArn is returned.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

#### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

## 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 V2](#)

# ListGlobalTables

Service: Amazon DynamoDB

Lists all global tables that have a replica in the specified region.

## Request Syntax

```
{  
  "ExclusiveStartGlobalTableName": "string",  
  "Limit": number,  
  "RegionName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ExclusiveStartGlobalTableName (p. 83)

The first global table name that this operation will evaluate.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

#### Limit (p. 83)

The maximum number of table names to return.

Type: Integer

Valid Range: Minimum value of 1.

Required: No

#### RegionName (p. 83)

Lists the global tables in a specific region.

Type: String

Required: No

## Response Syntax

```
{  
  "GlobalTables": [  
    {  
      "GlobalTableName": "string",  
      "ReplicationGroup": [  
        {  
          "RegionName": "string"  
        }  
      ]  
    }  
  ]  
}
```



```
    }  
  ]  
}  
],  
"LastEvaluatedGlobalTableName": "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.

### GlobalTables (p. 83)

List of global table names.

Type: Array of [GlobalTable \(p. 299\)](#) objects

### LastEvaluatedGlobalTableName (p. 83)

Last evaluated global table name.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

## 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 V2](#)

## ListTables

Service: Amazon DynamoDB

Returns an array of table names associated with the current account and endpoint. The output from `ListTables` is paginated, with each page returning a maximum of 100 table names.

### Request Syntax

```
{  
  "ExclusiveStartTableName": "string",  
  "Limit": number  
}
```

### Request Parameters

The request accepts the following data in JSON format.

#### Note

In the following list, the required parameters are described first.

#### [ExclusiveStartTableName \(p. 85\)](#)

The first table name that this operation will evaluate. Use the value that was returned for `LastEvaluatedTableName` in a previous operation, so that you can obtain the next page of results.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

#### [Limit \(p. 85\)](#)

A maximum number of table names to return. If this parameter is not specified, the limit is 100.

Type: Integer

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

Required: No

### Response Syntax

```
{  
  "LastEvaluatedTableName": "string",  
  "TableNames": [ "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.

### LastEvaluatedTableName (p. 85)

The name of the last table in the current page of results. Use this value as the `ExclusiveStartTableName` in a new request to obtain the next page of results, until all the table names are returned.

If you do not receive a `LastEvaluatedTableName` value in the response, this means that there are no more table names to be retrieved.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

### TableNames (p. 85)

The names of the tables associated with the current account at the current endpoint. The maximum size of this array is 100.

If `LastEvaluatedTableName` also appears in the output, you can use this value as the `ExclusiveStartTableName` parameter in a subsequent `ListTables` request and obtain the next page of results.

Type: Array of strings

Length Constraints: Minimum length of 3. Maximum length of 255.

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

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

## Example

### List Tables

This example requests a list of tables, starting with a table named *Forum* and ending after three table names have been returned.

### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
```

```
X-Amz-Target: DynamoDB_20120810.ListTables

{
  "ExclusiveStartTableName": "Forum",
  "Limit": 3
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "LastEvaluatedTableName": "Thread",
  "TableNames": ["Forum", "Reply", "Thread"]
}
```

## 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 V2](#)

# ListTagsOfResource

Service: Amazon DynamoDB

List all tags on an Amazon DynamoDB resource. You can call ListTagsOfResource up to 10 times per second, per account.

For an overview on tagging DynamoDB resources, see [Tagging for DynamoDB](#) in the *Amazon DynamoDB Developer Guide*.

## Request Syntax

```
{  
  "NextToken": "string",  
  "ResourceArn": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ResourceArn (p. 88)

The Amazon DynamoDB resource with tags to be listed. This value is an Amazon Resource Name (ARN).

Type: String

Length Constraints: Minimum length of 1. Maximum length of 1283.

Required: Yes

#### NextToken (p. 88)

An optional string that, if supplied, must be copied from the output of a previous call to ListTagOfResource. When provided in this manner, this API fetches the next page of results.

Type: String

Required: No

## Response Syntax

```
{  
  "NextToken": "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.

**NextToken (p. 88)**

If this value is returned, there are additional results to be displayed. To retrieve them, call `ListTagsOfResource` again, with `NextToken` set to this value.

Type: String

**Tags (p. 88)**

The tags currently associated with the Amazon DynamoDB resource.

Type: Array of [Tag \(p. 343\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

**InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

**ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## 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 V2](#)

# PutItem

Service: Amazon DynamoDB

Creates a new item, or replaces an old item with a new item. If an item that has the same primary key as the new item already exists in the specified table, the new item completely replaces the existing item. You can perform a conditional put operation (add a new item if one with the specified primary key doesn't exist), or replace an existing item if it has certain attribute values. You can return the item's attribute values in the same operation, using the `ReturnValues` parameter.

## Important

This topic provides general information about the `PutItem` API.

For information on how to call the `PutItem` API using the AWS SDK in specific languages, see the following:

- [PutItem in the AWS Command Line Interface](#)
- [PutItem in the AWS SDK for .NET](#)
- [PutItem in the AWS SDK for C++](#)
- [PutItem in the AWS SDK for Go](#)
- [PutItem in the AWS SDK for Java](#)
- [PutItem in the AWS SDK for JavaScript](#)
- [PutItem in the AWS SDK for PHP V3](#)
- [PutItem in the AWS SDK for Python](#)
- [PutItem in the AWS SDK for Ruby V2](#)

When you add an item, the primary key attribute(s) are the only required attributes. Attribute values cannot be null. String and Binary type attributes must have lengths greater than zero. Set type attributes cannot be empty. Requests with empty values will be rejected with a `ValidationException` exception.

## Note

To prevent a new item from replacing an existing item, use a conditional expression that contains the `attribute_not_exists` function with the name of the attribute being used as the partition key for the table. Since every record must contain that attribute, the `attribute_not_exists` function will only succeed if no matching item exists.

For more information about `PutItem`, see [Working with Items](#) in the *Amazon DynamoDB Developer Guide*.

## Request Syntax

```
{
  "ConditionalOperator": "string",
  "ConditionExpression": "string",
  "Expected": {
    "string": {
      "AttributeValueList": [
        {
          "B": blob,
          "BOOL": boolean,
          "BS": [ blob ],
          "L": [
            "AttributeValue"
          ],
          "M": {
            "string": "AttributeValue"
          },
          "N": "string",
          "NS": [ "string" ],
```

```

        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
],
"ComparisonOperator": "string",
"Exists": boolean,
"Value": {
    "B": blob,
    "BOOL": boolean,
    "BS": [ blob ],
    "L": [
        "AttributeValue"
    ],
    "M": {
        "string" : "AttributeValue"
    },
    "N": "string",
    "NS": [ "string" ],
    "NULL": boolean,
    "S": "string",
    "SS": [ "string" ]
}
},
"ExpressionAttributeNames": {
    "string" : "string"
},
"ExpressionAttributeValues": {
    "string" : {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
            "AttributeValue"
        ],
        "M": {
            "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
},
"Item": {
    "string" : {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
            "AttributeValue"
        ],
        "M": {
            "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
},
"ReturnConsumedCapacity": "string",
"ReturnItemCollectionMetrics": "string",

```



```
"ReturnValues": "string",  
"TableName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

### Item (p. 90)

A map of attribute name/value pairs, one for each attribute. Only the primary key attributes are required; you can optionally provide other attribute name-value pairs for the item.

You must provide all of the attributes for the primary key. For example, with a simple primary key, you only need to provide a value for the partition key. For a composite primary key, you must provide both values for both the partition key and the sort key.

If you specify any attributes that are part of an index key, then the data types for those attributes must match those of the schema in the table's attribute definition.

For more information about primary keys, see [Primary Key](#) in the *Amazon DynamoDB Developer Guide*.

Each element in the Item map is an `AttributeValue` object.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: Yes

### TableName (p. 90)

The name of the table to contain the item.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### ConditionalOperator (p. 90)

This is a legacy parameter. Use `ConditionExpression` instead. For more information, see [ConditionalOperator](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Valid Values: AND | OR

Required: No

### ConditionExpression (p. 90)

A condition that must be satisfied in order for a conditional `PutItem` operation to succeed.

An expression can contain any of the following:

- Functions: `attribute_exists` | `attribute_not_exists` | `attribute_type` | `contains` | `begins_with` | `size`

These function names are case-sensitive.

- Comparison operators: = | <> | < | > | <= | >= | BETWEEN | IN
- Logical operators: AND | OR | NOT

For more information on condition expressions, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

#### **Expected (p. 90)**

This is a legacy parameter. Use `ConditionExpression` instead. For more information, see [Expected](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [ExpectedAttributeValue \(p. 287\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

#### **ExpressionAttributeNames (p. 90)**

One or more substitution tokens for attribute names in an expression. The following are some use cases for using `ExpressionAttributeNames`:

- To access an attribute whose name conflicts with a DynamoDB reserved word.
- To create a placeholder for repeating occurrences of an attribute name in an expression.
- To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the `#` character in an expression to dereference an attribute name. For example, consider the following attribute name:

- Percentile

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- { "#P": "Percentile" }

You could then use this substitution in an expression, as in this example:

- `#P = :val`

#### **Note**

Tokens that begin with the `:` character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to string map

Value Length Constraints: Maximum length of 65535.

Required: No

#### **ExpressionAttributeValues (p. 90)**

One or more values that can be substituted in an expression.

Use the `:` (colon) character in an expression to dereference an attribute value. For example, suppose that you wanted to check whether the value of the *ProductStatus* attribute was one of the following:

Available | Backordered | Discontinued

You would first need to specify `ExpressionAttributeValues` as follows:

```
{ ":avail":{"S":"Available"}, ":back":{"S":"Backordered"}, ":disc":
{"S":"Discontinued"} }
```

You could then use these values in an expression, such as this:

```
ProductStatus IN (:avail, :back, :disc)
```

For more information on expression attribute values, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [AttributeValue \(p. 254\)](#) object map

Required: No

#### **ReturnConsumedCapacity (p. 90)**

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- **INDEXES** - The response includes the aggregate `ConsumedCapacity` for the operation, together with `ConsumedCapacity` for each table and secondary index that was accessed.

Note that some operations, such as `GetItem` and `BatchGetItem`, do not access any indexes at all. In these cases, specifying **INDEXES** will only return `ConsumedCapacity` information for table(s).

- **TOTAL** - The response includes only the aggregate `ConsumedCapacity` for the operation.
- **NONE** - No `ConsumedCapacity` details are included in the response.

Type: String

Valid Values: **INDEXES** | **TOTAL** | **NONE**

Required: No

#### **ReturnItemCollectionMetrics (p. 90)**

Determines whether item collection metrics are returned. If set to **SIZE**, the response includes statistics about item collections, if any, that were modified during the operation are returned in the response. If set to **NONE** (the default), no statistics are returned.

Type: String

Valid Values: **SIZE** | **NONE**

Required: No

#### **ReturnValues (p. 90)**

Use `ReturnValues` if you want to get the item attributes as they appeared before they were updated with the `PutItem` request. For `PutItem`, the valid values are:

- **NONE** - If `ReturnValues` is not specified, or if its value is **NONE**, then nothing is returned. (This setting is the default for `ReturnValues`.)
- **ALL\_OLD** - If `PutItem` overwrote an attribute name-value pair, then the content of the old item is returned.

### Note

The ReturnValues parameter is used by several DynamoDB operations; however, PutItem does not recognize any values other than NONE or ALL\_OLD.

Type: String

Valid Values: NONE | ALL\_OLD | UPDATED\_OLD | ALL\_NEW | UPDATED\_NEW

Required: No

## Response Syntax

```
{
  "Attributes": {
    "string": {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string": "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  },
  "ConsumedCapacity": {
    "CapacityUnits": number,
    "GlobalSecondaryIndexes": {
      "string": {
        "CapacityUnits": number
      }
    },
    "LocalSecondaryIndexes": {
      "string": {
        "CapacityUnits": number
      }
    }
  },
  "Table": {
    "CapacityUnits": number
  },
  "TableName": "string"
},
"ItemCollectionMetrics": {
  "ItemCollectionKey": {
    "string": {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string": "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
```

```
    "S": "string",
    "SS": [ "string" ]
  },
  "SizeEstimateRangeGB": [ 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.

### Attributes (p. 95)

The attribute values as they appeared before the `PutItem` operation, but only if `ReturnValues` is specified as `ALL_OLD` in the request. Each element consists of an attribute name and an attribute value.

Type: String to [AttributeValue](#) (p. 254) object map

Key Length Constraints: Maximum length of 65535.

### ConsumedCapacity (p. 95)

The capacity units consumed by the `PutItem` operation. The data returned includes the total provisioned throughput consumed, along with statistics for the table and any indexes involved in the operation. `ConsumedCapacity` is only returned if the `ReturnConsumedCapacity` parameter was specified. For more information, see [Provisioned Throughput](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ConsumedCapacity](#) (p. 278) object

### ItemCollectionMetrics (p. 95)

Information about item collections, if any, that were affected by the `PutItem` operation. `ItemCollectionMetrics` is only returned if the `ReturnItemCollectionMetrics` parameter was specified. If the table does not have any local secondary indexes, this information is not returned in the response.

Each `ItemCollectionMetrics` element consists of:

- `ItemCollectionKey` - The partition key value of the item collection. This is the same as the partition key value of the item itself.
- `SizeEstimateRangeGB` - An estimate of item collection size, in gigabytes. This value is a two-element array containing a lower bound and an upper bound for the estimate. The estimate includes the size of all the items in the table, plus the size of all attributes projected into all of the local secondary indexes on that table. Use this estimate to measure whether a local secondary index is approaching its size limit.

The estimate is subject to change over time; therefore, do not rely on the precision or accuracy of the estimate.

Type: [ItemCollectionMetrics](#) (p. 303) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **ConditionalCheckFailedException**

A condition specified in the operation could not be evaluated.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **ItemCollectionSizeLimitExceededException**

An item collection is too large. This exception is only returned for tables that have one or more local secondary indexes.

HTTP Status Code: 400

### **ProvisionedThroughputExceededException**

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Example

### Put an Item

The following example puts a new item into the Thread table, but only if there is not already an item in the table with the same key.

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.PutItem

{
  "TableName": "Thread",
  "Item": {
    "LastPostDateTime": {
      "S": "201303190422"
    },
    "Tags": {
```

```
        "SS": ["Update", "Multiple Items", "HelpMe"]
    },
    "ForumName": {
        "S": "Amazon DynamoDB"
    },
    "Message": {
        "S": "I want to update multiple items in a single call. What's the best way to
do that?"
    },
    "Subject": {
        "S": "How do I update multiple items?"
    },
    "LastPostedBy": {
        "S": "fred@example.com"
    }
},
"ConditionExpression": "ForumName <> :f and Subject <> :s",
"ExpressionAttributeValues": {
    ":f": {"S": "Amazon DynamoDB"},
    ":s": {"S": "How do I update multiple items?"}
}
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
}
```

## 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 V2](#)

## Query

Service: Amazon DynamoDB

The `Query` operation finds items based on primary key values. You can query any table or secondary index that has a composite primary key (a partition key and a sort key).

Use the `KeyConditionExpression` parameter to provide a specific value for the partition key. The `Query` operation will return all of the items from the table or index with that partition key value. You can optionally narrow the scope of the `Query` operation by specifying a sort key value and a comparison operator in `KeyConditionExpression`. To further refine the `Query` results, you can optionally provide a `FilterExpression`. A `FilterExpression` determines which items within the results should be returned to you. All of the other results are discarded.

A `Query` operation always returns a result set. If no matching items are found, the result set will be empty. Queries that do not return results consume the minimum number of read capacity units for that type of read operation.

### Note

DynamoDB calculates the number of read capacity units consumed based on item size, not on the amount of data that is returned to an application. The number of capacity units consumed will be the same whether you request all of the attributes (the default behavior) or just some of them (using a projection expression). The number will also be the same whether or not you use a `FilterExpression`.

`Query` results are always sorted by the sort key value. If the data type of the sort key is `Number`, the results are returned in numeric order; otherwise, the results are returned in order of UTF-8 bytes. By default, the sort order is ascending. To reverse the order, set the `ScanIndexForward` parameter to `false`.

A single `Query` operation will read up to the maximum number of items set (if using the `Limit` parameter) or a maximum of 1 MB of data and then apply any filtering to the results using `FilterExpression`. If `LastEvaluatedKey` is present in the response, you will need to paginate the result set. For more information, see [Paginating the Results](#) in the *Amazon DynamoDB Developer Guide*.

`FilterExpression` is applied after a `Query` finishes, but before the results are returned. A `FilterExpression` cannot contain partition key or sort key attributes. You need to specify those attributes in the `KeyConditionExpression`.

### Note

A `Query` operation can return an empty result set and a `LastEvaluatedKey` if all the items read for the page of results are filtered out.

You can query a table, a local secondary index, or a global secondary index. For a query on a table or on a local secondary index, you can set the `ConsistentRead` parameter to `true` and obtain a strongly consistent result. Global secondary indexes support eventually consistent reads only, so do not specify `ConsistentRead` when querying a global secondary index.

## Request Syntax

```
{
  "AttributesToGet": [ "string" ],
  "ConditionalOperator": "string",
  "ConsistentRead": boolean,
  "ExclusiveStartKey": {
    "string": {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
```



```

    ],
    "M": {
      "string" : "AttributeValue"
    },
    "N": "string",
    "NS": [ "string" ],
    "NULL": boolean,
    "S": "string",
    "SS": [ "string" ]
  }
},
"ExpressionAttributeNames": {
  "string" : "string"
},
"ExpressionAttributeValues": {
  "string" : {
    "B": blob,
    "BOOL": boolean,
    "BS": [ blob ],
    "L": [
      "AttributeValue"
    ],
    "M": {
      "string" : "AttributeValue"
    },
    "N": "string",
    "NS": [ "string" ],
    "NULL": boolean,
    "S": "string",
    "SS": [ "string" ]
  }
},
"FilterExpression": "string",
"IndexName": "string",
"KeyConditionExpression": "string",
"KeyConditions": {
  "string" : {
    "AttributeValueList": [
      {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
          "AttributeValue"
        ],
        "M": {
          "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
      }
    ],
    "ComparisonOperator": "string"
  }
},
"Limit": number,
"ProjectionExpression": "string",
"QueryFilter": {
  "string" : {
    "AttributeValueList": [
      {
        "B": blob,
        "BOOL": boolean,

```

```

        "BS": [ blob ],
        "L": [
            "AttributeValue"
        ],
        "M": {
            "string": "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
],
"ComparisonOperator": "string"
}
},
"ReturnConsumedCapacity": "string",
"ScanIndexForward": boolean,
"Select": "string",
"TableName": "string"
}

```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### TableName (p. 99)

The name of the table containing the requested items.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### AttributesToGet (p. 99)

This is a legacy parameter. Use `ProjectionExpression` instead. For more information, see [AttributesToGet](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of strings

Array Members: Minimum number of 1 item.

Length Constraints: Maximum length of 65535.

Required: No

#### ConditionalOperator (p. 99)

This is a legacy parameter. Use `FilterExpression` instead. For more information, see [ConditionalOperator](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Valid Values: AND | OR

Required: No

### **ConsistentRead** (p. 99)

Determines the read consistency model: If set to `true`, then the operation uses strongly consistent reads; otherwise, the operation uses eventually consistent reads.

Strongly consistent reads are not supported on global secondary indexes. If you query a global secondary index with `ConsistentRead` set to `true`, you will receive a `ValidationException`.

Type: Boolean

Required: No

### **ExclusiveStartKey** (p. 99)

The primary key of the first item that this operation will evaluate. Use the value that was returned for `LastEvaluatedKey` in the previous operation.

The data type for `ExclusiveStartKey` must be String, Number or Binary. No set data types are allowed.

Type: String to [AttributeValue](#) (p. 254) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### **ExpressionAttributeNames** (p. 99)

One or more substitution tokens for attribute names in an expression. The following are some use cases for using `ExpressionAttributeNames`:

- To access an attribute whose name conflicts with a DynamoDB reserved word.
- To create a placeholder for repeating occurrences of an attribute name in an expression.
- To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the `#` character in an expression to dereference an attribute name. For example, consider the following attribute name:

- `Percentile`

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- `{"#P": "Percentile"}`

You could then use this substitution in an expression, as in this example:

- `#P = :val`

#### **Note**

Tokens that begin with the `:` character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to string map

Value Length Constraints: Maximum length of 65535.

Required: No

### **ExpressionAttributeValues** (p. 99)

One or more values that can be substituted in an expression.

Use the : (colon) character in an expression to dereference an attribute value. For example, suppose that you wanted to check whether the value of the *ProductStatus* attribute was one of the following:

Available | Backordered | Discontinued

You would first need to specify `ExpressionAttributeValues` as follows:

```
{ ":avail":{"S":"Available"}, ":back":{"S":"Backordered"}, ":disc":
{"S":"Discontinued"} }
```

You could then use these values in an expression, such as this:

```
ProductStatus IN (:avail, :back, :disc)
```

For more information on expression attribute values, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [AttributeValue \(p. 254\)](#) object map

Required: No

#### **FilterExpression (p. 99)**

A string that contains conditions that DynamoDB applies after the `Query` operation, but before the data is returned to you. Items that do not satisfy the `FilterExpression` criteria are not returned.

A `FilterExpression` does not allow key attributes. You cannot define a filter expression based on a partition key or a sort key.

##### **Note**

A `FilterExpression` is applied after the items have already been read; the process of filtering does not consume any additional read capacity units.

For more information, see [Filter Expressions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

#### **IndexName (p. 99)**

The name of an index to query. This index can be any local secondary index or global secondary index on the table. Note that if you use the `IndexName` parameter, you must also provide `TableName`.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

#### **KeyConditionExpression (p. 99)**

The condition that specifies the key value(s) for items to be retrieved by the `Query` action.

The condition must perform an equality test on a single partition key value.

The condition can optionally perform one of several comparison tests on a single sort key value. This allows `Query` to retrieve one item with a given partition key value and sort key value, or several items that have the same partition key value but different sort key values.

The partition key equality test is required, and must be specified in the following format:

`partitionKeyName = :partitionkeyval`

If you also want to provide a condition for the sort key, it must be combined using **AND** with the condition for the sort key. Following is an example, using the **=** comparison operator for the sort key:

`partitionKeyName = :partitionkeyval AND sortKeyName = :sortkeyval`

Valid comparisons for the sort key condition are as follows:

- `sortKeyName = :sortkeyval` - true if the sort key value is equal to `:sortkeyval`.
- `sortKeyName < :sortkeyval` - true if the sort key value is less than `:sortkeyval`.
- `sortKeyName <= :sortkeyval` - true if the sort key value is less than or equal to `:sortkeyval`.
- `sortKeyName > :sortkeyval` - true if the sort key value is greater than `:sortkeyval`.
- `sortKeyName >= :sortkeyval` - true if the sort key value is greater than or equal to `:sortkeyval`.
- `sortKeyName BETWEEN :sortkeyval1 AND :sortkeyval2` - true if the sort key value is greater than or equal to `:sortkeyval1`, and less than or equal to `:sortkeyval2`.
- `begins_with ( sortKeyName, :sortkeyval )` - true if the sort key value begins with a particular operand. (You cannot use this function with a sort key that is of type Number.) Note that the function name `begins_with` is case-sensitive.

Use the `ExpressionAttributeValues` parameter to replace tokens such as `:partitionval` and `:sortval` with actual values at runtime.

You can optionally use the `ExpressionAttributeNames` parameter to replace the names of the partition key and sort key with placeholder tokens. This option might be necessary if an attribute name conflicts with a DynamoDB reserved word. For example, the following `KeyConditionExpression` parameter causes an error because *Size* is a reserved word:

- `Size = :myval`

To work around this, define a placeholder (such as `#S`) to represent the attribute name *Size*. `KeyConditionExpression` then is as follows:

- `#S = :myval`

For a list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*.

For more information on `ExpressionAttributeNames` and `ExpressionAttributeValues`, see [Using Placeholders for Attribute Names and Values](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

### [KeyConditions \(p. 99\)](#)

This is a legacy parameter. Use `KeyConditionExpression` instead. For more information, see [KeyConditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [Condition \(p. 275\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### [Limit \(p. 99\)](#)

The maximum number of items to evaluate (not necessarily the number of matching items). If DynamoDB processes the number of items up to the limit while processing the results, it stops the operation and returns the matching values up to that point, and a key in `LastEvaluatedKey` to apply in a subsequent operation, so that you can pick up where you left off. Also, if the processed data set size exceeds 1 MB before DynamoDB reaches this limit, it stops the operation and returns

the matching values up to the limit, and a key in `LastEvaluatedKey` to apply in a subsequent operation to continue the operation. For more information, see [Query and Scan](#) in the *Amazon DynamoDB Developer Guide*.

Type: Integer

Valid Range: Minimum value of 1.

Required: No

#### [ProjectionExpression \(p. 99\)](#)

A string that identifies one or more attributes to retrieve from the table. These attributes can include scalars, sets, or elements of a JSON document. The attributes in the expression must be separated by commas.

If no attribute names are specified, then all attributes will be returned. If any of the requested attributes are not found, they will not appear in the result.

For more information, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

#### [QueryFilter \(p. 99\)](#)

This is a legacy parameter. Use `FilterExpression` instead. For more information, see [QueryFilter](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [Condition \(p. 275\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

#### [ReturnConsumedCapacity \(p. 99\)](#)

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- **INDEXES** - The response includes the aggregate `ConsumedCapacity` for the operation, together with `ConsumedCapacity` for each table and secondary index that was accessed.

Note that some operations, such as `GetItem` and `BatchGetItem`, do not access any indexes at all. In these cases, specifying **INDEXES** will only return `ConsumedCapacity` information for table(s).

- **TOTAL** - The response includes only the aggregate `ConsumedCapacity` for the operation.
- **NONE** - No `ConsumedCapacity` details are included in the response.

Type: String

Valid Values: **INDEXES** | **TOTAL** | **NONE**

Required: No

#### [ScanIndexForward \(p. 99\)](#)

Specifies the order for index traversal: If `true` (default), the traversal is performed in ascending order; if `false`, the traversal is performed in descending order.

Items with the same partition key value are stored in sorted order by sort key. If the sort key data type is `Number`, the results are stored in numeric order. For type `String`, the results are stored in order of UTF-8 bytes. For type `Binary`, DynamoDB treats each byte of the binary data as unsigned.

If `ScanIndexForward` is `true`, DynamoDB returns the results in the order in which they are stored (by sort key value). This is the default behavior. If `ScanIndexForward` is `false`, DynamoDB reads the results in reverse order by sort key value, and then returns the results to the client.

Type: Boolean

Required: No

### Select (p. 99)

The attributes to be returned in the result. You can retrieve all item attributes, specific item attributes, the count of matching items, or in the case of an index, some or all of the attributes projected into the index.

- `ALL_ATTRIBUTES` - Returns all of the item attributes from the specified table or index. If you query a local secondary index, then for each matching item in the index DynamoDB will fetch the entire item from the parent table. If the index is configured to project all item attributes, then all of the data can be obtained from the local secondary index, and no fetching is required.
- `ALL_PROJECTED_ATTRIBUTES` - Allowed only when querying an index. Retrieves all attributes that have been projected into the index. If the index is configured to project all attributes, this return value is equivalent to specifying `ALL_ATTRIBUTES`.
- `COUNT` - Returns the number of matching items, rather than the matching items themselves.
- `SPECIFIC_ATTRIBUTES` - Returns only the attributes listed in `AttributesToGet`. This return value is equivalent to specifying `AttributesToGet` without specifying any value for `Select`.

If you query or scan a local secondary index and request only attributes that are projected into that index, the operation will read only the index and not the table. If any of the requested attributes are not projected into the local secondary index, DynamoDB will fetch each of these attributes from the parent table. This extra fetching incurs additional throughput cost and latency.

If you query or scan a global secondary index, you can only request attributes that are projected into the index. Global secondary index queries cannot fetch attributes from the parent table.

If neither `Select` nor `AttributesToGet` are specified, DynamoDB defaults to `ALL_ATTRIBUTES` when accessing a table, and `ALL_PROJECTED_ATTRIBUTES` when accessing an index. You cannot use both `Select` and `AttributesToGet` together in a single request, unless the value for `Select` is `SPECIFIC_ATTRIBUTES`. (This usage is equivalent to specifying `AttributesToGet` without any value for `Select`.)

#### Note

If you use the `ProjectionExpression` parameter, then the value for `Select` can only be `SPECIFIC_ATTRIBUTES`. Any other value for `Select` will return an error.

Type: String

Valid Values: `ALL_ATTRIBUTES` | `ALL_PROJECTED_ATTRIBUTES` | `SPECIFIC_ATTRIBUTES` | `COUNT`

Required: No

## Response Syntax

```
{
  "ConsumedCapacity": {
    "CapacityUnits": number,
    "GlobalSecondaryIndexes": {
      "string" : {
        "CapacityUnits": number
      }
    }
  }
}
```

```

    },
    "LocalSecondaryIndexes": {
      "string": {
        "CapacityUnits": number
      }
    },
    "Table": {
      "CapacityUnits": number
    },
    "TableName": "string"
  },
  "Count": number,
  "Items": [
    {
      "string": {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
          "AttributeValue"
        ],
        "M": {
          "string": "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
      }
    }
  ],
  "LastEvaluatedKey": {
    "string": {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string": "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  },
  "ScannedCount": 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.

### ConsumedCapacity (p. 106)

The capacity units consumed by the `Query` operation. The data returned includes the total provisioned throughput consumed, along with statistics for the table and any indexes involved in the operation. `ConsumedCapacity` is only returned if the `ReturnConsumedCapacity` parameter was



specified For more information, see [Provisioned Throughput](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ConsumedCapacity](#) (p. 278) object

#### **Count (p. 106)**

The number of items in the response.

If you used a `QueryFilter` in the request, then `Count` is the number of items returned after the filter was applied, and `ScannedCount` is the number of matching items before the filter was applied.

If you did not use a filter in the request, then `Count` and `ScannedCount` are the same.

Type: Integer

#### **Items (p. 106)**

An array of item attributes that match the query criteria. Each element in this array consists of an attribute name and the value for that attribute.

Type: Array of string to [AttributeValue](#) (p. 254) object maps

Key Length Constraints: Maximum length of 65535.

#### **LastEvaluatedKey (p. 106)**

The primary key of the item where the operation stopped, inclusive of the previous result set. Use this value to start a new operation, excluding this value in the new request.

If `LastEvaluatedKey` is empty, then the "last page" of results has been processed and there is no more data to be retrieved.

If `LastEvaluatedKey` is not empty, it does not necessarily mean that there is more data in the result set. The only way to know when you have reached the end of the result set is when `LastEvaluatedKey` is empty.

Type: String to [AttributeValue](#) (p. 254) object map

Key Length Constraints: Maximum length of 65535.

#### **ScannedCount (p. 106)**

The number of items evaluated, before any `QueryFilter` is applied. A high `ScannedCount` value with few, or no, `Count` results indicates an inefficient `Query` operation. For more information, see [Count and ScannedCount](#) in the *Amazon DynamoDB Developer Guide*.

If you did not use a filter in the request, then `ScannedCount` is the same as `Count`.

Type: Integer

## **Errors**

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### ProvisionedThroughputExceededException

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### ResourceNotFoundException

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Examples

### Retrieve a Range of Items

The following example queries the *Reply* table for replies in a forum that were posted by particular users. There is a local secondary index on the *Reply* table, *PostedBy-Index*, to facilitate fast lookups on the these attributes.

The `ProjectionExpression` parameter determines which attributes are returned.

### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.Query

{
  "TableName": "Reply",
  "IndexName": "PostedBy-Index",
  "Limit": 3,
  "ConsistentRead": true,
  "ProjectionExpression": "Id, PostedBy, ReplyDateTime",
  "KeyConditionExpression": "Id = :v1 AND PostedBy BETWEEN :v2a AND :v2b",
  "ExpressionAttributeValues": {
    ":v1": {"S": "Amazon DynamoDB#DynamoDB Thread 1"},
    ":v2a": {"S": "User A"},
    ":v2b": {"S": "User C"}
  },
  "ReturnConsumedCapacity": "TOTAL"
}
```

### Sample Response

```
HTTP/1.1 200 OK
```

```
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "ConsumedCapacity": {
    "CapacityUnits": 1,
    "TableName": "Reply"
  },
  "Count": 2,
  "Items": [
    {
      "ReplyDateTime": {"S": "2015-02-18T20:27:36.165Z"},
      "PostedBy": {"S": "User A"},
      "Id": {"S": "Amazon DynamoDB#DynamoDB Thread 1"}
    },
    {
      "ReplyDateTime": {"S": "2015-02-25T20:27:36.165Z"},
      "PostedBy": {"S": "User B"},
      "Id": {"S": "Amazon DynamoDB#DynamoDB Thread 1"}
    }
  ],
  "ScannedCount": 2
}
```

## Count Items

The following example returns the number of items in the Thread table for a particular forum.

### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.Query

{
  "TableName": "Thread",
  "ConsistentRead": true,
  "KeyConditionExpression": "ForumName = :val",
  "ExpressionAttributeValues": {":val": {"S": "Amazon DynamoDB"}}
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
```

```
"Count": 2,  
"ScannedCount": 2  
}
```

## 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 V2](#)

# RestoreTableFromBackup

Service: Amazon DynamoDB

Creates a new table from an existing backup. Any number of users can execute up to 4 concurrent restores (any type of restore) in a given account.

You can call `RestoreTableFromBackup` at a maximum rate of 10 times per second.

You must manually set up the following on the restored table:

- Auto scaling policies
- IAM policies
- Cloudwatch metrics and alarms
- Tags
- Stream settings
- Time to Live (TTL) settings

## Request Syntax

```
{  
  "BackupArn": "string",  
  "TargetTableName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### BackupArn (p. 112)

The ARN associated with the backup.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: Yes

#### TargetTableName (p. 112)

The name of the new table to which the backup must be restored.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{
```

```

"TableDescription": {
  "AttributeDefinitions": [
    {
      "AttributeName": "string",
      "AttributeType": "string"
    }
  ],
  "CreationDateTime": number,
  "GlobalSecondaryIndexes": [
    {
      "Backfilling": boolean,
      "IndexArn": "string",
      "IndexName": "string",
      "IndexSizeBytes": number,
      "IndexStatus": "string",
      "ItemCount": number,
      "KeySchema": [
        {
          "AttributeName": "string",
          "KeyType": "string"
        }
      ],
      "Projection": {
        "NonKeyAttributes": [ "string" ],
        "ProjectionType": "string"
      },
      "ProvisionedThroughput": {
        "LastDecreaseDateTime": number,
        "LastIncreaseDateTime": number,
        "NumberOfDecreasesToday": number,
        "ReadCapacityUnits": number,
        "WriteCapacityUnits": number
      }
    }
  ],
  "ItemCount": number,
  "KeySchema": [
    {
      "AttributeName": "string",
      "KeyType": "string"
    }
  ],
  "LatestStreamArn": "string",
  "LatestStreamLabel": "string",
  "LocalSecondaryIndexes": [
    {
      "IndexArn": "string",
      "IndexName": "string",
      "IndexSizeBytes": number,
      "ItemCount": number,
      "KeySchema": [
        {
          "AttributeName": "string",
          "KeyType": "string"
        }
      ],
      "Projection": {
        "NonKeyAttributes": [ "string" ],
        "ProjectionType": "string"
      }
    }
  ],
  "ProvisionedThroughput": {
    "LastDecreaseDateTime": number,
    "LastIncreaseDateTime": number,
    "NumberOfDecreasesToday": number,

```

```
    "ReadCapacityUnits": number,
    "WriteCapacityUnits": number
  },
  "RestoreSummary": {
    "RestoreDateTime": number,
    "RestoreInProgress": boolean,
    "SourceBackupArn": "string",
    "SourceTableArn": "string"
  },
  "SSEDescription": {
    "KMSMasterKeyArn": "string",
    "SSEType": "string",
    "Status": "string"
  },
  "StreamSpecification": {
    "StreamEnabled": boolean,
    "StreamViewType": "string"
  },
  "TableArn": "string",
  "TableId": "string",
  "TableName": "string",
  "TableSizeBytes": number,
  "TableStatus": "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.

### TableDescription (p. 112)

The description of the table created from an existing backup.

Type: [TableDescription \(p. 338\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### BackupInUseException

There is another ongoing conflicting backup control plane operation on the table. The backups is either being created, deleted or restored to a table.

HTTP Status Code: 400

### BackupNotFoundException

Backup not found for the given BackupARN.

HTTP Status Code: 400

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### LimitExceededException

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

**TableAlreadyExistsException**

A target table with the specified name already exists.

HTTP Status Code: 400

**TableInUseException**

A target table with the specified name is either being created or deleted.

HTTP Status Code: 400

## 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 V2](#)



# RestoreTableToPointInTime

Service: Amazon DynamoDB

Restores the specified table to the specified point in time within `EarliestRestorableDateTime` and `LatestRestorableDateTime`. You can restore your table to any point in time during the last 35 days. Any number of users can execute up to 4 concurrent restores (any type of restore) in a given account.

When you restore using point in time recovery, DynamoDB restores your table data to the state based on the selected date and time (day:hour:minute:second) to a new table.

Along with data, the following are also included on the new restored table using point in time recovery:

- Global secondary indexes (GSIs)
- Local secondary indexes (LSIs)
- Provisioned read and write capacity
- Encryption settings

## Important

All these settings come from the current settings of the source table at the time of restore.

You must manually set up the following on the restored table:

- Auto scaling policies
- IAM policies
- Cloudwatch metrics and alarms
- Tags
- Stream settings
- Time to Live (TTL) settings
- Point in time recovery settings

## Request Syntax

```
{
  "RestoreDateTime": number,
  "SourceTableName": "string",
  "TargetTableName": "string",
  "UseLatestRestorableTime": boolean
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### SourceTableName (p. 116)

Name of the source table that is being restored.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### TargetTableName (p. 116)

The name of the new table to which it must be restored to.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### RestoreDateTime (p. 116)

Time in the past to restore the table to.

Type: Timestamp

Required: No

#### UseLatestRestorableTime (p. 116)

Restore the table to the latest possible time. LatestRestorableDateTime is typically 5 minutes before the current time.

Type: Boolean

Required: No

## Response Syntax

```
{
  "TableDescription": {
    "AttributeDefinitions": [
      {
        "AttributeName": "string",
        "AttributeType": "string"
      }
    ],
    "CreationDateTime": number,
    "GlobalSecondaryIndexes": [
      {
        "Backfilling": boolean,
        "IndexArn": "string",
        "IndexName": "string",
        "IndexSizeBytes": number,
        "IndexStatus": "string",
        "ItemCount": number,
        "KeySchema": [
          {
            "AttributeName": "string",
            "KeyType": "string"
          }
        ],
        "Projection": {
          "NonKeyAttributes": [ "string" ],
          "ProjectionType": "string"
        },
        "ProvisionedThroughput": {
          "LastDecreaseDateTime": number,
          "LastIncreaseDateTime": number,
          "NumberOfDecreasesToday": number,
          "ReadCapacityUnits": number,
```

```

        "WriteCapacityUnits": number
    }
},
"ItemCount": number,
"KeySchema": [
    {
        "AttributeName": "string",
        "KeyType": "string"
    }
],
"LatestStreamArn": "string",
"LatestStreamLabel": "string",
"LocalSecondaryIndexes": [
    {
        "IndexArn": "string",
        "IndexName": "string",
        "IndexSizeBytes": number,
        "ItemCount": number,
        "KeySchema": [
            {
                "AttributeName": "string",
                "KeyType": "string"
            }
        ],
        "Projection": {
            "NonKeyAttributes": [ "string" ],
            "ProjectionType": "string"
        }
    }
],
"ProvisionedThroughput": {
    "LastDecreaseDateTime": number,
    "LastIncreaseDateTime": number,
    "NumberOfDecreasesToday": number,
    "ReadCapacityUnits": number,
    "WriteCapacityUnits": number
},
"RestoreSummary": {
    "RestoreDateTime": number,
    "RestoreInProgress": boolean,
    "SourceBackupArn": "string",
    "SourceTableArn": "string"
},
"SSEDescription": {
    "KMSMasterKeyArn": "string",
    "SSEType": "string",
    "Status": "string"
},
"StreamSpecification": {
    "StreamEnabled": boolean,
    "StreamViewType": "string"
},
"TableArn": "string",
"TableId": "string",
"TableName": "string",
"TableSizeBytes": number,
"TableStatus": "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.

#### **TableDescription (p. 117)**

Represents the properties of a table.

Type: [TableDescription \(p. 338\)](#) object

## **Errors**

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

#### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

#### **InvalidRestoreTimeException**

An invalid restore time was specified. `RestoreDateTime` must be between `EarliestRestorableDateTime` and `LatestRestorableDateTime`.

HTTP Status Code: 400

#### **LimitExceededException**

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

#### **PointInTimeRecoveryUnavailableException**

Point in time recovery has not yet been enabled for this source table.

HTTP Status Code: 400

#### **TableAlreadyExistsException**

A target table with the specified name already exists.

HTTP Status Code: 400

#### **TableInUseException**

A target table with the specified name is either being created or deleted.

HTTP Status Code: 400

#### **TableNotFoundException**

A source table with the name `TableName` does not currently exist within the subscriber's account.

HTTP Status Code: 400

## 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 V2](#)

# Scan

Service: Amazon DynamoDB

The Scan operation returns one or more items and item attributes by accessing every item in a table or a secondary index. To have DynamoDB return fewer items, you can provide a `FilterExpression` operation.

If the total number of scanned items exceeds the maximum data set size limit of 1 MB, the scan stops and results are returned to the user as a `LastEvaluatedKey` value to continue the scan in a subsequent operation. The results also include the number of items exceeding the limit. A scan can result in no table data meeting the filter criteria.

A single Scan operation will read up to the maximum number of items set (if using the `Limit` parameter) or a maximum of 1 MB of data and then apply any filtering to the results using `FilterExpression`. If `LastEvaluatedKey` is present in the response, you will need to paginate the result set. For more information, see [Paginating the Results](#) in the *Amazon DynamoDB Developer Guide*.

Scan operations proceed sequentially; however, for faster performance on a large table or secondary index, applications can request a parallel Scan operation by providing the `Segment` and `TotalSegments` parameters. For more information, see [Parallel Scan](#) in the *Amazon DynamoDB Developer Guide*.

Scan uses eventually consistent reads when accessing the data in a table; therefore, the result set might not include the changes to data in the table immediately before the operation began. If you need a consistent copy of the data, as of the time that the Scan begins, you can set the `ConsistentRead` parameter to `true`.

## Request Syntax

```
{
  "AttributesToGet": [ "string" ],
  "ConditionalOperator": "string",
  "ConsistentRead": boolean,
  "ExclusiveStartKey": {
    "string" : {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string" : "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  },
  "ExpressionAttributeNames": {
    "string" : "string"
  },
  "ExpressionAttributeValues": {
    "string" : {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ]
    }
  }
}
```

```

    ],
    "M": {
      "string" : "AttributeValue"
    },
    "N": "string",
    "NS": [ "string" ],
    "NULL": boolean,
    "S": "string",
    "SS": [ "string" ]
  }
},
"FilterExpression": "string",
"IndexName": "string",
"Limit": number,
"ProjectionExpression": "string",
"ReturnConsumedCapacity": "string",
"ScanFilter": {
  "string" : {
    "AttributeValueList": [
      {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
          "AttributeValue"
        ],
        "M": {
          "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
      }
    ],
    "ComparisonOperator": "string"
  }
},
"Segment": number,
"Select": "string",
"TableName": "string",
"TotalSegments": number
}

```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### TableName (p. 121)

The name of the table containing the requested items; or, if you provide `IndexName`, the name of the table to which that index belongs.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### AttributesToGet (p. 121)

This is a legacy parameter. Use `ProjectionExpression` instead. For more information, see [AttributesToGet](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of strings

Array Members: Minimum number of 1 item.

Length Constraints: Maximum length of 65535.

Required: No

### ConditionalOperator (p. 121)

This is a legacy parameter. Use `FilterExpression` instead. For more information, see [ConditionalOperator](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Valid Values: AND | OR

Required: No

### ConsistentRead (p. 121)

A Boolean value that determines the read consistency model during the scan:

- If `ConsistentRead` is `false`, then the data returned from `Scan` might not contain the results from other recently completed write operations (`PutItem`, `UpdateItem` or `DeleteItem`).
- If `ConsistentRead` is `true`, then all of the write operations that completed before the `Scan` began are guaranteed to be contained in the `Scan` response.

The default setting for `ConsistentRead` is `false`.

The `ConsistentRead` parameter is not supported on global secondary indexes. If you scan a global secondary index with `ConsistentRead` set to `true`, you will receive a `ValidationException`.

Type: Boolean

Required: No

### ExclusiveStartKey (p. 121)

The primary key of the first item that this operation will evaluate. Use the value that was returned for `LastEvaluatedKey` in the previous operation.

The data type for `ExclusiveStartKey` must be String, Number or Binary. No set data types are allowed.

In a parallel scan, a `Scan` request that includes `ExclusiveStartKey` must specify the same segment whose previous `Scan` returned the corresponding value of `LastEvaluatedKey`.

Type: String to [AttributeValue](#) (p. 254) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### ExpressionAttributeNames (p. 121)

One or more substitution tokens for attribute names in an expression. The following are some use cases for using `ExpressionAttributeNames`:

- To access an attribute whose name conflicts with a DynamoDB reserved word.



- To create a placeholder for repeating occurrences of an attribute name in an expression.
- To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the `#` character in an expression to dereference an attribute name. For example, consider the following attribute name:

- Percentile

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- `{"#P":"Percentile"}`

You could then use this substitution in an expression, as in this example:

- `#P = :val`

**Note**

Tokens that begin with the `:` character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to string map

Value Length Constraints: Maximum length of 65535.

Required: No

**[ExpressionAttributeValues \(p. 121\)](#)**

One or more values that can be substituted in an expression.

Use the `:` (colon) character in an expression to dereference an attribute value. For example, suppose that you wanted to check whether the value of the *ProductStatus* attribute was one of the following:

Available | Backordered | Discontinued

You would first need to specify `ExpressionAttributeValues` as follows:

```
{ ":avail":{"S":"Available"}, ":back":{"S":"Backordered"}, ":disc":  
{"S":"Discontinued"} }
```

You could then use these values in an expression, such as this:

```
ProductStatus IN (:avail, :back, :disc)
```

For more information on expression attribute values, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [AttributeValue \(p. 254\)](#) object map

Required: No

**[FilterExpression \(p. 121\)](#)**

A string that contains conditions that DynamoDB applies after the `Scan` operation, but before the data is returned to you. Items that do not satisfy the `FilterExpression` criteria are not returned.

**Note**

A `FilterExpression` is applied after the items have already been read; the process of filtering does not consume any additional read capacity units.

For more information, see [Filter Expressions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

#### **IndexName (p. 121)**

The name of a secondary index to scan. This index can be any local secondary index or global secondary index. Note that if you use the `IndexName` parameter, you must also provide `TableName`.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

#### **Limit (p. 121)**

The maximum number of items to evaluate (not necessarily the number of matching items). If DynamoDB processes the number of items up to the limit while processing the results, it stops the operation and returns the matching values up to that point, and a key in `LastEvaluatedKey` to apply in a subsequent operation, so that you can pick up where you left off. Also, if the processed data set size exceeds 1 MB before DynamoDB reaches this limit, it stops the operation and returns the matching values up to the limit, and a key in `LastEvaluatedKey` to apply in a subsequent operation to continue the operation. For more information, see [Query and Scan](#) in the *Amazon DynamoDB Developer Guide*.

Type: Integer

Valid Range: Minimum value of 1.

Required: No

#### **ProjectionExpression (p. 121)**

A string that identifies one or more attributes to retrieve from the specified table or index. These attributes can include scalars, sets, or elements of a JSON document. The attributes in the expression must be separated by commas.

If no attribute names are specified, then all attributes will be returned. If any of the requested attributes are not found, they will not appear in the result.

For more information, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

#### **ReturnConsumedCapacity (p. 121)**

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- **INDEXES** - The response includes the aggregate `ConsumedCapacity` for the operation, together with `ConsumedCapacity` for each table and secondary index that was accessed.

Note that some operations, such as `GetItem` and `BatchGetItem`, do not access any indexes at all. In these cases, specifying **INDEXES** will only return `ConsumedCapacity` information for table(s).

- **TOTAL** - The response includes only the aggregate `ConsumedCapacity` for the operation.

- `NONE` - No `ConsumedCapacity` details are included in the response.

Type: String

Valid Values: `INDEXES` | `TOTAL` | `NONE`

Required: No

#### [ScanFilter \(p. 121\)](#)

This is a legacy parameter. Use `FilterExpression` instead. For more information, see [ScanFilter](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [Condition \(p. 275\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

#### [Segment \(p. 121\)](#)

For a parallel `Scan` request, `Segment` identifies an individual segment to be scanned by an application worker.

Segment IDs are zero-based, so the first segment is always 0. For example, if you want to use four application threads to scan a table or an index, then the first thread specifies a `Segment` value of 0, the second thread specifies 1, and so on.

The value of `LastEvaluatedKey` returned from a parallel `Scan` request must be used as `ExclusiveStartKey` with the same segment ID in a subsequent `Scan` operation.

The value for `Segment` must be greater than or equal to 0, and less than the value provided for `TotalSegments`.

If you provide `Segment`, you must also provide `TotalSegments`.

Type: Integer

Valid Range: Minimum value of 0. Maximum value of 999999.

Required: No

#### [Select \(p. 121\)](#)

The attributes to be returned in the result. You can retrieve all item attributes, specific item attributes, the count of matching items, or in the case of an index, some or all of the attributes projected into the index.

- `ALL_ATTRIBUTES` - Returns all of the item attributes from the specified table or index. If you query a local secondary index, then for each matching item in the index DynamoDB will fetch the entire item from the parent table. If the index is configured to project all item attributes, then all of the data can be obtained from the local secondary index, and no fetching is required.
- `ALL_PROJECTED_ATTRIBUTES` - Allowed only when querying an index. Retrieves all attributes that have been projected into the index. If the index is configured to project all attributes, this return value is equivalent to specifying `ALL_ATTRIBUTES`.
- `COUNT` - Returns the number of matching items, rather than the matching items themselves.
- `SPECIFIC_ATTRIBUTES` - Returns only the attributes listed in `AttributesToGet`. This return value is equivalent to specifying `AttributesToGet` without specifying any value for `Select`.

If you query or scan a local secondary index and request only attributes that are projected into that index, the operation will read only the index and not the table. If any of the requested attributes are not projected into the local secondary index, DynamoDB will fetch each of these attributes from the parent table. This extra fetching incurs additional throughput cost and latency.

If you query or scan a global secondary index, you can only request attributes that are projected into the index. Global secondary index queries cannot fetch attributes from the parent table.

If neither `Select` nor `AttributesToGet` are specified, DynamoDB defaults to `ALL_ATTRIBUTES` when accessing a table, and `ALL_PROJECTED_ATTRIBUTES` when accessing an index. You cannot use both `Select` and `AttributesToGet` together in a single request, unless the value for `Select` is `SPECIFIC_ATTRIBUTES`. (This usage is equivalent to specifying `AttributesToGet` without any value for `Select`.)

**Note**

If you use the `ProjectionExpression` parameter, then the value for `Select` can only be `SPECIFIC_ATTRIBUTES`. Any other value for `Select` will return an error.

Type: String

Valid Values: `ALL_ATTRIBUTES` | `ALL_PROJECTED_ATTRIBUTES` | `SPECIFIC_ATTRIBUTES` | `COUNT`

Required: No

**TotalSegments (p. 121)**

For a parallel `Scan` request, `TotalSegments` represents the total number of segments into which the `Scan` operation will be divided. The value of `TotalSegments` corresponds to the number of application workers that will perform the parallel scan. For example, if you want to use four application threads to scan a table or an index, specify a `TotalSegments` value of 4.

The value for `TotalSegments` must be greater than or equal to 1, and less than or equal to 1000000. If you specify a `TotalSegments` value of 1, the `Scan` operation will be sequential rather than parallel.

If you specify `TotalSegments`, you must also specify `Segment`.

Type: Integer

Valid Range: Minimum value of 1. Maximum value of 1000000.

Required: No

## Response Syntax

```
{
  "ConsumedCapacity": {
    "CapacityUnits": number,
    "GlobalSecondaryIndexes": {
      "string" : {
        "CapacityUnits": number
      }
    },
    "LocalSecondaryIndexes": {
      "string" : {
        "CapacityUnits": number
      }
    },
    "Table": {
      "CapacityUnits": number
    },
    "TableName": "string"
  },
  "Count": number,
```

```

"Items": [
  {
    "string": {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string": "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  }
],
"LastEvaluatedKey": {
  "string": {
    "B": blob,
    "BOOL": boolean,
    "BS": [ blob ],
    "L": [
      "AttributeValue"
    ],
    "M": {
      "string": "AttributeValue"
    },
    "N": "string",
    "NS": [ "string" ],
    "NULL": boolean,
    "S": "string",
    "SS": [ "string" ]
  }
},
"ScannedCount": 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.

### ConsumedCapacity (p. 127)

The capacity units consumed by the Scan operation. The data returned includes the total provisioned throughput consumed, along with statistics for the table and any indexes involved in the operation. ConsumedCapacity is only returned if the ReturnConsumedCapacity parameter was specified. For more information, see [Provisioned Throughput](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ConsumedCapacity \(p. 278\)](#) object

### Count (p. 127)

The number of items in the response.

If you set ScanFilter in the request, then Count is the number of items returned after the filter was applied, and ScannedCount is the number of matching items before the filter was applied.

If you did not use a filter in the request, then `Count` is the same as `ScannedCount`.

Type: Integer

#### **Items (p. 127)**

An array of item attributes that match the scan criteria. Each element in this array consists of an attribute name and the value for that attribute.

Type: Array of string to [AttributeValue \(p. 254\)](#) object maps

Key Length Constraints: Maximum length of 65535.

#### **LastEvaluatedKey (p. 127)**

The primary key of the item where the operation stopped, inclusive of the previous result set. Use this value to start a new operation, excluding this value in the new request.

If `LastEvaluatedKey` is empty, then the "last page" of results has been processed and there is no more data to be retrieved.

If `LastEvaluatedKey` is not empty, it does not necessarily mean that there is more data in the result set. The only way to know when you have reached the end of the result set is when `LastEvaluatedKey` is empty.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

#### **ScannedCount (p. 127)**

The number of items evaluated, before any `ScanFilter` is applied. A high `ScannedCount` value with few, or no, `Count` results indicates an inefficient `Scan` operation. For more information, see [Count and ScannedCount](#) in the *Amazon DynamoDB Developer Guide*.

If you did not use a filter in the request, then `ScannedCount` is the same as `Count`.

Type: Integer

## **Errors**

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **ProvisionedThroughputExceededException**

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Examples

### Return All Items

The following example returns all of the items in a table. No scan filter is applied.

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.Scan

{
  "TableName": "Reply",
  "ReturnConsumedCapacity": "TOTAL"
}
```

#### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
  "ConsumedCapacity": {
    "CapacityUnits": 0.5,
    "TableName": "Reply"
  },
  "Count": 4,
  "Items": [
    {
      "PostedBy": {
        "S": "joe@example.com"
      },
      "ReplyDateTime": {
        "S": "20130320115336"
      },
      "Id": {
        "S": "Amazon DynamoDB#How do I update multiple items?"
      },
      "Message": {
        "S": "Have you looked at BatchWriteItem?"
      }
    },
    {
      "PostedBy": {
        "S": "fred@example.com"
      }
    }
  ]
}
```

```

    },
    "ReplyDateTime": {
      "S": "20130320115342"
    },
    "Id": {
      "S": "Amazon DynamoDB#How do I update multiple items?"
    },
    "Message": {
      "S": "No, I didn't know about that. Where can I find more information?"
    }
  },
  {
    "PostedBy": {
      "S": "joe@example.com"
    },
    "ReplyDateTime": {
      "S": "20130320115347"
    },
    "Id": {
      "S": "Amazon DynamoDB#How do I update multiple items?"
    },
    "Message": {
      "S": "BatchWriteItem is documented in the Amazon DynamoDB API Reference."
    }
  },
  {
    "PostedBy": {
      "S": "fred@example.com"
    },
    "ReplyDateTime": {
      "S": "20130320115352"
    },
    "Id": {
      "S": "Amazon DynamoDB#How do I update multiple items?"
    },
    "Message": {
      "S": "OK, I'll take a look at that. Thanks!"
    }
  }
],
"ScannedCount": 4
}

```

## Use a Filter Expression

The following example returns only those items matching specific criteria.

### Sample Request

```

POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.Scan

{
  "TableName": "Reply",

```



```
"FilterExpression": "PostedBy = :val",
"ExpressionAttributeValues": {":val": {"S": "joe@example.com"}},
"ReturnConsumedCapacity": "TOTAL"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "ConsumedCapacity": {
    "CapacityUnits": 0.5,
    "TableName": "Reply"
  },
  "Count": 2,
  "Items": [
    {
      "PostedBy": {
        "S": "joe@example.com"
      },
      "ReplyDateTime": {
        "S": "20130320115336"
      },
      "Id": {
        "S": "Amazon DynamoDB#How do I update multiple items?"
      },
      "Message": {
        "S": "Have you looked at BatchWriteItem?"
      }
    },
    {
      "PostedBy": {
        "S": "joe@example.com"
      },
      "ReplyDateTime": {
        "S": "20130320115347"
      },
      "Id": {
        "S": "Amazon DynamoDB#How do I update multiple items?"
      },
      "Message": {
        "S": "BatchWriteItem is documented in the Amazon DynamoDB API Reference."
      }
    }
  ],
  "ScannedCount": 4
}
```

### 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 V2](#)

# TagResource

Service: Amazon DynamoDB

Associate a set of tags with an Amazon DynamoDB resource. You can then activate these user-defined tags so that they appear on the Billing and Cost Management console for cost allocation tracking. You can call TagResource up to 5 times per second, per account.

For an overview on tagging DynamoDB resources, see [Tagging for DynamoDB](#) in the *Amazon DynamoDB Developer Guide*.

## Request Syntax

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

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ResourceArn (p. 134)

Identifies the Amazon DynamoDB resource to which tags should be added. This value is an Amazon Resource Name (ARN).

Type: String

Length Constraints: Minimum length of 1. Maximum length of 1283.

Required: Yes

#### Tags (p. 134)

The tags to be assigned to the Amazon DynamoDB resource.

Type: Array of [Tag \(p. 343\)](#) objects

Required: Yes

## Response Elements

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

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

#### **LimitExceededException**

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

#### **ResourceInUseException**

The operation conflicts with the resource's availability. For example, you attempted to recreate an existing table, or tried to delete a table currently in the `CREATING` state.

HTTP Status Code: 400

#### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## 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 V2](#)

# UntagResource

Service: Amazon DynamoDB

Removes the association of tags from an Amazon DynamoDB resource. You can call UntagResource up to 5 times per second, per account.

For an overview on tagging DynamoDB resources, see [Tagging for DynamoDB](#) in the *Amazon DynamoDB Developer Guide*.

## Request Syntax

```
{  
  "ResourceArn": "string",  
  "TagKeys": [ "string" ]  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ResourceArn (p. 136)

The Amazon DyanamoDB resource the tags will be removed from. This value is an Amazon Resource Name (ARN).

Type: String

Length Constraints: Minimum length of 1. Maximum length of 1283.

Required: Yes

#### TagKeys (p. 136)

A list of tag keys. Existing tags of the resource whose keys are members of this list will be removed from the Amazon DynamoDB resource.

Type: Array of strings

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

Required: Yes

## Response Elements

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

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### **LimitExceededException**

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

### **ResourceInUseException**

The operation conflicts with the resource's availability. For example, you attempted to recreate an existing table, or tried to delete a table currently in the `CREATING` state.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## **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 V2](#)

# UpdateContinuousBackups

Service: Amazon DynamoDB

UpdateContinuousBackups enables or disables point in time recovery for the specified table. A successful UpdateContinuousBackups call returns the current ContinuousBackupsDescription. Continuous backups are **ENABLED** on all tables at table creation. If point in time recovery is enabled, PointInTimeRecoveryStatus will be set to **ENABLED**.

Once continuous backups and point in time recovery are enabled, you can restore to any point in time within EarliestRestorableDateTime and LatestRestorableDateTime.

LatestRestorableDateTime is typically 5 minutes before the current time. You can restore your table to any point in time during the last 35 days..

## Request Syntax

```
{
  "PointInTimeRecoverySpecification": {
    "PointInTimeRecoveryEnabled": boolean
  },
  "TableName": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### PointInTimeRecoverySpecification (p. 138)

Represents the settings used to enable point in time recovery.

Type: [PointInTimeRecoverySpecification \(p. 315\)](#) object

Required: Yes

#### TableName (p. 138)

The name of the table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

## Response Syntax

```
{
  "ContinuousBackupsDescription": {
    "ContinuousBackupsStatus": "string",
    "PointInTimeRecoveryDescription": {
      "EarliestRestorableDateTime": number,
      "LatestRestorableDateTime": number,

```

```
        "PointInTimeRecoveryStatus": "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.

### ContinuousBackupsDescription (p. 138)

Represents the continuous backups and point in time recovery settings on the table.

Type: [ContinuousBackupsDescription \(p. 280\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### ContinuousBackupsUnavailableException

Backups have not yet been enabled for this table.

HTTP Status Code: 400

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### TableNotFoundException

A source table with the name `TableName` does not currently exist within the subscriber's account.

HTTP Status Code: 400

## 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 V2](#)



# UpdateGlobalTable

Service: Amazon DynamoDB

Adds or removes replicas in the specified global table. The global table must already exist to be able to use this operation. Any replica to be added must be empty, must have the same name as the global table, must have the same key schema, and must have DynamoDB Streams enabled and must have same provisioned and maximum write capacity units.

## Note

Although you can use `UpdateGlobalTable` to add replicas and remove replicas in a single request, for simplicity we recommend that you issue separate requests for adding or removing replicas.

If global secondary indexes are specified, then the following conditions must also be met:

- The global secondary indexes must have the same name.
- The global secondary indexes must have the same hash key and sort key (if present).
- The global secondary indexes must have the same provisioned and maximum write capacity units.

## Request Syntax

```
{
  "GlobalTableName": "string",
  "ReplicaUpdates": [
    {
      "Create": {
        "RegionName": "string"
      },
      "Delete": {
        "RegionName": "string"
      }
    }
  ]
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### **GlobalTableName** (p. 140)

The global table name.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### **ReplicaUpdates** (p. 140)

A list of regions that should be added or removed from the global table.

Type: Array of [ReplicaUpdate](#) (p. 329) objects

Required: Yes

## Response Syntax

```
{
  "GlobalTableDescription": {
    "CreationDateTime": number,
    "GlobalTableArn": "string",
    "GlobalTableName": "string",
    "GlobalTableStatus": "string",
    "ReplicationGroup": [
      {
        "RegionName": "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.

### **GlobalTableDescription (p. 141)**

Contains the details of the global table.

Type: [GlobalTableDescription \(p. 300\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **GlobalTableNotFoundException**

The specified global table does not exist.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **ReplicaAlreadyExistsException**

The specified replica is already part of the global table.

HTTP Status Code: 400

### **ReplicaNotFoundException**

The specified replica is no longer part of the global table.

HTTP Status Code: 400

### **TableNotFoundException**

A source table with the name `TableName` does not currently exist within the subscriber's account.

HTTP Status Code: 400

## 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 V2](#)

# UpdateGlobalTableSettings

Service: Amazon DynamoDB

Updates settings for a global table.

## Request Syntax

```
{
  "GlobalTableGlobalSecondaryIndexSettingsUpdate": [
    {
      "IndexName": "string",
      "ProvisionedWriteCapacityAutoScalingSettingsUpdate": {
        "AutoScalingDisabled": boolean,
        "AutoScalingRoleArn": "string",
        "MaximumUnits": number,
        "MinimumUnits": number,
        "ScalingPolicyUpdate": {
          "PolicyName": "string",
          "TargetTrackingScalingPolicyConfiguration": {
            "DisableScaleIn": boolean,
            "ScaleInCooldown": number,
            "ScaleOutCooldown": number,
            "TargetValue": number
          }
        }
      }
    },
    "ProvisionedWriteCapacityUnits": number
  ],
  "GlobalTableName": "string",
  "GlobalTableProvisionedWriteCapacityAutoScalingSettingsUpdate": {
    "AutoScalingDisabled": boolean,
    "AutoScalingRoleArn": "string",
    "MaximumUnits": number,
    "MinimumUnits": number,
    "ScalingPolicyUpdate": {
      "PolicyName": "string",
      "TargetTrackingScalingPolicyConfiguration": {
        "DisableScaleIn": boolean,
        "ScaleInCooldown": number,
        "ScaleOutCooldown": number,
        "TargetValue": number
      }
    }
  },
  "GlobalTableProvisionedWriteCapacityUnits": number,
  "ReplicaSettingsUpdate": [
    {
      "RegionName": "string",
      "ReplicaGlobalSecondaryIndexSettingsUpdate": [
        {
          "IndexName": "string",
          "ProvisionedReadCapacityAutoScalingSettingsUpdate": {
            "AutoScalingDisabled": boolean,
            "AutoScalingRoleArn": "string",
            "MaximumUnits": number,
            "MinimumUnits": number,
            "ScalingPolicyUpdate": {
              "PolicyName": "string",
              "TargetTrackingScalingPolicyConfiguration": {
                "DisableScaleIn": boolean,
                "ScaleInCooldown": number,
                "ScaleOutCooldown": number,

```

```
        "TargetValue": number
      }
    },
    "ProvisionedReadCapacityUnits": number
  },
  "ReplicaProvisionedReadCapacityAutoScalingSettingsUpdate": {
    "AutoScalingDisabled": boolean,
    "AutoScalingRoleArn": string,
    "MaximumUnits": number,
    "MinimumUnits": number,
    "ScalingPolicyUpdate": {
      "PolicyName": string,
      "TargetTrackingScalingPolicyConfiguration": {
        "DisableScaleIn": boolean,
        "ScaleInCooldown": number,
        "ScaleOutCooldown": number,
        "TargetValue": number
      }
    }
  },
  "ReplicaProvisionedReadCapacityUnits": number
}
]
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### GlobalTableName (p. 143)

The name of the global table

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### GlobalTableGlobalSecondaryIndexSettingsUpdate (p. 143)

Represents the settings of a global secondary index for a global table that will be modified.

Type: Array of [GlobalTableGlobalSecondaryIndexSettingsUpdate \(p. 302\)](#) objects

Array Members: Minimum number of 1 item. Maximum number of 20 items.

Required: No

#### GlobalTableProvisionedWriteCapacityAutoScalingSettingsUpdate (p. 143)

AutoScaling settings for managing provisioned write capacity for the global table.

Type: [AutoScalingSettingsUpdate \(p. 263\)](#) object

Required: No

### GlobalTableProvisionedWriteCapacityUnits (p. 143)

The maximum number of writes consumed per second before DynamoDB returns a `ThrottlingException`.

Type: Long

Valid Range: Minimum value of 1.

Required: No

### ReplicaSettingsUpdate (p. 143)

Represents the settings for a global table in a region that will be modified.

Type: Array of [ReplicaSettingsUpdate \(p. 328\)](#) objects

Array Members: Minimum number of 1 item. Maximum number of 50 items.

Required: No

## Response Syntax

```
{
  "GlobalTableName": "string",
  "ReplicaSettings": [
    {
      "RegionName": "string",
      "ReplicaGlobalSecondaryIndexSettings": [
        {
          "IndexName": "string",
          "IndexStatus": "string",
          "ProvisionedReadCapacityAutoScalingSettings": {
            "AutoScalingDisabled": boolean,
            "AutoScalingRoleArn": "string",
            "MaximumUnits": number,
            "MinimumUnits": number,
            "ScalingPolicies": [
              {
                "PolicyName": "string",
                "TargetTrackingScalingPolicyConfiguration": {
                  "DisableScaleIn": boolean,
                  "ScaleInCooldown": number,
                  "ScaleOutCooldown": number,
                  "TargetValue": number
                }
              }
            ]
          },
          "ProvisionedReadCapacityUnits": number,
          "ProvisionedWriteCapacityAutoScalingSettings": {
            "AutoScalingDisabled": boolean,
            "AutoScalingRoleArn": "string",
            "MaximumUnits": number,
            "MinimumUnits": number,
            "ScalingPolicies": [
              {
                "PolicyName": "string",
                "TargetTrackingScalingPolicyConfiguration": {
                  "DisableScaleIn": boolean,
                  "ScaleInCooldown": number,
                  "ScaleOutCooldown": number,
                  "TargetValue": number
                }
              }
            ]
          }
        }
      ]
    }
  ]
}
```

```

        }
      }
    ],
    },
    "ProvisionedWriteCapacityUnits": number
  }
],
"ReplicaProvisionedReadCapacityAutoScalingSettings": {
  "AutoScalingDisabled": boolean,
  "AutoScalingRoleArn": "string",
  "MaximumUnits": number,
  "MinimumUnits": number,
  "ScalingPolicies": [
    {
      "PolicyName": "string",
      "TargetTrackingScalingPolicyConfiguration": {
        "DisableScaleIn": boolean,
        "ScaleInCooldown": number,
        "ScaleOutCooldown": number,
        "TargetValue": number
      }
    }
  ]
},
"ReplicaProvisionedReadCapacityUnits": number,
"ReplicaProvisionedWriteCapacityAutoScalingSettings": {
  "AutoScalingDisabled": boolean,
  "AutoScalingRoleArn": "string",
  "MaximumUnits": number,
  "MinimumUnits": number,
  "ScalingPolicies": [
    {
      "PolicyName": "string",
      "TargetTrackingScalingPolicyConfiguration": {
        "DisableScaleIn": boolean,
        "ScaleInCooldown": number,
        "ScaleOutCooldown": number,
        "TargetValue": number
      }
    }
  ]
},
"ReplicaProvisionedWriteCapacityUnits": number,
"ReplicaStatus": "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.

### GlobalTableName (p. 145)

The name of the global table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

### [ReplicaSettings \(p. 145\)](#)

The region specific settings for the global table.

Type: Array of [ReplicaSettingsDescription \(p. 326\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **GlobalTableNotFoundException**

The specified global table does not exist.

HTTP Status Code: 400

### **IndexNotFoundException**

The operation tried to access a nonexistent index.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **LimitExceededException**

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

### **ReplicaNotFoundException**

The specified replica is no longer part of the global table.

HTTP Status Code: 400

### **ResourceInUseException**

The operation conflicts with the resource's availability. For example, you attempted to recreate an existing table, or tried to delete a table currently in the `CREATING` state.

HTTP Status Code: 400

## 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 V2](#)

# UpdateItem

Service: Amazon DynamoDB

Edits an existing item's attributes, or adds a new item to the table if it does not already exist. You can put, delete, or add attribute values. You can also perform a conditional update on an existing item (insert a new attribute name-value pair if it doesn't exist, or replace an existing name-value pair if it has certain expected attribute values).

You can also return the item's attribute values in the same UpdateItem operation using the ReturnValues parameter.

## Request Syntax

```

{
  "AttributeUpdates": {
    "string": {
      "Action": "string",
      "Value": {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
          "AttributeValue"
        ],
        "M": {
          "string": "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
      }
    }
  },
  "ConditionalOperator": "string",
  "ConditionExpression": "string",
  "Expected": {
    "string": {
      "AttributeValueList": [
        {
          "B": blob,
          "BOOL": boolean,
          "BS": [ blob ],
          "L": [
            "AttributeValue"
          ],
          "M": {
            "string": "AttributeValue"
          },
          "N": "string",
          "NS": [ "string" ],
          "NULL": boolean,
          "S": "string",
          "SS": [ "string" ]
        }
      ]
    },
    "ComparisonOperator": "string",
    "Exists": boolean,
    "Value": {
      "B": blob,
      "BOOL": boolean,

```

```

        "BS": [ blob ],
        "L": [
            "AttributeValue"
        ],
        "M": {
            "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
}
},
"ExpressionAttributeNames": {
    "string" : "string"
},
"ExpressionAttributeValues": {
    "string" : {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
            "AttributeValue"
        ],
        "M": {
            "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
},
"Key": {
    "string" : {
        "B": blob,
        "BOOL": boolean,
        "BS": [ blob ],
        "L": [
            "AttributeValue"
        ],
        "M": {
            "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    }
},
"ReturnConsumedCapacity": "string",
"ReturnItemCollectionMetrics": "string",
"ReturnValues": "string",
"TableName": "string",
"UpdateExpression": "string"
}

```

## Request Parameters

The request accepts the following data in JSON format.

**Note**

In the following list, the required parameters are described first.

**Key (p. 149)**

The primary key of the item to be updated. Each element consists of an attribute name and a value for that attribute.

For the primary key, you must provide all of the attributes. For example, with a simple primary key, you only need to provide a value for the partition key. For a composite primary key, you must provide values for both the partition key and the sort key.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: Yes

**TableName (p. 149)**

The name of the table containing the item to update.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

**AttributeUpdates (p. 149)**

This is a legacy parameter. Use `UpdateExpression` instead. For more information, see [AttributeUpdates](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [AttributeValueUpdate \(p. 257\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

**ConditionalOperator (p. 149)**

This is a legacy parameter. Use `ConditionExpression` instead. For more information, see [ConditionalOperator](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Valid Values: AND | OR

Required: No

**ConditionExpression (p. 149)**

A condition that must be satisfied in order for a conditional update to succeed.

An expression can contain any of the following:

- Functions: `attribute_exists` | `attribute_not_exists` | `attribute_type` | `contains` | `begins_with` | `size`

These function names are case-sensitive.

- Comparison operators: `=` | `<>` | `<` | `>` | `<=` | `>=` | `BETWEEN` | `IN`
- Logical operators: `AND` | `OR` | `NOT`

For more information on condition expressions, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

#### **Expected (p. 149)**

This is a legacy parameter. Use `ConditionExpression` instead. For more information, see [Expected](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [ExpectedAttributeValue \(p. 287\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

#### **ExpressionAttributeNames (p. 149)**

One or more substitution tokens for attribute names in an expression. The following are some use cases for using `ExpressionAttributeNames`:

- To access an attribute whose name conflicts with a DynamoDB reserved word.
- To create a placeholder for repeating occurrences of an attribute name in an expression.
- To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the `#` character in an expression to dereference an attribute name. For example, consider the following attribute name:

- `Percentile`

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- `{"#P": "Percentile"}`

You could then use this substitution in an expression, as in this example:

- `#P = :val`

#### **Note**

Tokens that begin with the `:` character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to string map

Value Length Constraints: Maximum length of 65535.

Required: No

#### **ExpressionAttributeValues (p. 149)**

One or more values that can be substituted in an expression.

Use the `:` (colon) character in an expression to dereference an attribute value. For example, suppose that you wanted to check whether the value of the *ProductStatus* attribute was one of the following:

`Available | Backordered | Discontinued`

You would first need to specify `ExpressionAttributeValues` as follows:

```
{ ":avail":{"S":"Available"}, ":back":{"S":"Backordered"}, ":disc":  
{"S":"Discontinued"} }
```

You could then use these values in an expression, such as this:

```
ProductStatus IN (:avail, :back, :disc)
```

For more information on expression attribute values, see [Specifying Conditions](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to [AttributeValue \(p. 254\)](#) object map

Required: No

#### **ReturnConsumedCapacity (p. 149)**

Determines the level of detail about provisioned throughput consumption that is returned in the response:

- **INDEXES** - The response includes the aggregate **ConsumedCapacity** for the operation, together with **ConsumedCapacity** for each table and secondary index that was accessed.

Note that some operations, such as **GetItem** and **BatchGetItem**, do not access any indexes at all. In these cases, specifying **INDEXES** will only return **ConsumedCapacity** information for table(s).

- **TOTAL** - The response includes only the aggregate **ConsumedCapacity** for the operation.
- **NONE** - No **ConsumedCapacity** details are included in the response.

Type: String

Valid Values: **INDEXES** | **TOTAL** | **NONE**

Required: No

#### **ReturnItemCollectionMetrics (p. 149)**

Determines whether item collection metrics are returned. If set to **SIZE**, the response includes statistics about item collections, if any, that were modified during the operation are returned in the response. If set to **NONE** (the default), no statistics are returned.

Type: String

Valid Values: **SIZE** | **NONE**

Required: No

#### **ReturnValues (p. 149)**

Use **ReturnValues** if you want to get the item attributes as they appear before or after they are updated. For **UpdateItem**, the valid values are:

- **NONE** - If **ReturnValues** is not specified, or if its value is **NONE**, then nothing is returned. (This setting is the default for **ReturnValues**.)
- **ALL\_OLD** - Returns all of the attributes of the item, as they appeared before the **UpdateItem** operation.
- **UPDATED\_OLD** - Returns only the updated attributes, as they appeared before the **UpdateItem** operation.
- **ALL\_NEW** - Returns all of the attributes of the item, as they appear after the **UpdateItem** operation.
- **UPDATED\_NEW** - Returns only the updated attributes, as they appear after the **UpdateItem** operation.

There is no additional cost associated with requesting a return value aside from the small network and processing overhead of receiving a larger response. No read capacity units are consumed.

The values returned are strongly consistent.

Type: String

Valid Values: NONE | ALL\_OLD | UPDATED\_OLD | ALL\_NEW | UPDATED\_NEW

Required: No

### [UpdateExpression \(p. 149\)](#)

An expression that defines one or more attributes to be updated, the action to be performed on them, and new value(s) for them.

The following action values are available for `UpdateExpression`.

- **SET** - Adds one or more attributes and values to an item. If any of these attribute already exist, they are replaced by the new values. You can also use **SET** to add or subtract from an attribute that is of type Number. For example: `SET myNum = myNum + :val`

**SET** supports the following functions:

- **if\_not\_exists** (path, operand) - if the item does not contain an attribute at the specified path, then **if\_not\_exists** evaluates to operand; otherwise, it evaluates to path. You can use this function to avoid overwriting an attribute that may already be present in the item.
- **list\_append** (operand, operand) - evaluates to a list with a new element added to it. You can append the new element to the start or the end of the list by reversing the order of the operands.

These function names are case-sensitive.

- **REMOVE** - Removes one or more attributes from an item.
- **ADD** - Adds the specified value to the item, if the attribute does not already exist. If the attribute does exist, then the behavior of **ADD** depends on the data type of the attribute:
  - If the existing attribute is a number, and if `value` is also a number, then `value` is mathematically added to the existing attribute. If `value` is a negative number, then it is subtracted from the existing attribute.

#### **Note**

If you use **ADD** to increment or decrement a number value for an item that doesn't exist before the update, DynamoDB uses 0 as the initial value.

Similarly, if you use **ADD** for an existing item to increment or decrement an attribute value that doesn't exist before the update, DynamoDB uses 0 as the initial value. For example, suppose that the item you want to update doesn't have an attribute named *itemcount*, but you decide to **ADD** the number 3 to this attribute anyway. DynamoDB will create the *itemcount* attribute, set its initial value to 0, and finally add 3 to it. The result will be a new *itemcount* attribute in the item, with a value of 3.

- If the existing data type is a set and if `value` is also a set, then `value` is added to the existing set. For example, if the attribute value is the set [ 1 , 2 ], and the **ADD** action specified [ 3 ], then the final attribute value is [ 1 , 2 , 3 ]. An error occurs if an **ADD** action is specified for a set attribute and the attribute type specified does not match the existing set type.

Both sets must have the same primitive data type. For example, if the existing data type is a set of strings, the `value` must also be a set of strings.

#### **Important**

The **ADD** action only supports Number and set data types. In addition, **ADD** can only be used on top-level attributes, not nested attributes.

- **DELETE** - Deletes an element from a set.

If a set of values is specified, then those values are subtracted from the old set. For example, if the attribute value was the set [ a , b , c ] and the `DELETE` action specifies [ a , c ], then the final attribute value is [ b ]. Specifying an empty set is an error.

### Important

The `DELETE` action only supports set data types. In addition, `DELETE` can only be used on top-level attributes, not nested attributes.

You can have many actions in a single expression, such as the following: `SET a=:value1, b=:value2 DELETE :value3, :value4, :value5`

For more information on update expressions, see [Modifying Items and Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Required: No

## Response Syntax

```
{
  "Attributes": {
    "string": {
      "B": blob,
      "BOOL": boolean,
      "BS": [ blob ],
      "L": [
        "AttributeValue"
      ],
      "M": {
        "string": "AttributeValue"
      },
      "N": "string",
      "NS": [ "string" ],
      "NULL": boolean,
      "S": "string",
      "SS": [ "string" ]
    }
  },
  "ConsumedCapacity": {
    "CapacityUnits": number,
    "GlobalSecondaryIndexes": {
      "string": {
        "CapacityUnits": number
      }
    },
    "LocalSecondaryIndexes": {
      "string": {
        "CapacityUnits": number
      }
    }
  },
  "Table": {
    "CapacityUnits": number
  },
  "TableName": "string"
},
"ItemCollectionMetrics": {
  "ItemCollectionKey": {
    "string": {
      "B": blob,
      "BOOL": boolean,
```



```

        "BS": [ blob ],
        "L": [
            "AttributeValue"
        ],
        "M": {
            "string" : "AttributeValue"
        },
        "N": "string",
        "NS": [ "string" ],
        "NULL": boolean,
        "S": "string",
        "SS": [ "string" ]
    },
    "SizeEstimateRangeGB": [ 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.

### Attributes (p. 155)

A map of attribute values as they appear before or after the `UpdateItem` operation, as determined by the `ReturnValues` parameter.

The `Attributes` map is only present if `ReturnValues` was specified as something other than `NONE` in the request. Each element represents one attribute.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

### ConsumedCapacity (p. 155)

The capacity units consumed by the `UpdateItem` operation. The data returned includes the total provisioned throughput consumed, along with statistics for the table and any indexes involved in the operation. `ConsumedCapacity` is only returned if the `ReturnConsumedCapacity` parameter was specified. For more information, see [Provisioned Throughput](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ConsumedCapacity \(p. 278\)](#) object

### ItemCollectionMetrics (p. 155)

Information about item collections, if any, that were affected by the `UpdateItem` operation. `ItemCollectionMetrics` is only returned if the `ReturnItemCollectionMetrics` parameter was specified. If the table does not have any local secondary indexes, this information is not returned in the response.

Each `ItemCollectionMetrics` element consists of:

- `ItemCollectionKey` - The partition key value of the item collection. This is the same as the partition key value of the item itself.
- `SizeEstimateRangeGB` - An estimate of item collection size, in gigabytes. This value is a two-element array containing a lower bound and an upper bound for the estimate. The estimate includes the size of all the items in the table, plus the size of all attributes projected into all of the local secondary indexes on that table. Use this estimate to measure whether a local secondary index is approaching its size limit.

The estimate is subject to change over time; therefore, do not rely on the precision or accuracy of the estimate.

Type: [ItemCollectionMetrics](#) (p. 303) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **ConditionalCheckFailedException**

A condition specified in the operation could not be evaluated.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **ItemCollectionSizeLimitExceededException**

An item collection is too large. This exception is only returned for tables that have one or more local secondary indexes.

HTTP Status Code: 400

### **ProvisionedThroughputExceededException**

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## Examples

### Conditional Update

This example updates the `Thread` table, changing the `LastPostedBy` attribute - but only if `LastPostedBy` is currently `"fred@example.com"`. All of the item's attributes, as they appear after the update, are returned in the response.

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
```

```
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.UpdateItem
```

```
{
  "TableName": "Thread",
  "Key": {
    "ForumName": {
      "S": "Amazon DynamoDB"
    },
    "Subject": {
      "S": "Maximum number of items?"
    }
  },
  "UpdateExpression": "set LastPostedBy = :val1",
  "ConditionExpression": "LastPostedBy = :val2",
  "ExpressionAttributeValues": {
    ":val1": {"S": "alice@example.com"},
    ":val2": {"S": "fred@example.com"}
  },
  "ReturnValues": "ALL_NEW"
}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "Attributes": {
    "LastPostedBy": {
      "S": "alice@example.com"
    },
    "ForumName": {
      "S": "Amazon DynamoDB"
    },
    "LastPostDateTime": {
      "S": "20130320010350"
    },
    "Tags": {
      "SS": ["Update", "Multiple Items", "HelpMe"]
    },
    "Subject": {
      "S": "Maximum number of items?"
    },
    "Views": {
      "N": "5"
    },
    "Message": {
      "S": "I want to put 10 million data items to an Amazon DynamoDB table. Is
there an upper limit?"
    }
  }
}
```

## Atomic Counter

The following example increments the `Replies` attribute in the `Thread` table whenever someone posts a reply. Because `ReturnValues` is set to `NONE`, no output appears in the response payload.

### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDB_20120810.UpdateItem

{
  "TableName": "Thread",
  "Key": {
    "ForumName": {
      "S": "Amazon DynamoDB"
    },
    "Subject": {
      "S": "A question about updates"
    }
  },
  "UpdateExpression": "set Replies = Replies + :num",
  "ExpressionAttributeValues": {
    ":num": {"N": "1"}
  },
  "ReturnValues" : "NONE"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
}
```

## 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 V2](#)

# UpdateTable

Service: Amazon DynamoDB

Modifies the provisioned throughput settings, global secondary indexes, or DynamoDB Streams settings for a given table.

You can only perform one of the following operations at once:

- Modify the provisioned throughput settings of the table.
- Enable or disable Streams on the table.
- Remove a global secondary index from the table.
- Create a new global secondary index on the table. Once the index begins backfilling, you can use UpdateTable to perform other operations.

UpdateTable is an asynchronous operation; while it is executing, the table status changes from ACTIVE to UPDATING. While it is UPDATING, you cannot issue another UpdateTable request. When the table returns to the ACTIVE state, the UpdateTable operation is complete.

## Request Syntax

```
{
  "AttributeDefinitions": [
    {
      "AttributeName": "string",
      "AttributeType": "string"
    }
  ],
  "GlobalSecondaryIndexUpdates": [
    {
      "Create": {
        "IndexName": "string",
        "KeySchema": [
          {
            "AttributeName": "string",
            "KeyType": "string"
          }
        ],
        "Projection": {
          "NonKeyAttributes": [ "string" ],
          "ProjectionType": "string"
        },
        "ProvisionedThroughput": {
          "ReadCapacityUnits": number,
          "WriteCapacityUnits": number
        }
      },
      "Delete": {
        "IndexName": "string"
      },
      "Update": {
        "IndexName": "string",
        "ProvisionedThroughput": {
          "ReadCapacityUnits": number,
          "WriteCapacityUnits": number
        }
      }
    }
  ],
  "ProvisionedThroughput": {
    "ReadCapacityUnits": number,
```

```

    "WriteCapacityUnits": number
  },
  "SSESpecification": {
    "Enabled": boolean,
    "KMSMasterKeyId": "string",
    "SSEType": "string"
  },
  "StreamSpecification": {
    "StreamEnabled": boolean,
    "StreamViewType": "string"
  },
  "TableName": "string"
}

```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### TableName (p. 161)

The name of the table to be updated.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### AttributeDefinitions (p. 161)

An array of attributes that describe the key schema for the table and indexes. If you are adding a new global secondary index to the table, `AttributeDefinitions` must include the key element(s) of the new index.

Type: Array of [AttributeDefinition \(p. 253\)](#) objects

Required: No

#### GlobalSecondaryIndexUpdates (p. 161)

An array of one or more global secondary indexes for the table. For each index in the array, you can request one action:

- `Create` - add a new global secondary index to the table.
- `Update` - modify the provisioned throughput settings of an existing global secondary index.
- `Delete` - remove a global secondary index from the table.

For more information, see [Managing Global Secondary Indexes](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of [GlobalSecondaryIndexUpdate \(p. 298\)](#) objects

Required: No

#### ProvisionedThroughput (p. 161)

The new provisioned throughput settings for the specified table or index.

Type: [ProvisionedThroughput \(p. 317\)](#) object

Required: No

#### SSESpecification (p. 161)

The new server-side encryption settings for the specified table.

Type: [SSESpecification \(p. 336\)](#) object

Required: No

#### StreamSpecification (p. 161)

Represents the DynamoDB Streams configuration for the table.

##### Note

You will receive a `ResourceInUseException` if you attempt to enable a stream on a table that already has a stream, or if you attempt to disable a stream on a table which does not have a stream.

Type: [StreamSpecification \(p. 337\)](#) object

Required: No

## Response Syntax

```
{
  "TableDescription": {
    "AttributeDefinitions": [
      {
        "AttributeName": "string",
        "AttributeType": "string"
      }
    ],
    "CreationDateTime": number,
    "GlobalSecondaryIndexes": [
      {
        "Backfilling": boolean,
        "IndexArn": "string",
        "IndexName": "string",
        "IndexSizeBytes": number,
        "IndexStatus": "string",
        "ItemCount": number,
        "KeySchema": [
          {
            "AttributeName": "string",
            "KeyType": "string"
          }
        ],
        "Projection": {
          "NonKeyAttributes": [ "string" ],
          "ProjectionType": "string"
        },
        "ProvisionedThroughput": {
          "LastDecreaseDateTime": number,
          "LastIncreaseDateTime": number,
          "NumberOfDecreasesToday": number,
          "ReadCapacityUnits": number,
          "WriteCapacityUnits": number
        }
      }
    ],
    "ItemCount": number,
    "KeySchema": [
```



```

    {
      "AttributeName": "string",
      "KeyType": "string"
    }
  ],
  "LatestStreamArn": "string",
  "LatestStreamLabel": "string",
  "LocalSecondaryIndexes": [
    {
      "IndexArn": "string",
      "IndexName": "string",
      "IndexSizeBytes": number,
      "ItemCount": number,
      "KeySchema": [
        {
          "AttributeName": "string",
          "KeyType": "string"
        }
      ],
      "Projection": {
        "NonKeyAttributes": [ "string" ],
        "ProjectionType": "string"
      }
    }
  ],
  "ProvisionedThroughput": {
    "LastDecreaseDateTime": number,
    "LastIncreaseDateTime": number,
    "NumberOfDecreasesToday": number,
    "ReadCapacityUnits": number,
    "WriteCapacityUnits": number
  },
  "RestoreSummary": {
    "RestoreDateTime": number,
    "RestoreInProgress": boolean,
    "SourceBackupArn": "string",
    "SourceTableArn": "string"
  },
  "SSEDescription": {
    "KMSMasterKeyArn": "string",
    "SSEType": "string",
    "Status": "string"
  },
  "StreamSpecification": {
    "StreamEnabled": boolean,
    "StreamViewType": "string"
  },
  "TableArn": "string",
  "TableId": "string",
  "TableName": "string",
  "TableSizeBytes": number,
  "TableStatus": "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.

### TableDescription (p. 163)

Represents the properties of the table.

Type: [TableDescription](#) (p. 338) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **LimitExceededException**

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include CreateTable, UpdateTable, DeleteTable, UpdateTimeToLive, RestoreTableFromBackup, and RestoreTableToPointInTime.

For tables with secondary indexes, only one of those tables can be in the CREATING state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the ACTIVE state is 250.

HTTP Status Code: 400

### **ResourceInUseException**

The operation conflicts with the resource's availability. For example, you attempted to recreate an existing table, or tried to delete a table currently in the CREATING state.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be ACTIVE.

HTTP Status Code: 400

## Example

### Modify Provisioned Write Throughput

This example changes both the provisioned read and write throughput of the Thread table to 10 capacity units.

#### Sample Request

```
POST / HTTP/1.1
Host: dynamodb.<region>.<domain>;
Accept-Encoding: identity
Content-Length: <PayloadSizeBytes>
User-Agent: <UserAgentString>
Content-Type: application/x-amz-json-1.0
Authorization: AWS4-HMAC-SHA256 Credential=<Credential>, SignedHeaders=<Headers>,
  Signature=<Signature>
X-Amz-Date: <Date>
```

```
X-Amz-Target: DynamoDB_20120810.UpdateTable
```

```
{
  "TableName": "Thread",
  "ProvisionedThroughput": {
    "ReadCapacityUnits": 10,
    "WriteCapacityUnits": 10
  }
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>
{
  "TableDescription": {
    "TableArn": "arn:aws:dynamodb:us-west-2:123456789012:table/Thread",
    "AttributeDefinitions": [
      {
        "AttributeName": "ForumName",
        "AttributeType": "S"
      },
      {
        "AttributeName": "LastPostDateTime",
        "AttributeType": "S"
      },
      {
        "AttributeName": "Subject",
        "AttributeType": "S"
      }
    ],
    "CreationDateTime": 1.363801528686E9,
    "ItemCount": 0,
    "KeySchema": [
      {
        "AttributeName": "ForumName",
        "KeyType": "HASH"
      },
      {
        "AttributeName": "Subject",
        "KeyType": "RANGE"
      }
    ],
    "LocalSecondaryIndexes": [
      {
        "IndexName": "LastPostIndex",
        "IndexSizeBytes": 0,
        "ItemCount": 0,
        "KeySchema": [
          {
            "AttributeName": "ForumName",
            "KeyType": "HASH"
          },
          {
            "AttributeName": "LastPostDateTime",
            "KeyType": "RANGE"
          }
        ]
      }
    ]
  }
}
```

```
        "Projection": {
            "ProjectionType": "KEYS_ONLY"
        }
    },
    "ProvisionedThroughput": {
        "LastIncreaseDateTime": 1.363801701282E9,
        "NumberOfDecreasesToday": 0,
        "ReadCapacityUnits": 5,
        "WriteCapacityUnits": 5
    },
    "TableName": "Thread",
    "TableSizeBytes": 0,
    "TableStatus": "UPDATING"
}
```

## 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 V2](#)

# UpdateTimeToLive

Service: Amazon DynamoDB

The UpdateTimeToLive method will enable or disable TTL for the specified table. A successful UpdateTimeToLive call returns the current TimeToLiveSpecification; it may take up to one hour for the change to fully process. Any additional UpdateTimeToLive calls for the same table during this one hour duration result in a ValidationException.

TTL compares the current time in epoch time format to the time stored in the TTL attribute of an item. If the epoch time value stored in the attribute is less than the current time, the item is marked as expired and subsequently deleted.

## Note

The epoch time format is the number of seconds elapsed since 12:00:00 AM January 1st, 1970 UTC.

DynamoDB deletes expired items on a best-effort basis to ensure availability of throughput for other data operations.

## Important

DynamoDB typically deletes expired items within two days of expiration. The exact duration within which an item gets deleted after expiration is specific to the nature of the workload. Items that have expired and not been deleted will still show up in reads, queries, and scans.

As items are deleted, they are removed from any Local Secondary Index and Global Secondary Index immediately in the same eventually consistent way as a standard delete operation.

For more information, see [Time To Live](#) in the Amazon DynamoDB Developer Guide.

## Request Syntax

```
{
  "TableName": "string",
  "TimeToLiveSpecification": {
    "AttributeName": "string",
    "Enabled": boolean
  }
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### TableName (p. 168)

The name of the table to be configured.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### TimeToLiveSpecification (p. 168)

Represents the settings used to enable or disable Time to Live for the specified table.

Type: [TimeToLiveSpecification](#) (p. 345) object

Required: Yes

## Response Syntax

```
{
  "TimeToLiveSpecification": {
    "AttributeName": "string",
    "Enabled": boolean
  }
}
```

## 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.

### [TimeToLiveSpecification](#) (p. 169)

Represents the output of an `UpdateTimeToLive` operation.

Type: [TimeToLiveSpecification](#) (p. 345) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **LimitExceededException**

There is no limit to the number of daily on-demand backups that can be taken.

Up to 10 simultaneous table operations are allowed per account. These operations include `CreateTable`, `UpdateTable`, `DeleteTable`, `UpdateTimeToLive`, `RestoreTableFromBackup`, and `RestoreTableToPointInTime`.

For tables with secondary indexes, only one of those tables can be in the `CREATING` state at any point in time. Do not attempt to create more than one such table simultaneously.

The total limit of tables in the `ACTIVE` state is 250.

HTTP Status Code: 400

### **ResourceInUseException**

The operation conflicts with the resource's availability. For example, you attempted to recreate an existing table, or tried to delete a table currently in the `CREATING` state.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent table or index. The resource might not be specified correctly, or its status might not be `ACTIVE`.

HTTP Status Code: 400

## 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 V2](#)

# Amazon DynamoDB Accelerator

The following actions are supported by Amazon DynamoDB Accelerator:

- [CreateCluster](#) (p. 171)
- [CreateParameterGroup](#) (p. 177)
- [CreateSubnetGroup](#) (p. 179)
- [DecreaseReplicationFactor](#) (p. 182)
- [DeleteCluster](#) (p. 185)
- [DeleteParameterGroup](#) (p. 188)
- [DeleteSubnetGroup](#) (p. 190)
- [DescribeClusters](#) (p. 192)
- [DescribeDefaultParameters](#) (p. 195)
- [DescribeEvents](#) (p. 198)
- [DescribeParameterGroups](#) (p. 201)
- [DescribeParameters](#) (p. 204)
- [DescribeSubnetGroups](#) (p. 207)
- [IncreaseReplicationFactor](#) (p. 210)
- [ListTags](#) (p. 213)
- [RebootNode](#) (p. 215)
- [TagResource](#) (p. 218)
- [UntagResource](#) (p. 221)
- [UpdateCluster](#) (p. 223)
- [UpdateParameterGroup](#) (p. 227)
- [UpdateSubnetGroup](#) (p. 229)

# CreateCluster

Service: Amazon DynamoDB Accelerator

Creates a DAX cluster. All nodes in the cluster run the same DAX caching software.

## Request Syntax

```
{
  "AvailabilityZones": [ "string" ],
  "ClusterName": "string",
  "Description": "string",
  "IamRoleArn": "string",
  "NodeType": "string",
  "NotificationTopicArn": "string",
  "ParameterGroupName": "string",
  "PreferredMaintenanceWindow": "string",
  "ReplicationFactor": number,
  "SecurityGroupIds": [ "string" ],
  "SSSESpecification": {
    "Enabled": boolean
  },
  "SubnetGroupName": "string",
  "Tags": [
    {
      "Key": "string",
      "Value": "string"
    }
  ]
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ClusterName (p. 171)

The cluster identifier. This parameter is stored as a lowercase string.

#### Constraints:

- A name must contain from 1 to 20 alphanumeric characters or hyphens.
- The first character must be a letter.
- A name cannot end with a hyphen or contain two consecutive hyphens.

Type: String

Required: Yes

#### NodeType (p. 171)

The compute and memory capacity of the nodes in the cluster.

Type: String

Required: Yes



### ReplicationFactor (p. 171)

The number of nodes in the DAX cluster. A replication factor of 1 will create a single-node cluster, without any read replicas. For additional fault tolerance, you can create a multiple node cluster with one or more read replicas. To do this, set *ReplicationFactor* to 2 or more.

#### Note

AWS recommends that you have at least two read replicas per cluster.

Type: Integer

Required: Yes

### AvailabilityZones (p. 171)

The Availability Zones (AZs) in which the cluster nodes will be created. All nodes belonging to the cluster are placed in these Availability Zones. Use this parameter if you want to distribute the nodes across multiple AZs.

Type: Array of strings

Required: No

### Description (p. 171)

A description of the cluster.

Type: String

Required: No

### IamRoleArn (p. 171)

*This parameter has been deprecated.*

A valid Amazon Resource Name (ARN) that identifies an IAM role. At runtime, DAX will assume this role and use the role's permissions to access DynamoDB on your behalf.

Type: String

Required: No

### NotificationTopicArn (p. 171)

The Amazon Resource Name (ARN) of the Amazon SNS topic to which notifications will be sent.

#### Note

The Amazon SNS topic owner must be same as the DAX cluster owner.

Type: String

Required: No

### ParameterGroupName (p. 171)

The parameter group to be associated with the DAX cluster.

Type: String

Required: No

### PreferredMaintenanceWindow (p. 171)

Specifies the weekly time range during which maintenance on the DAX cluster is performed. It is specified as a range in the format ddd:hh24:mi-ddd:hh24:mi (24H Clock UTC). The minimum maintenance window is a 60 minute period. Valid values for ddd are:

- sun

- mon
- tue
- wed
- thu
- fri
- sat

Example: sun:05:00–sun:09:00

**Note**

If you don't specify a preferred maintenance window when you create or modify a cache cluster, DAX assigns a 60-minute maintenance window on a randomly selected day of the week.

Type: String

Required: No

**SecurityGroupIds (p. 171)**

A list of security group IDs to be assigned to each node in the DAX cluster. (Each of the security group ID is system-generated.)

If this parameter is not specified, DAX assigns the default VPC security group to each node.

Type: Array of strings

Required: No

**SSESpecification (p. 171)**

Represents the settings used to enable server-side encryption on the cluster.

Type: [SSESpecification \(p. 365\)](#) object

Required: No

**SubnetGroupName (p. 171)**

The name of the subnet group to be used for the replication group.

**Important**

DAX clusters can only run in an Amazon VPC environment. All of the subnets that you specify in a subnet group must exist in the same VPC.

Type: String

Required: No

**Tags (p. 171)**

A set of tags to associate with the DAX cluster.

Type: Array of [Tag \(p. 368\)](#) objects

Required: No

## Response Syntax

```
{
  "Cluster": {
    "ActiveNodes": number,
    "ClusterArn": "string",
```

```

"ClusterDiscoveryEndpoint": {
  "Address": "string",
  "Port": number
},
"ClusterName": "string",
"Description": "string",
"IamRoleArn": "string",
"NodeIdsToRemove": [ "string" ],
"Nodes": [
  {
    "AvailabilityZone": "string",
    "Endpoint": {
      "Address": "string",
      "Port": number
    },
    "NodeCreateTime": number,
    "NodeId": "string",
    "NodeStatus": "string",
    "ParameterGroupStatus": "string"
  }
],
"NodeType": "string",
"NotificationConfiguration": {
  "TopicArn": "string",
  "TopicStatus": "string"
},
"ParameterGroup": {
  "NodeIdsToReboot": [ "string" ],
  "ParameterApplyStatus": "string",
  "ParameterGroupName": "string"
},
"PreferredMaintenanceWindow": "string",
"SecurityGroups": [
  {
    "SecurityGroupIdentifier": "string",
    "Status": "string"
  }
],
"SSEDescription": {
  "Status": "string"
},
"Status": "string",
"SubnetGroup": "string",
"TotalNodes": 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.

### Cluster (p. 173)

A description of the DAX cluster that you have created.

Type: [Cluster \(p. 349\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

**ClusterAlreadyExistsFault**

You already have a DAX cluster with the given identifier.

HTTP Status Code: 400

**ClusterQuotaForCustomerExceededFault**

You have attempted to exceed the maximum number of DAX clusters for your AWS account.

HTTP Status Code: 400

**InsufficientClusterCapacityFault**

There are not enough system resources to create the cluster you requested (or to resize an already-existing cluster).

HTTP Status Code: 400

**InvalidClusterStateFault**

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

**InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

**InvalidParameterGroupStateFault**

One or more parameters in a parameter group are in an invalid state.

HTTP Status Code: 400

**InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

**InvalidVPCNetworkStateFault**

The VPC network is in an invalid state.

HTTP Status Code: 400

**NodeQuotaForClusterExceededFault**

You have attempted to exceed the maximum number of nodes for a DAX cluster.

HTTP Status Code: 400

**NodeQuotaForCustomerExceededFault**

You have attempted to exceed the maximum number of nodes for your AWS account.

HTTP Status Code: 400

**ParameterGroupNotFoundFault**

The specified parameter group does not exist.

HTTP Status Code: 400

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

**SubnetGroupNotFoundFault**

The requested subnet group name does not refer to an existing subnet group.

HTTP Status Code: 400

**TagQuotaPerResourceExceeded**

You have exceeded the maximum number of tags for this DAX cluster.

HTTP Status Code: 400

## 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 V2](#)

# CreateParameterGroup

Service: Amazon DynamoDB Accelerator

Creates a new parameter group. A parameter group is a collection of parameters that you apply to all of the nodes in a DAX cluster.

## Request Syntax

```
{  
  "Description": "string",  
  "ParameterGroupName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ParameterGroupName (p. 177)

The name of the parameter group to apply to all of the clusters in this replication group.

Type: String

Required: Yes

#### Description (p. 177)

A description of the parameter group.

Type: String

Required: No

## Response Syntax

```
{  
  "ParameterGroup": {  
    "Description": "string",  
    "ParameterGroupName": "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.

#### ParameterGroup (p. 177)

Represents the output of a *CreateParameterGroup* action.

Type: [ParameterGroup](#) (p. 360) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### **InvalidParameterGroupStateFault**

One or more parameters in a parameter group are in an invalid state.

HTTP Status Code: 400

### **InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

### **ParameterGroupAlreadyExistsFault**

The specified parameter group already exists.

HTTP Status Code: 400

### **ParameterGroupQuotaExceededFault**

You have attempted to exceed the maximum number of parameter groups.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# CreateSubnetGroup

Service: Amazon DynamoDB Accelerator

Creates a new subnet group.

## Request Syntax

```
{
  "Description": "string",
  "SubnetGroupName": "string",
  "SubnetIds": [ "string" ]
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### SubnetGroupName (p. 179)

A name for the subnet group. This value is stored as a lowercase string.

Type: String

Required: Yes

#### SubnetIds (p. 179)

A list of VPC subnet IDs for the subnet group.

Type: Array of strings

Required: Yes

#### Description (p. 179)

A description for the subnet group

Type: String

Required: No

## Response Syntax

```
{
  "SubnetGroup": {
    "Description": "string",
    "SubnetGroupName": "string",
    "Subnets": [
      {
        "SubnetAvailabilityZone": "string",
        "SubnetIdentifier": "string"
      }
    ],
    "VpcId": "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.

### **SubnetGroup (p. 179)**

Represents the output of a *CreateSubnetGroup* operation.

Type: [SubnetGroup \(p. 367\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **InvalidSubnet**

An invalid subnet identifier was specified.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

### **SubnetGroupAlreadyExistsFault**

The specified subnet group already exists.

HTTP Status Code: 400

### **SubnetGroupQuotaExceededFault**

The request cannot be processed because it would exceed the allowed number of subnets in a subnet group.

HTTP Status Code: 400

### **SubnetQuotaExceededFault**

The request cannot be processed because it would exceed the allowed number of subnets in a subnet group.

HTTP Status Code: 400

## 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 V2](#)

# DecreaseReplicationFactor

Service: Amazon DynamoDB Accelerator

Removes one or more nodes from a DAX cluster.

## Note

You cannot use `DecreaseReplicationFactor` to remove the last node in a DAX cluster. If you need to do this, use `DeleteCluster` instead.

## Request Syntax

```
{
  "AvailabilityZones": [ "string" ],
  "ClusterName": "string",
  "NewReplicationFactor": number,
  "NodeIdsToRemove": [ "string" ]
}
```

## Request Parameters

The request accepts the following data in JSON format.

## Note

In the following list, the required parameters are described first.

### ClusterName (p. 182)

The name of the DAX cluster from which you want to remove nodes.

Type: String

Required: Yes

### NewReplicationFactor (p. 182)

The new number of nodes for the DAX cluster.

Type: Integer

Required: Yes

### AvailabilityZones (p. 182)

The Availability Zone(s) from which to remove nodes.

Type: Array of strings

Required: No

### NodeIdsToRemove (p. 182)

The unique identifiers of the nodes to be removed from the cluster.

Type: Array of strings

Required: No

## Response Syntax

```
{
  "Cluster": {
    "ActiveNodes": number,
  }
}
```

```

    "ClusterArn": "string",
    "ClusterDiscoveryEndpoint": {
      "Address": "string",
      "Port": number
    },
    "ClusterName": "string",
    "Description": "string",
    "IamRoleArn": "string",
    "NodeIdsToRemove": [ "string" ],
    "Nodes": [
      {
        "AvailabilityZone": "string",
        "Endpoint": {
          "Address": "string",
          "Port": number
        },
        "NodeCreateTime": number,
        "NodeId": "string",
        "NodeStatus": "string",
        "ParameterGroupStatus": "string"
      }
    ],
    "NodeType": "string",
    "NotificationConfiguration": {
      "TopicArn": "string",
      "TopicStatus": "string"
    },
    "ParameterGroup": {
      "NodeIdsToReboot": [ "string" ],
      "ParameterApplyStatus": "string",
      "ParameterGroupName": "string"
    },
    "PreferredMaintenanceWindow": "string",
    "SecurityGroups": [
      {
        "SecurityGroupIdentifier": "string",
        "Status": "string"
      }
    ],
    "SSEDescription": {
      "Status": "string"
    },
    "Status": "string",
    "SubnetGroup": "string",
    "TotalNodes": 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.

### Cluster (p. 182)

A description of the DAX cluster, after you have decreased its replication factor.

Type: [Cluster \(p. 349\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

**ClusterNotFoundFault**

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

**InvalidClusterStateFault**

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

**InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

**InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

**NodeNotFoundFault**

None of the nodes in the cluster have the given node ID.

HTTP Status Code: 400

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# DeleteCluster

Service: Amazon DynamoDB Accelerator

Deletes a previously provisioned DAX cluster. *DeleteCluster* deletes all associated nodes, node endpoints and the DAX cluster itself. When you receive a successful response from this action, DAX immediately begins deleting the cluster; you cannot cancel or revert this action.

## Request Syntax

```
{  
  "ClusterName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ClusterName (p. 185)

The name of the cluster to be deleted.

Type: String

Required: Yes

## Response Syntax

```
{  
  "Cluster": {  
    "ActiveNodes": number,  
    "ClusterArn": "string",  
    "ClusterDiscoveryEndpoint": {  
      "Address": "string",  
      "Port": number  
    },  
    "ClusterName": "string",  
    "Description": "string",  
    "IamRoleArn": "string",  
    "NodeIdsToRemove": [ "string" ],  
    "Nodes": [  
      {  
        "AvailabilityZone": "string",  
        "Endpoint": {  
          "Address": "string",  
          "Port": number  
        },  
        "NodeCreateTime": number,  
        "NodeId": "string",  
        "NodeStatus": "string",  
        "ParameterGroupStatus": "string"  
      }  
    ],  
    "NodeType": "string",  
    "NotificationConfiguration": {  
      "TopicArn": "string",
```

```

        "TopicStatus": "string"
    },
    "ParameterGroup": {
        "NodeIdsToReboot": [ "string" ],
        "ParameterApplyStatus": "string",
        "ParameterGroupName": "string"
    },
    "PreferredMaintenanceWindow": "string",
    "SecurityGroups": [
        {
            "SecurityGroupIdentifier": "string",
            "Status": "string"
        }
    ],
    "SSEDescription": {
        "Status": "string"
    },
    "Status": "string",
    "SubnetGroup": "string",
    "TotalNodes": 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.

### Cluster (p. 185)

A description of the DAX cluster that is being deleted.

Type: [Cluster \(p. 349\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### ClusterNotFoundFault

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

### InvalidClusterStateFault

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

### InvalidParameterCombinationException

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### InvalidParameterValueException

The value for a parameter is invalid.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)



# DeleteParameterGroup

Service: Amazon DynamoDB Accelerator

Deletes the specified parameter group. You cannot delete a parameter group if it is associated with any DAX clusters.

## Request Syntax

```
{  
  "ParameterGroupName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ParameterGroupName (p. 188)

The name of the parameter group to delete.

Type: String

Required: Yes

## Response Syntax

```
{  
  "DeletionMessage": "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.

#### DeletionMessage (p. 188)

A user-specified message for this action (i.e., a reason for deleting the parameter group).

Type: String

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

#### InvalidParameterCombinationException

Two or more incompatible parameters were specified.

HTTP Status Code: 400

**InvalidParameterGroupStateFault**

One or more parameters in a parameter group are in an invalid state.

HTTP Status Code: 400

**InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

**ParameterGroupNotFoundFault**

The specified parameter group does not exist.

HTTP Status Code: 400

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# DeleteSubnetGroup

Service: Amazon DynamoDB Accelerator

Deletes a subnet group.

**Note**

You cannot delete a subnet group if it is associated with any DAX clusters.

## Request Syntax

```
{  
  "SubnetGroupName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

**Note**

In the following list, the required parameters are described first.

**SubnetGroupName (p. 190)**

The name of the subnet group to delete.

Type: String

Required: Yes

## Response Syntax

```
{  
  "DeletionMessage": "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.

**DeletionMessage (p. 190)**

A user-specified message for this action (i.e., a reason for deleting the subnet group).

Type: String

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

**SubnetGroupInUseFault**

The specified subnet group is currently in use.

HTTP Status Code: 400

**SubnetGroupNotFoundFault**

The requested subnet group name does not refer to an existing subnet group.

HTTP Status Code: 400

## 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 V2](#)

# DescribeClusters

Service: Amazon DynamoDB Accelerator

Returns information about all provisioned DAX clusters if no cluster identifier is specified, or about a specific DAX cluster if a cluster identifier is supplied.

If the cluster is in the CREATING state, only cluster level information will be displayed until all of the nodes are successfully provisioned.

If the cluster is in the DELETING state, only cluster level information will be displayed.

If nodes are currently being added to the DAX cluster, node endpoint information and creation time for the additional nodes will not be displayed until they are completely provisioned. When the DAX cluster state is *available*, the cluster is ready for use.

If nodes are currently being removed from the DAX cluster, no endpoint information for the removed nodes is displayed.

## Request Syntax

```
{  
  "ClusterNames": [ "string" ],  
  "MaxResults": number,  
  "NextToken": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ClusterNames (p. 192)

The names of the DAX clusters being described.

Type: Array of strings

Required: No

#### MaxResults (p. 192)

The maximum number of results to include in the response. If more results exist than the specified `MaxResults` value, a token is included in the response so that the remaining results can be retrieved.

The value for `MaxResults` must be between 20 and 100.

Type: Integer

Required: No

#### NextToken (p. 192)

An optional token returned from a prior request. Use this token for pagination of results from this action. If this parameter is specified, the response includes only results beyond the token, up to the value specified by `MaxResults`.

Type: String

Required: No

## Response Syntax

```
{
  "Clusters": [
    {
      "ActiveNodes": number,
      "ClusterArn": "string",
      "ClusterDiscoveryEndpoint": {
        "Address": "string",
        "Port": number
      },
      "ClusterName": "string",
      "Description": "string",
      "IamRoleArn": "string",
      "NodeIdsToRemove": [ "string" ],
      "Nodes": [
        {
          "AvailabilityZone": "string",
          "Endpoint": {
            "Address": "string",
            "Port": number
          },
          "NodeCreateTime": number,
          "NodeId": "string",
          "NodeStatus": "string",
          "ParameterGroupStatus": "string"
        }
      ],
      "NodeType": "string",
      "NotificationConfiguration": {
        "TopicArn": "string",
        "TopicStatus": "string"
      },
      "ParameterGroup": {
        "NodeIdsToReboot": [ "string" ],
        "ParameterApplyStatus": "string",
        "ParameterGroupName": "string"
      },
      "PreferredMaintenanceWindow": "string",
      "SecurityGroups": [
        {
          "SecurityGroupIdentifier": "string",
          "Status": "string"
        }
      ],
      "SSEDescription": {
        "Status": "string"
      },
      "Status": "string",
      "SubnetGroup": "string",
      "TotalNodes": number
    }
  ],
  "NextToken": "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.

**Clusters (p. 193)**

The descriptions of your DAX clusters, in response to a *DescribeClusters* request.

Type: Array of [Cluster \(p. 349\)](#) objects

**NextToken (p. 193)**

Provides an identifier to allow retrieval of paginated results.

Type: String

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

**ClusterNotFoundFault**

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

**InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

**InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# DescribeDefaultParameters

Service: Amazon DynamoDB Accelerator

Returns the default system parameter information for the DAX caching software.

## Request Syntax

```
{  
  "MaxResults": number,  
  "NextToken": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

### MaxResults (p. 195)

The maximum number of results to include in the response. If more results exist than the specified `MaxResults` value, a token is included in the response so that the remaining results can be retrieved.

The value for `MaxResults` must be between 20 and 100.

Type: Integer

Required: No

### NextToken (p. 195)

An optional token returned from a prior request. Use this token for pagination of results from this action. If this parameter is specified, the response includes only results beyond the token, up to the value specified by `MaxResults`.

Type: String

Required: No

## Response Syntax

```
{  
  "NextToken": "string",  
  "Parameters": [  
    {  
      "AllowedValues": "string",  
      "ChangeType": "string",  
      "DataType": "string",  
      "Description": "string",  
      "IsModifiable": "string",  
      "NodeTypeSpecificValues": [  
        {  
          "NodeType": "string",  
          "Value": "string"  
        }  
      ],  
    }  
  ],  
}
```



```
    "ParameterName": "string",  
    "ParameterType": "string",  
    "ParameterValue": "string",  
    "Source": "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. 195)

Provides an identifier to allow retrieval of paginated results.

Type: String

### Parameters (p. 195)

A list of parameters. Each element in the list represents one parameter.

Type: Array of [Parameter \(p. 358\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InvalidParameterCombinationException

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### InvalidParameterValueException

The value for a parameter is invalid.

HTTP Status Code: 400

### ServiceLinkedRoleNotFoundFault

HTTP Status Code: 400

## 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 V2](#)

# DescribeEvents

Service: Amazon DynamoDB Accelerator

Returns events related to DAX clusters and parameter groups. You can obtain events specific to a particular DAX cluster or parameter group by providing the name as a parameter.

By default, only the events occurring within the last hour are returned; however, you can retrieve up to 14 days' worth of events if necessary.

## Request Syntax

```
{  
  "Duration": number,  
  "EndTime": number,  
  "MaxResults": number,  
  "NextToken": "string",  
  "SourceName": "string",  
  "SourceType": "string",  
  "StartTime": number  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

### Duration (p. 198)

The number of minutes' worth of events to retrieve.

Type: Integer

Required: No

### EndTime (p. 198)

The end of the time interval for which to retrieve events, specified in ISO 8601 format.

Type: Timestamp

Required: No

### MaxResults (p. 198)

The maximum number of results to include in the response. If more results exist than the specified `MaxResults` value, a token is included in the response so that the remaining results can be retrieved.

The value for `MaxResults` must be between 20 and 100.

Type: Integer

Required: No

### NextToken (p. 198)

An optional token returned from a prior request. Use this token for pagination of results from this action. If this parameter is specified, the response includes only results beyond the token, up to the value specified by `MaxResults`.

Type: String

Required: No

#### **SourceName (p. 198)**

The identifier of the event source for which events will be returned. If not specified, then all sources are included in the response.

Type: String

Required: No

#### **SourceType (p. 198)**

The event source to retrieve events for. If no value is specified, all events are returned.

Type: String

Valid Values: CLUSTER | PARAMETER\_GROUP | SUBNET\_GROUP

Required: No

#### **StartTime (p. 198)**

The beginning of the time interval to retrieve events for, specified in ISO 8601 format.

Type: Timestamp

Required: No

## Response Syntax

```
{
  "Events": [
    {
      "Date": number,
      "Message": "string",
      "SourceName": "string",
      "SourceType": "string"
    }
  ],
  "NextToken": "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.

#### **Events (p. 199)**

An array of events. Each element in the array represents one event.

Type: Array of [Event \(p. 353\)](#) objects

#### **NextToken (p. 199)**

Provides an identifier to allow retrieval of paginated results.

Type: String

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### **InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# DescribeParameterGroups

Service: Amazon DynamoDB Accelerator

Returns a list of parameter group descriptions. If a parameter group name is specified, the list will contain only the descriptions for that group.

## Request Syntax

```
{  
  "MaxResults": number,  
  "NextToken": "string",  
  "ParameterGroupNames": [ "string" ]  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### MaxResults (p. 201)

The maximum number of results to include in the response. If more results exist than the specified `MaxResults` value, a token is included in the response so that the remaining results can be retrieved.

The value for `MaxResults` must be between 20 and 100.

Type: Integer

Required: No

#### NextToken (p. 201)

An optional token returned from a prior request. Use this token for pagination of results from this action. If this parameter is specified, the response includes only results beyond the token, up to the value specified by `MaxResults`.

Type: String

Required: No

#### ParameterGroupNames (p. 201)

The names of the parameter groups.

Type: Array of strings

Required: No

## Response Syntax

```
{  
  "NextToken": "string",  
  "ParameterGroups": [  
    {  
      "Description": "string",
```

```
    "ParameterGroupName": "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. 201)

Provides an identifier to allow retrieval of paginated results.

Type: String

### ParameterGroups (p. 201)

An array of parameter groups. Each element in the array represents one parameter group.

Type: Array of [ParameterGroup \(p. 360\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InvalidParameterCombinationException

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### InvalidParameterValueException

The value for a parameter is invalid.

HTTP Status Code: 400

### ParameterGroupNotFoundFault

The specified parameter group does not exist.

HTTP Status Code: 400

### ServiceLinkedRoleNotFoundFault

HTTP Status Code: 400

## 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 V2](#)



# DescribeParameters

Service: Amazon DynamoDB Accelerator

Returns the detailed parameter list for a particular parameter group.

## Request Syntax

```
{  
  "MaxResults": number,  
  "NextToken": "string",  
  "ParameterGroupName": "string",  
  "Source": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ParameterGroupName (p. 204)

The name of the parameter group.

Type: String

Required: Yes

#### MaxResults (p. 204)

The maximum number of results to include in the response. If more results exist than the specified `MaxResults` value, a token is included in the response so that the remaining results can be retrieved.

The value for `MaxResults` must be between 20 and 100.

Type: Integer

Required: No

#### NextToken (p. 204)

An optional token returned from a prior request. Use this token for pagination of results from this action. If this parameter is specified, the response includes only results beyond the token, up to the value specified by `MaxResults`.

Type: String

Required: No

#### Source (p. 204)

How the parameter is defined. For example, `system` denotes a system-defined parameter.

Type: String

Required: No

## Response Syntax

```
{
  "NextToken": "string",
  "Parameters": [
    {
      "AllowedValues": "string",
      "ChangeType": "string",
      "DataType": "string",
      "Description": "string",
      "IsModifiable": "string",
      "NodeTypeSpecificValues": [
        {
          "NodeType": "string",
          "Value": "string"
        }
      ],
      "ParameterName": "string",
      "ParameterType": "string",
      "ParameterValue": "string",
      "Source": "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. 205)

Provides an identifier to allow retrieval of paginated results.

Type: String

### **Parameters** (p. 205)

A list of parameters within a parameter group. Each element in the list represents one parameter.

Type: Array of [Parameter](#) (p. 358) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### **InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

### **ParameterGroupNotFoundFault**

The specified parameter group does not exist.

HTTP Status Code: 400

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# DescribeSubnetGroups

Service: Amazon DynamoDB Accelerator

Returns a list of subnet group descriptions. If a subnet group name is specified, the list will contain only the description of that group.

## Request Syntax

```
{  
  "MaxResults": number,  
  "NextToken": "string",  
  "SubnetGroupNames": [ "string" ]  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### MaxResults (p. 207)

The maximum number of results to include in the response. If more results exist than the specified `MaxResults` value, a token is included in the response so that the remaining results can be retrieved.

The value for `MaxResults` must be between 20 and 100.

Type: Integer

Required: No

#### NextToken (p. 207)

An optional token returned from a prior request. Use this token for pagination of results from this action. If this parameter is specified, the response includes only results beyond the token, up to the value specified by `MaxResults`.

Type: String

Required: No

#### SubnetGroupNames (p. 207)

The name of the subnet group.

Type: Array of strings

Required: No

## Response Syntax

```
{  
  "NextToken": "string",  
  "SubnetGroups": [  
    {  
      "Description": "string",
```

```
    "SubnetGroupName": "string",
    "Subnets": [
      {
        "SubnetAvailabilityZone": "string",
        "SubnetIdentifier": "string"
      }
    ],
    "VpcId": "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. 207)

Provides an identifier to allow retrieval of paginated results.

Type: String

### SubnetGroups (p. 207)

An array of subnet groups. Each element in the array represents a single subnet group.

Type: Array of [SubnetGroup \(p. 367\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### ServiceLinkedRoleNotFoundFault

HTTP Status Code: 400

### SubnetGroupNotFoundFault

The requested subnet group name does not refer to an existing subnet group.

HTTP Status Code: 400

## 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 V2](#)



# IncreaseReplicationFactor

Service: Amazon DynamoDB Accelerator

Adds one or more nodes to a DAX cluster.

## Request Syntax

```
{  
  "AvailabilityZones": [ "string" ],  
  "ClusterName": "string",  
  "NewReplicationFactor": number  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ClusterName (p. 210)

The name of the DAX cluster that will receive additional nodes.

Type: String

Required: Yes

#### NewReplicationFactor (p. 210)

The new number of nodes for the DAX cluster.

Type: Integer

Required: Yes

#### AvailabilityZones (p. 210)

The Availability Zones (AZs) in which the cluster nodes will be created. All nodes belonging to the cluster are placed in these Availability Zones. Use this parameter if you want to distribute the nodes across multiple AZs.

Type: Array of strings

Required: No

## Response Syntax

```
{  
  "Cluster": {  
    "ActiveNodes": number,  
    "ClusterArn": "string",  
    "ClusterDiscoveryEndpoint": {  
      "Address": "string",  
      "Port": number  
    },  
    "ClusterName": "string",  
    "Description": "string",  
  }
```

```

    "TamRoleArn": "string",
    "NodeIdsToRemove": [ "string" ],
    "Nodes": [
      {
        "AvailabilityZone": "string",
        "Endpoint": {
          "Address": "string",
          "Port": number
        },
        "NodeCreateTime": number,
        "NodeId": "string",
        "NodeStatus": "string",
        "ParameterGroupStatus": "string"
      }
    ],
    "NodeType": "string",
    "NotificationConfiguration": {
      "TopicArn": "string",
      "TopicStatus": "string"
    },
    "ParameterGroup": {
      "NodeIdsToReboot": [ "string" ],
      "ParameterApplyStatus": "string",
      "ParameterGroupName": "string"
    },
    "PreferredMaintenanceWindow": "string",
    "SecurityGroups": [
      {
        "SecurityGroupIdentifier": "string",
        "Status": "string"
      }
    ],
    "SSEDescription": {
      "Status": "string"
    },
    "Status": "string",
    "SubnetGroup": "string",
    "TotalNodes": 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.

### Cluster (p. 210)

A description of the DAX cluster. with its new replication factor.

Type: [Cluster \(p. 349\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### ClusterNotFoundFault

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400



**InsufficientClusterCapacityFault**

There are not enough system resources to create the cluster you requested (or to resize an already-existing cluster).

HTTP Status Code: 400

**InvalidClusterStateFault**

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

**InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

**InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

**InvalidVPCNetworkStateFault**

The VPC network is in an invalid state.

HTTP Status Code: 400

**NodeQuotaForClusterExceededFault**

You have attempted to exceed the maximum number of nodes for a DAX cluster.

HTTP Status Code: 400

**NodeQuotaForCustomerExceededFault**

You have attempted to exceed the maximum number of nodes for your AWS account.

HTTP Status Code: 400

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

## ListTags

Service: Amazon DynamoDB Accelerator

List all of the tags for a DAX cluster. You can call `ListTags` up to 10 times per second, per account.

## Request Syntax

```
{
  "NextToken": "string",
  "ResourceName": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ResourceName (p. 213)

The name of the DAX resource to which the tags belong.

Type: String

Required: Yes

#### NextToken (p. 213)

An optional token returned from a prior request. Use this token for pagination of results from this action. If this parameter is specified, the response includes only results beyond the token.

Type: String

Required: No

## Response Syntax

```
{
  "NextToken": "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.

#### NextToken (p. 213)

If this value is present, there are additional results to be displayed. To retrieve them, call `ListTags` again, with `NextToken` set to this value.

Type: String

#### **Tags (p. 213)**

A list of tags currently associated with the DAX cluster.

Type: Array of [Tag \(p. 368\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

#### **ClusterNotFoundFault**

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

#### **InvalidARNFault**

The Amazon Resource Name (ARN) supplied in the request is not valid.

HTTP Status Code: 400

#### **InvalidClusterStateFault**

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

#### **InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

#### **InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

#### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# RebootNode

Service: Amazon DynamoDB Accelerator

Reboots a single node of a DAX cluster. The reboot action takes place as soon as possible. During the reboot, the node status is set to REBOOTING.

## Request Syntax

```
{
  "ClusterName": "string",
  "NodeId": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ClusterName (p. 215)

The name of the DAX cluster containing the node to be rebooted.

Type: String

Required: Yes

#### NodeId (p. 215)

The system-assigned ID of the node to be rebooted.

Type: String

Required: Yes

## Response Syntax

```
{
  "Cluster": {
    "ActiveNodes": number,
    "ClusterArn": "string",
    "ClusterDiscoveryEndpoint": {
      "Address": "string",
      "Port": number
    },
    "ClusterName": "string",
    "Description": "string",
    "IamRoleArn": "string",
    "NodeIdsToRemove": [ "string" ],
    "Nodes": [
      {
        "AvailabilityZone": "string",
        "Endpoint": {
          "Address": "string",
          "Port": number
        },
        "NodeCreateTime": number,
        "NodeId": "string",

```

```

        "NodeStatus": "string",
        "ParameterGroupStatus": "string"
    }
],
"NodeType": "string",
"NotificationConfiguration": {
    "TopicArn": "string",
    "TopicStatus": "string"
},
"ParameterGroup": {
    "NodeIdsToReboot": [ "string" ],
    "ParameterApplyStatus": "string",
    "ParameterGroupName": "string"
},
"PreferredMaintenanceWindow": "string",
"SecurityGroups": [
    {
        "SecurityGroupIdentifier": "string",
        "Status": "string"
    }
],
"SSEDescription": {
    "Status": "string"
},
"Status": "string",
"SubnetGroup": "string",
"TotalNodes": 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.

### Cluster (p. 215)

A description of the DAX cluster after a node has been rebooted.

Type: [Cluster \(p. 349\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### ClusterNotFoundFault

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

### InvalidClusterStateFault

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

### InvalidParameterCombinationException

Two or more incompatible parameters were specified.

HTTP Status Code: 400

**InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

**NodeNotFoundFault**

None of the nodes in the cluster have the given node ID.

HTTP Status Code: 400

**ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## 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 V2](#)

# TagResource

Service: Amazon DynamoDB Accelerator

Associates a set of tags with a DAX resource. You can call `TagResource` up to 5 times per second, per account.

## Request Syntax

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

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ResourceName (p. 218)

The name of the DAX resource to which tags should be added.

Type: String

Required: Yes

#### Tags (p. 218)

The tags to be assigned to the DAX resource.

Type: Array of [Tag \(p. 368\)](#) objects

Required: Yes

## Response Syntax

```
{
  "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.

### Tags (p. 218)

The list of tags that are associated with the DAX resource.

Type: Array of [Tag \(p. 368\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **ClusterNotFoundFault**

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

### **InvalidARNFault**

The Amazon Resource Name (ARN) supplied in the request is not valid.

HTTP Status Code: 400

### **InvalidClusterStateFault**

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

### **InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### **InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

### **TagQuotaPerResourceExceeded**

You have exceeded the maximum number of tags for this DAX cluster.

HTTP Status Code: 400

## 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 V2](#)

# UntagResource

Service: Amazon DynamoDB Accelerator

Removes the association of tags from a DAX resource. You can call `UntagResource` up to 5 times per second, per account.

## Request Syntax

```
{
  "ResourceName": "string",
  "TagKeys": [ "string" ]
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ResourceName (p. 221)

The name of the DAX resource from which the tags should be removed.

Type: String

Required: Yes

#### TagKeys (p. 221)

A list of tag keys. If the DAX cluster has any tags with these keys, then the tags are removed from the cluster.

Type: Array of strings

Required: Yes

## Response Syntax

```
{
  "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.

#### Tags (p. 221)

The tag keys that have been removed from the cluster.

Type: Array of [Tag \(p. 368\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **ClusterNotFoundFault**

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

### **InvalidARNFault**

The Amazon Resource Name (ARN) supplied in the request is not valid.

HTTP Status Code: 400

### **InvalidClusterStateFault**

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

### **InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### **InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

### **TagNotFoundFault**

The tag does not exist.

HTTP Status Code: 400

## 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 V2](#)

# UpdateCluster

Service: Amazon DynamoDB Accelerator

Modifies the settings for a DAX cluster. You can use this action to change one or more cluster configuration parameters by specifying the parameters and the new values.

## Request Syntax

```
{  
  "ClusterName": "string",  
  "Description": "string",  
  "NotificationTopicArn": "string",  
  "NotificationTopicStatus": "string",  
  "ParameterGroupName": "string",  
  "PreferredMaintenanceWindow": "string",  
  "SecurityGroupIds": [ "string" ]  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ClusterName (p. 223)

The name of the DAX cluster to be modified.

Type: String

Required: Yes

#### Description (p. 223)

A description of the changes being made to the cluster.

Type: String

Required: No

#### NotificationTopicArn (p. 223)

The Amazon Resource Name (ARN) that identifies the topic.

Type: String

Required: No

#### NotificationTopicStatus (p. 223)

The current state of the topic.

Type: String

Required: No

#### ParameterGroupName (p. 223)

The name of a parameter group for this cluster.

Type: String

Required: No

#### PreferredMaintenanceWindow (p. 223)

A range of time when maintenance of DAX cluster software will be performed. For example: sun:01:00–sun:09:00. Cluster maintenance normally takes less than 30 minutes, and is performed automatically within the maintenance window.

Type: String

Required: No

#### SecurityGroupIds (p. 223)

A list of user-specified security group IDs to be assigned to each node in the DAX cluster. If this parameter is not specified, DAX assigns the default VPC security group to each node.

Type: Array of strings

Required: No

## Response Syntax

```
{
  "Cluster": {
    "ActiveNodes": number,
    "ClusterArn": "string",
    "ClusterDiscoveryEndpoint": {
      "Address": "string",
      "Port": number
    },
    "ClusterName": "string",
    "Description": "string",
    "IamRoleArn": "string",
    "NodeIdsToRemove": [ "string" ],
    "Nodes": [
      {
        "AvailabilityZone": "string",
        "Endpoint": {
          "Address": "string",
          "Port": number
        },
        "NodeCreateTime": number,
        "NodeId": "string",
        "NodeStatus": "string",
        "ParameterGroupStatus": "string"
      }
    ],
    "NodeType": "string",
    "NotificationConfiguration": {
      "TopicArn": "string",
      "TopicStatus": "string"
    },
    "ParameterGroup": {
      "NodeIdsToReboot": [ "string" ],
      "ParameterApplyStatus": "string",
      "ParameterGroupName": "string"
    },
    "PreferredMaintenanceWindow": "string",
    "SecurityGroups": [
      {
        "SecurityGroupIdentifier": "string",
        "Status": "string"
      }
    ]
  }
}
```

```
    ],  
    "SSEDescription": {  
      "Status": "string"  
    },  
    "Status": "string",  
    "SubnetGroup": "string",  
    "TotalNodes": 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.

### Cluster (p. 224)

A description of the DAX cluster, after it has been modified.

Type: [Cluster \(p. 349\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### ClusterNotFoundFault

The requested cluster ID does not refer to an existing DAX cluster.

HTTP Status Code: 400

### InvalidClusterStateFault

The requested DAX cluster is not in the *available* state.

HTTP Status Code: 400

### InvalidParameterCombinationException

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### InvalidParameterGroupStateFault

One or more parameters in a parameter group are in an invalid state.

HTTP Status Code: 400

### InvalidParameterValueException

The value for a parameter is invalid.

HTTP Status Code: 400

### ParameterGroupNotFoundFault

The specified parameter group does not exist.

HTTP Status Code: 400

### ServiceLinkedRoleNotFoundFault

HTTP Status Code: 400

## 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 V2](#)

# UpdateParameterGroup

Service: Amazon DynamoDB Accelerator

Modifies the parameters of a parameter group. You can modify up to 20 parameters in a single request by submitting a list parameter name and value pairs.

## Request Syntax

```
{
  "ParameterGroupName": "string",
  "ParameterNameValues": [
    {
      "ParameterName": "string",
      "ParameterValue": "string"
    }
  ]
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ParameterGroupName (p. 227)

The name of the parameter group.

Type: String

Required: Yes

#### ParameterNameValues (p. 227)

An array of name-value pairs for the parameters in the group. Each element in the array represents a single parameter.

Type: Array of [ParameterNameValue \(p. 362\)](#) objects

Required: Yes

## Response Syntax

```
{
  "ParameterGroup": {
    "Description": "string",
    "ParameterGroupName": "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.



### **ParameterGroup (p. 227)**

The parameter group that has been modified.

Type: [ParameterGroup \(p. 360\)](#) object

## **Errors**

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### **InvalidParameterCombinationException**

Two or more incompatible parameters were specified.

HTTP Status Code: 400

### **InvalidParameterGroupStateFault**

One or more parameters in a parameter group are in an invalid state.

HTTP Status Code: 400

### **InvalidParameterValueException**

The value for a parameter is invalid.

HTTP Status Code: 400

### **ParameterGroupNotFoundFault**

The specified parameter group does not exist.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

## **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 V2](#)

# UpdateSubnetGroup

Service: Amazon DynamoDB Accelerator

Modifies an existing subnet group.

## Request Syntax

```
{  
  "Description": "string",  
  "SubnetGroupName": "string",  
  "SubnetIds": [ "string" ]  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### SubnetGroupName (p. 229)

The name of the subnet group.

Type: String

Required: Yes

#### Description (p. 229)

A description of the subnet group.

Type: String

Required: No

#### SubnetIds (p. 229)

A list of subnet IDs in the subnet group.

Type: Array of strings

Required: No

## Response Syntax

```
{  
  "SubnetGroup": {  
    "Description": "string",  
    "SubnetGroupName": "string",  
    "Subnets": [  
      {  
        "SubnetAvailabilityZone": "string",  
        "SubnetIdentifier": "string"  
      }  
    ],  
    "VpcId": "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.

### **SubnetGroup** (p. 229)

The subnet group that has been modified.

Type: [SubnetGroup](#) (p. 367) object

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **InvalidSubnet**

An invalid subnet identifier was specified.

HTTP Status Code: 400

### **ServiceLinkedRoleNotFoundFault**

HTTP Status Code: 400

### **SubnetGroupNotFoundFault**

The requested subnet group name does not refer to an existing subnet group.

HTTP Status Code: 400

### **SubnetInUse**

The requested subnet is being used by another subnet group.

HTTP Status Code: 400

### **SubnetQuotaExceededFault**

The request cannot be processed because it would exceed the allowed number of subnets in a subnet group.

HTTP Status Code: 400

## 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 V2](#)

# Amazon DynamoDB Streams

The following actions are supported by Amazon DynamoDB Streams:

- [DescribeStream](#) (p. 232)
- [GetRecords](#) (p. 236)
- [GetShardIterator](#) (p. 241)
- [ListStreams](#) (p. 245)

# DescribeStream

Service: Amazon DynamoDB Streams

Returns information about a stream, including the current status of the stream, its Amazon Resource Name (ARN), the composition of its shards, and its corresponding DynamoDB table.

## Note

You can call `DescribeStream` at a maximum rate of 10 times per second.

Each shard in the stream has a `SequenceNumberRange` associated with it. If the `SequenceNumberRange` has a `StartingSequenceNumber` but no `EndingSequenceNumber`, then the shard is still open (able to receive more stream records). If both `StartingSequenceNumber` and `EndingSequenceNumber` are present, then that shard is closed and can no longer receive more data.

## Request Syntax

```
{
  "ExclusiveStartShardId": "string",
  "Limit": number,
  "StreamArn": "string"
}
```

## Request Parameters

The request accepts the following data in JSON format.

## Note

In the following list, the required parameters are described first.

### [StreamArn \(p. 232\)](#)

The Amazon Resource Name (ARN) for the stream.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: Yes

### [ExclusiveStartShardId \(p. 232\)](#)

The shard ID of the first item that this operation will evaluate. Use the value that was returned for `LastEvaluatedShardId` in the previous operation.

Type: String

Length Constraints: Minimum length of 28. Maximum length of 65.

Required: No

### [Limit \(p. 232\)](#)

The maximum number of shard objects to return. The upper limit is 100.

Type: Integer

Valid Range: Minimum value of 1.

Required: No

## Response Syntax

```
{
  "StreamDescription": {
    "CreationRequestDateTime": number,
    "KeySchema": [
      {
        "AttributeName": "string",
        "KeyType": "string"
      }
    ],
    "LastEvaluatedShardId": "string",
    "Shards": [
      {
        "ParentShardId": "string",
        "SequenceNumberRange": {
          "EndingSequenceNumber": "string",
          "StartingSequenceNumber": "string"
        },
        "ShardId": "string"
      }
    ],
    "StreamArn": "string",
    "StreamLabel": "string",
    "StreamStatus": "string",
    "StreamViewType": "string",
    "TableName": "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.

### StreamDescription (p. 233)

A complete description of the stream, including its creation date and time, the DynamoDB table associated with the stream, the shard IDs within the stream, and the beginning and ending sequence numbers of stream records within the shards.

Type: [StreamDescription \(p. 379\)](#) object

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### ResourceNotFoundException

The operation tried to access a nonexistent stream.

HTTP Status Code: 400

## Example

### Describe A Stream

The following sample returns a description of a stream with a given stream ARN. All of the shards in the stream are listed in the response, along with the beginning and ending sequence numbers of stream records within the shards. Note that one of the shards is still open, because it does not have an `EndingSequenceNumber`.

### Sample Request

```
POST / HTTP/1.1
x-amzn-RequestId: <RequestId>
x-amzn-crc32: <CRC32>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDBStreams_20120810.DescribeStream

{
  "StreamArn": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/
stream/2015-05-20T20:51:10.252"
}
```

### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
  "StreamDescription": {
    "StreamArn": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/
stream/2015-05-20T20:51:10.252",
    "StreamLabel": "2015-05-20T20:51:10.252",
    "StreamStatus": "ENABLED",
    "StreamViewType": "NEW_AND_OLD_IMAGES",
    "CreationRequestDateTime": "Wed May 20 13:51:10 PDT 2015",
    "TableName": "Forum",
    "KeySchema": [
      { "AttributeName": "ForumName", "KeyType": "HASH" },
      { "AttributeName": "Subject", "KeyType": "RANGE" }
    ],
    "Shards": [
      {
        "SequenceNumberRange": {
          "EndingSequenceNumber": "2050000000000000910398",
          "StartingSequenceNumber": "2050000000000000910398"
        },
        "ShardId": "shardId-00000001414562045508-2bac9cd2"
      },
      {
        "ParentShardId": "shardId-00000001414562045508-2bac9cd2",
        "SequenceNumberRange": {
          "EndingSequenceNumber": "82040000000000001192334",
          "StartingSequenceNumber": "82040000000000001192334"
        }
      }
    ]
  }
}
```

```
    },
    "ShardId": "shardId-00000001414576573621-f55eea83"
  },
  {
    "ParentShardId": "shardId-00000001414576573621-f55eea83",
    "SequenceNumberRange": {
      "EndingSequenceNumber": "168370000000000001135967",
      "StartingSequenceNumber": "168370000000000001135967"
    },
    "ShardId": "shardId-00000001414592258131-674fd923"
  },
  {
    "ParentShardId": "shardId-00000001414592258131-674fd923",
    "SequenceNumberRange": {"StartingSequenceNumber":
"257460000000000000000935255"},
    "ShardId": "shardId-00000001414608446368-3a1afbaf"
  }
],
}
```

## 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 V2](#)



## GetRecords

Service: Amazon DynamoDB Streams

Retrieves the stream records from a given shard.

Specify a shard iterator using the `ShardIterator` parameter. The shard iterator specifies the position in the shard from which you want to start reading stream records sequentially. If there are no stream records available in the portion of the shard that the iterator points to, `GetRecords` returns an empty list. Note that it might take multiple calls to get to a portion of the shard that contains stream records.

### Note

`GetRecords` can retrieve a maximum of 1 MB of data or 1000 stream records, whichever comes first.

## Request Syntax

```
{  
  "Limit": number,  
  "ShardIterator": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

### Note

In the following list, the required parameters are described first.

#### ShardIterator (p. 236)

A shard iterator that was retrieved from a previous `GetShardIterator` operation. This iterator can be used to access the stream records in this shard.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 2048.

Required: Yes

#### Limit (p. 236)

The maximum number of records to return from the shard. The upper limit is 1000.

Type: Integer

Valid Range: Minimum value of 1.

Required: No

## Response Syntax

```
{  
  "NextShardIterator": "string",  
  "Records": [  
    {  
      "awsRegion": "string",  
      "dynamodb": {  
        "ApproximateCreationDateTime": number,  
        "Keys": {
```

```

        "string" : {
            "B": blob,
            "BOOL": boolean,
            "BS": [ blob ],
            "L": [
                "AttributeValue"
            ],
            "M": {
                "string" : "AttributeValue"
            },
            "N": "string",
            "NS": [ "string" ],
            "NULL": boolean,
            "S": "string",
            "SS": [ "string" ]
        }
    },
    "NewImage": {
        "string" : {
            "B": blob,
            "BOOL": boolean,
            "BS": [ blob ],
            "L": [
                "AttributeValue"
            ],
            "M": {
                "string" : "AttributeValue"
            },
            "N": "string",
            "NS": [ "string" ],
            "NULL": boolean,
            "S": "string",
            "SS": [ "string" ]
        }
    },
    "OldImage": {
        "string" : {
            "B": blob,
            "BOOL": boolean,
            "BS": [ blob ],
            "L": [
                "AttributeValue"
            ],
            "M": {
                "string" : "AttributeValue"
            },
            "N": "string",
            "NS": [ "string" ],
            "NULL": boolean,
            "S": "string",
            "SS": [ "string" ]
        }
    },
    "SequenceNumber": "string",
    "SizeBytes": number,
    "StreamViewType": "string"
},
"eventID": "string",
"eventName": "string",
"eventSource": "string",
"eventVersion": "string",
"userIdentity": {
    "PrincipalId": "string",
    "Type": "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.

### **NextShardIterator** (p. 236)

The next position in the shard from which to start sequentially reading stream records. If set to `null`, the shard has been closed and the requested iterator will not return any more data.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 2048.

### **Records** (p. 236)

The stream records from the shard, which were retrieved using the shard iterator.

Type: Array of [Record](#) (p. 374) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors](#) (p. 384).

### **ExpiredIteratorException**

The shard iterator has expired and can no longer be used to retrieve stream records. A shard iterator expires 15 minutes after it is retrieved using the `GetShardIterator` action.

HTTP Status Code: 400

### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

### **LimitExceededException**

Your request rate is too high. The AWS SDKs for DynamoDB automatically retry requests that receive this exception. Your request is eventually successful, unless your retry queue is too large to finish. Reduce the frequency of requests and use exponential backoff. For more information, go to [Error Retries and Exponential Backoff](#) in the *Amazon DynamoDB Developer Guide*.

HTTP Status Code: 400

### **ResourceNotFoundException**

The operation tried to access a nonexistent stream.

HTTP Status Code: 400

### **TrimmedDataAccessException**

The operation attempted to read past the oldest stream record in a shard.

In DynamoDB Streams, there is a 24 hour limit on data retention. Stream records whose age exceeds this limit are subject to removal (trimming) from the stream. You might receive a `TrimmedDataAccessException` if:

- You request a shard iterator with a sequence number older than the trim point (24 hours).
- You obtain a shard iterator, but before you use the iterator in a `GetRecords` request, a stream record in the shard exceeds the 24 hour period and is trimmed. This causes the iterator to access a record that no longer exists.

HTTP Status Code: 400

## Example

### Retrieve stream records from a shard

The following sample retrieves all the stream records from a shard. To do this, it uses a `ShardIterator` that was obtained from a previous `GetShardIterator` call.

#### Sample Request

```
POST / HTTP/1.1
x-amzn-RequestId: <RequestId>
x-amzn-crc32: <CRC32>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDBStreams_20120810.GetRecords

{
  "ShardIterator": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/
stream/2015-05-20T20:51:10.252|1|AAAAAAAAAAEvJp6D+zaQ... <remaining characters
omitted> ..."
}
```

#### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
  "NextShardIterator": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/
stream/2015-05-20T20:51:10.252|1|AAAAAAAAAAGQBYshYDEe ... <remaining characters
omitted> ...",
  "Records": [
    {
      "awsRegion": "us-west-2",
      "dynamodb": {
        "ApproximateCreationDateTime": 1.46480431E9,
        "Keys": {
          "ForumName": {"S": "DynamoDB"},
          "Subject": {"S": "DynamoDB Thread 3"}
        },
        "SequenceNumber": "300000000000000499659",
        "SizeBytes": 41,
        "StreamViewType": "KEYS_ONLY"
      },
      "eventID": "e2fd9c34eff2d779b297b26f5fef4206",
    }
  ]
}
```

```

        "eventName": "INSERT",
        "eventSource": "aws:dynamodb",
        "eventVersion": "1.0"
    },
    {
        "awsRegion": "us-west-2",
        "dynamodb": {
            "ApproximateCreationDateTime": 1.46480527E9,
            "Keys": {
                "ForumName": {"S": "DynamoDB"},
                "Subject": {"S": "DynamoDB Thread 1"}
            },
            "SequenceNumber": "400000000000000499660",
            "SizeBytes": 41,
            "StreamViewType": "KEYS_ONLY"
        },
        "eventID": "4b25bd0da9a181a155114127e4837252",
        "eventName": "MODIFY",
        "eventSource": "aws:dynamodb",
        "eventVersion": "1.0"
    },
    {
        "awsRegion": "us-west-2",
        "dynamodb": {
            "ApproximateCreationDateTime": 1.46480646E9,
            "Keys": {
                "ForumName": {"S": "DynamoDB"},
                "Subject": {"S": "DynamoDB Thread 2"}
            },
            "SequenceNumber": "500000000000000499661",
            "SizeBytes": 41,
            "StreamViewType": "KEYS_ONLY"
        },
        "eventID": "740280c73a3df7842edab3548a1b08ad",
        "eventName": "REMOVE",
        "eventSource": "aws:dynamodb",
        "eventVersion": "1.0"
    }
]
}

```

## 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 V2](#)

# GetShardIterator

Service: Amazon DynamoDB Streams

Returns a shard iterator. A shard iterator provides information about how to retrieve the stream records from within a shard. Use the shard iterator in a subsequent `GetRecords` request to read the stream records from the shard.

## Note

A shard iterator expires 15 minutes after it is returned to the requester.

## Request Syntax

```
{  
  "SequenceNumber": "string",  
  "ShardId": "string",  
  "ShardIteratorType": "string",  
  "StreamArn": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

## Note

In the following list, the required parameters are described first.

### ShardId (p. 241)

The identifier of the shard. The iterator will be returned for this shard ID.

Type: String

Length Constraints: Minimum length of 28. Maximum length of 65.

Required: Yes

### ShardIteratorType (p. 241)

Determines how the shard iterator is used to start reading stream records from the shard:

- `AT_SEQUENCE_NUMBER` - Start reading exactly from the position denoted by a specific sequence number.
- `AFTER_SEQUENCE_NUMBER` - Start reading right after the position denoted by a specific sequence number.
- `TRIM_HORIZON` - Start reading at the last (untrimmed) stream record, which is the oldest record in the shard. In DynamoDB Streams, there is a 24 hour limit on data retention. Stream records whose age exceeds this limit are subject to removal (trimming) from the stream.
- `LATEST` - Start reading just after the most recent stream record in the shard, so that you always read the most recent data in the shard.

Type: String

Valid Values: `TRIM_HORIZON` | `LATEST` | `AT_SEQUENCE_NUMBER` | `AFTER_SEQUENCE_NUMBER`

Required: Yes

### StreamArn (p. 241)

The Amazon Resource Name (ARN) for the stream.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: Yes

#### **SequenceNumber (p. 241)**

The sequence number of a stream record in the shard from which to start reading.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 40.

Required: No

## Response Syntax

```
{  
  "ShardIterator": "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.

#### **ShardIterator (p. 242)**

The position in the shard from which to start reading stream records sequentially. A shard iterator specifies this position using the sequence number of a stream record in a shard.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 2048.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

#### **InternalServerError**

An error occurred on the server side.

HTTP Status Code: 500

#### **ResourceNotFoundException**

The operation tried to access a nonexistent stream.

HTTP Status Code: 400

#### **TrimmedDataAccessException**

The operation attempted to read past the oldest stream record in a shard.

In DynamoDB Streams, there is a 24 hour limit on data retention. Stream records whose age exceeds this limit are subject to removal (trimming) from the stream. You might receive a `TrimmedDataAccessException` if:

- You request a shard iterator with a sequence number older than the trim point (24 hours).
- You obtain a shard iterator, but before you use the iterator in a `GetRecords` request, a stream record in the shard exceeds the 24 hour period and is trimmed. This causes the iterator to access a record that no longer exists.

HTTP Status Code: 400

## Example

### Retrieve a Shard Iterator For a Stream

The following sample returns a shard iterator for the provided stream ARN and shard ID. The shard iterator will allow access to stream records beginning with the given sequence number.

#### Sample Request

```
POST / HTTP/1.1
x-amzn-RequestId: <RequestId>
x-amzn-crc32: <CRC32>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDBStreams_20120810.GetShardIterator

{
  "StreamArn": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/
stream/2015-05-20T20:51:10.252",
  "ShardId": "00000001414576573621-f55eea83",
  "ShardIteratorType": "TRIM_HORIZON"
}
```

#### Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
  "ShardIterator": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/
stream/2015-05-20T20:51:10.252|1|AAAAAAAAAAEvJp6D+zaQ... <remaining characters
omitted> ..."
}
```

## 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 V2](#)

# ListStreams

Service: Amazon DynamoDB Streams

Returns an array of stream ARNs associated with the current account and endpoint. If the `TableName` parameter is present, then `ListStreams` will return only the streams ARNs for that table.

## Note

You can call `ListStreams` at a maximum rate of 5 times per second.

## Request Syntax

```
{  
  "ExclusiveStartStreamArn": "string",  
  "Limit": number,  
  "TableName": "string"  
}
```

## Request Parameters

The request accepts the following data in JSON format.

## Note

In the following list, the required parameters are described first.

### [ExclusiveStartStreamArn \(p. 245\)](#)

The ARN (Amazon Resource Name) of the first item that this operation will evaluate. Use the value that was returned for `LastEvaluatedStreamArn` in the previous operation.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: No

### [Limit \(p. 245\)](#)

The maximum number of streams to return. The upper limit is 100.

Type: Integer

Valid Range: Minimum value of 1.

Required: No

### [TableName \(p. 245\)](#)

If this parameter is provided, then only the streams associated with this table name are returned.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

## Response Syntax

```
{
```

```
"LastEvaluatedStreamArn": "string",
"Streams": [
  {
    "StreamArn": "string",
    "StreamLabel": "string",
    "TableName": "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.

### LastEvaluatedStreamArn (p. 245)

The stream ARN of the item where the operation stopped, inclusive of the previous result set. Use this value to start a new operation, excluding this value in the new request.

If `LastEvaluatedStreamArn` is empty, then the "last page" of results has been processed and there is no more data to be retrieved.

If `LastEvaluatedStreamArn` is not empty, it does not necessarily mean that there is more data in the result set. The only way to know when you have reached the end of the result set is when `LastEvaluatedStreamArn` is empty.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

### Streams (p. 245)

A list of stream descriptors associated with the current account and endpoint.

Type: Array of [Stream \(p. 378\)](#) objects

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 384\)](#).

### InternalServerError

An error occurred on the server side.

HTTP Status Code: 500

### ResourceNotFoundException

The operation tried to access a nonexistent stream.

HTTP Status Code: 400

## Example

### Retrieve All Stream ARNs

The following sample returns all of the stream ARNs.

## Sample Request

```
POST / HTTP/1.1
x-amzn-RequestId: <RequestId>
x-amzn-crc32: <CRC32>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
X-Amz-Date: <Date>
X-Amz-Target: DynamoDBStreams_20120810.ListStreams

{}
```

## Sample Response

```
HTTP/1.1 200 OK
x-amzn-RequestId: <RequestId>
x-amzn-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
  "Streams": [
    {
      "StreamArn": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/stream/2015-05-20T20:51:10.252",
      "TableName": "Forum",
      "StreamLabel": "2015-05-20T20:51:10.252"
    },
    {
      "StreamArn": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/stream/2015-05-20T20:50:02.714",
      "TableName": "Forum",
      "StreamLabel": "2015-05-20T20:50:02.714"
    },
    {
      "StreamArn": "arn:aws:dynamodb:us-west-2:111122223333:table/Forum/stream/2015-05-19T23:03:50.641",
      "TableName": "Forum",
      "StreamLabel": "2015-05-19T23:03:50.641"
    },
    ...remaining output omitted...
  ]
}
```

## 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 V2](#)

# Data Types

The following data types are supported by Amazon DynamoDB:

- [AttributeDefinition](#) (p. 253)
- [AttributeValue](#) (p. 254)
- [AttributeValueUpdate](#) (p. 257)
- [AutoScalingPolicyDescription](#) (p. 259)
- [AutoScalingPolicyUpdate](#) (p. 260)
- [AutoScalingSettingsDescription](#) (p. 261)
- [AutoScalingSettingsUpdate](#) (p. 263)
- [AutoScalingTargetTrackingScalingPolicyConfigurationDescription](#) (p. 265)
- [AutoScalingTargetTrackingScalingPolicyConfigurationUpdate](#) (p. 267)
- [BackupDescription](#) (p. 269)
- [BackupDetails](#) (p. 270)
- [BackupSummary](#) (p. 272)
- [Capacity](#) (p. 274)
- [Condition](#) (p. 275)
- [ConsumedCapacity](#) (p. 278)
- [ContinuousBackupsDescription](#) (p. 280)
- [CreateGlobalSecondaryIndexAction](#) (p. 281)
- [CreateReplicaAction](#) (p. 283)
- [DeleteGlobalSecondaryIndexAction](#) (p. 284)
- [DeleteReplicaAction](#) (p. 285)
- [DeleteRequest](#) (p. 286)
- [ExpectedAttributeValue](#) (p. 287)
- [GlobalSecondaryIndex](#) (p. 291)
- [GlobalSecondaryIndexDescription](#) (p. 293)
- [GlobalSecondaryIndexInfo](#) (p. 296)
- [GlobalSecondaryIndexUpdate](#) (p. 298)
- [GlobalTable](#) (p. 299)
- [GlobalTableDescription](#) (p. 300)
- [GlobalTableGlobalSecondaryIndexSettingsUpdate](#) (p. 302)
- [ItemCollectionMetrics](#) (p. 303)
- [KeysAndAttributes](#) (p. 304)
- [KeySchemaElement](#) (p. 306)
- [LocalSecondaryIndex](#) (p. 308)
- [LocalSecondaryIndexDescription](#) (p. 310)
- [LocalSecondaryIndexInfo](#) (p. 312)
- [PointInTimeRecoveryDescription](#) (p. 314)
- [PointInTimeRecoverySpecification](#) (p. 315)
- [Projection](#) (p. 316)
- [ProvisionedThroughput](#) (p. 317)
- [ProvisionedThroughputDescription](#) (p. 318)

- [PutRequest](#) (p. 320)
- [Replica](#) (p. 321)
- [ReplicaDescription](#) (p. 322)
- [ReplicaGlobalSecondaryIndexSettingsDescription](#) (p. 323)
- [ReplicaGlobalSecondaryIndexSettingsUpdate](#) (p. 325)
- [ReplicaSettingsDescription](#) (p. 326)
- [ReplicaSettingsUpdate](#) (p. 328)
- [ReplicaUpdate](#) (p. 329)
- [RestoreSummary](#) (p. 330)
- [SourceTableDetails](#) (p. 331)
- [SourceTableFeatureDetails](#) (p. 333)
- [SSEDescription](#) (p. 335)
- [SSESpecification](#) (p. 336)
- [StreamSpecification](#) (p. 337)
- [TableDescription](#) (p. 338)
- [Tag](#) (p. 343)
- [TimeToLiveDescription](#) (p. 344)
- [TimeToLiveSpecification](#) (p. 345)
- [UpdateGlobalSecondaryIndexAction](#) (p. 346)
- [WriteRequest](#) (p. 347)

The following data types are supported by Amazon DynamoDB Accelerator:

- [Cluster](#) (p. 349)
- [Endpoint](#) (p. 352)
- [Event](#) (p. 353)
- [Node](#) (p. 354)
- [NodeTypeSpecificValue](#) (p. 356)
- [NotificationConfiguration](#) (p. 357)
- [Parameter](#) (p. 358)
- [ParameterGroup](#) (p. 360)
- [ParameterGroupStatus](#) (p. 361)
- [ParameterNameValue](#) (p. 362)
- [SecurityGroupMembership](#) (p. 363)
- [SSEDescription](#) (p. 364)
- [SSESpecification](#) (p. 365)
- [Subnet](#) (p. 366)
- [SubnetGroup](#) (p. 367)
- [Tag](#) (p. 368)

The following data types are supported by Amazon DynamoDB Streams:

- [AttributeValue](#) (p. 370)
- [Identity](#) (p. 372)
- [KeySchemaElement](#) (p. 373)
- [Record](#) (p. 374)

- [SequenceNumberRange](#) (p. 376)
- [Shard](#) (p. 377)
- [Stream](#) (p. 378)
- [StreamDescription](#) (p. 379)
- [StreamRecord](#) (p. 382)

## Amazon DynamoDB

The following data types are supported by Amazon DynamoDB:

- [AttributeDefinition](#) (p. 253)
- [AttributeValue](#) (p. 254)
- [AttributeValueUpdate](#) (p. 257)
- [AutoScalingPolicyDescription](#) (p. 259)
- [AutoScalingPolicyUpdate](#) (p. 260)
- [AutoScalingSettingsDescription](#) (p. 261)
- [AutoScalingSettingsUpdate](#) (p. 263)
- [AutoScalingTargetTrackingScalingPolicyConfigurationDescription](#) (p. 265)
- [AutoScalingTargetTrackingScalingPolicyConfigurationUpdate](#) (p. 267)
- [BackupDescription](#) (p. 269)
- [BackupDetails](#) (p. 270)
- [BackupSummary](#) (p. 272)
- [Capacity](#) (p. 274)
- [Condition](#) (p. 275)
- [ConsumedCapacity](#) (p. 278)
- [ContinuousBackupsDescription](#) (p. 280)
- [CreateGlobalSecondaryIndexAction](#) (p. 281)
- [CreateReplicaAction](#) (p. 283)
- [DeleteGlobalSecondaryIndexAction](#) (p. 284)
- [DeleteReplicaAction](#) (p. 285)
- [DeleteRequest](#) (p. 286)
- [ExpectedAttributeValue](#) (p. 287)
- [GlobalSecondaryIndex](#) (p. 291)
- [GlobalSecondaryIndexDescription](#) (p. 293)
- [GlobalSecondaryIndexInfo](#) (p. 296)
- [GlobalSecondaryIndexUpdate](#) (p. 298)
- [GlobalTable](#) (p. 299)
- [GlobalTableDescription](#) (p. 300)
- [GlobalTableGlobalSecondaryIndexSettingsUpdate](#) (p. 302)
- [ItemCollectionMetrics](#) (p. 303)
- [KeysAndAttributes](#) (p. 304)
- [KeySchemaElement](#) (p. 306)
- [LocalSecondaryIndex](#) (p. 308)
- [LocalSecondaryIndexDescription](#) (p. 310)
- [LocalSecondaryIndexInfo](#) (p. 312)



- [PointInTimeRecoveryDescription](#) (p. 314)
- [PointInTimeRecoverySpecification](#) (p. 315)
- [Projection](#) (p. 316)
- [ProvisionedThroughput](#) (p. 317)
- [ProvisionedThroughputDescription](#) (p. 318)
- [PutRequest](#) (p. 320)
- [Replica](#) (p. 321)
- [ReplicaDescription](#) (p. 322)
- [ReplicaGlobalSecondaryIndexSettingsDescription](#) (p. 323)
- [ReplicaGlobalSecondaryIndexSettingsUpdate](#) (p. 325)
- [ReplicaSettingsDescription](#) (p. 326)
- [ReplicaSettingsUpdate](#) (p. 328)
- [ReplicaUpdate](#) (p. 329)
- [RestoreSummary](#) (p. 330)
- [SourceTableDetails](#) (p. 331)
- [SourceTableFeatureDetails](#) (p. 333)
- [SSEDescription](#) (p. 335)
- [SSESpecification](#) (p. 336)
- [StreamSpecification](#) (p. 337)
- [TableDescription](#) (p. 338)
- [Tag](#) (p. 343)
- [TimeToLiveDescription](#) (p. 344)
- [TimeToLiveSpecification](#) (p. 345)
- [UpdateGlobalSecondaryIndexAction](#) (p. 346)
- [WriteRequest](#) (p. 347)

# AttributeDefinition

Service: Amazon DynamoDB

Represents an attribute for describing the key schema for the table and indexes.

## Contents

### Note

In the following list, the required parameters are described first.

### AttributeName

A name for the attribute.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: Yes

### AttributeType

The data type for the attribute, where:

- **S** - the attribute is of type String
- **N** - the attribute is of type Number
- **B** - the attribute is of type Binary

Type: String

Valid Values: **S** | **N** | **B**

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 V2](#)

# AttributeValue

Service: Amazon DynamoDB

Represents the data for an attribute.

Each attribute value is described as a name-value pair. The name is the data type, and the value is the data itself.

For more information, see [Data Types](#) in the *Amazon DynamoDB Developer Guide*.

## Contents

### Note

In the following list, the required parameters are described first.

### B

An attribute of type Binary. For example:

```
"B": "dGhpcyB0ZXh0IGlzcIGJhc2U2NC1lbmNvZGVk"
```

Type: Base64-encoded binary data object

Required: No

### BOOL

An attribute of type Boolean. For example:

```
"BOOL": true
```

Type: Boolean

Required: No

### BS

An attribute of type Binary Set. For example:

```
"BS": [ "U3Vubnk=", "UmFpbmk=", "U25vd3k=" ]
```

Type: Array of Base64-encoded binary data objects

Required: No

### L

An attribute of type List. For example:

```
"L": [ "Cookies", "Coffee", 3.14159 ]
```

Type: Array of [AttributeValue \(p. 254\)](#) objects

Required: No

### M

An attribute of type Map. For example:

```
"M": { "Name": { "S": "Joe" }, "Age": { "N": "35" } }
```

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

## **N**

An attribute of type Number. For example:

```
"N": "123.45"
```

Numbers are sent across the network to DynamoDB as strings, to maximize compatibility across languages and libraries. However, DynamoDB treats them as number type attributes for mathematical operations.

Type: String

Required: No

## **NS**

An attribute of type Number Set. For example:

```
"NS": ["42.2", "-19", "7.5", "3.14"]
```

Numbers are sent across the network to DynamoDB as strings, to maximize compatibility across languages and libraries. However, DynamoDB treats them as number type attributes for mathematical operations.

Type: Array of strings

Required: No

## **NULL**

An attribute of type Null. For example:

```
"NULL": true
```

Type: Boolean

Required: No

## **S**

An attribute of type String. For example:

```
"S": "Hello"
```

Type: String

Required: No

## **SS**

An attribute of type String Set. For example:

```
"SS": ["Giraffe", "Hippo", "Zebra"]
```

Type: Array of strings

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 V2](#)

# AttributeValueUpdate

Service: Amazon DynamoDB

For the `UpdateItem` operation, represents the attributes to be modified, the action to perform on each, and the new value for each.

## Note

You cannot use `UpdateItem` to update any primary key attributes. Instead, you will need to delete the item, and then use `PutItem` to create a new item with new attributes.

Attribute values cannot be null; string and binary type attributes must have lengths greater than zero; and set type attributes must not be empty. Requests with empty values will be rejected with a `ValidationException` exception.

## Contents

### Note

In the following list, the required parameters are described first.

### Action

Specifies how to perform the update. Valid values are `PUT` (default), `DELETE`, and `ADD`. The behavior depends on whether the specified primary key already exists in the table.

#### If an item with the specified *Key* is found in the table:

- `PUT` - Adds the specified attribute to the item. If the attribute already exists, it is replaced by the new value.
- `DELETE` - If no value is specified, the attribute and its value are removed from the item. The data type of the specified value must match the existing value's data type.

If a *set* of values is specified, then those values are subtracted from the old set. For example, if the attribute value was the set `[ a, b, c ]` and the `DELETE` action specified `[ a, c ]`, then the final attribute value would be `[ b ]`. Specifying an empty set is an error.

- `ADD` - If the attribute does not already exist, then the attribute and its values are added to the item. If the attribute does exist, then the behavior of `ADD` depends on the data type of the attribute:
  - If the existing attribute is a number, and if `Value` is also a number, then the `Value` is mathematically added to the existing attribute. If `Value` is a negative number, then it is subtracted from the existing attribute.

### Note

If you use `ADD` to increment or decrement a number value for an item that doesn't exist before the update, DynamoDB uses 0 as the initial value.

In addition, if you use `ADD` to update an existing item, and intend to increment or decrement an attribute value which does not yet exist, DynamoDB uses 0 as the initial value. For example, suppose that the item you want to update does not yet have an attribute named *itemcount*, but you decide to `ADD` the number 3 to this attribute anyway, even though it currently does not exist. DynamoDB will create the *itemcount* attribute, set its initial value to 0, and finally add 3 to it. The result will be a new *itemcount* attribute in the item, with a value of 3.

- If the existing data type is a set, and if the `Value` is also a set, then the `Value` is added to the existing set. (This is a *set* operation, not mathematical addition.) For example, if the attribute value was the set `[ 1, 2 ]`, and the `ADD` action specified `[ 3 ]`, then the final attribute value would be `[ 1, 2, 3 ]`. An error occurs if an `Add` action is specified for a set attribute and the attribute type specified does not match the existing set type.

Both sets must have the same primitive data type. For example, if the existing data type is a set of strings, the `Value` must also be a set of strings. The same holds true for number sets and binary sets.

This action is only valid for an existing attribute whose data type is number or is a set. Do not use `ADD` for any other data types.

**If no item with the specified *Key* is found:**

- `PUT` - DynamoDB creates a new item with the specified primary key, and then adds the attribute.
- `DELETE` - Nothing happens; there is no attribute to delete.
- `ADD` - DynamoDB creates an item with the supplied primary key and number (or set of numbers) for the attribute value. The only data types allowed are number and number set; no other data types can be specified.

Type: String

Valid Values: `ADD` | `PUT` | `DELETE`

Required: No

**Value**

Represents the data for an attribute.

Each attribute value is described as a name-value pair. The name is the data type, and the value is the data itself.

For more information, see [Data Types](#) in the *Amazon DynamoDB Developer Guide*.

Type: [AttributeValue](#) (p. 254) object

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 V2](#)

# AutoScalingPolicyDescription

Service: Amazon DynamoDB

Represents the properties of the scaling policy.

## Contents

### Note

In the following list, the required parameters are described first.

### PolicyName

The name of the scaling policy.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 256.

Pattern: `\p{Print}+`

Required: No

### TargetTrackingScalingPolicyConfiguration

Represents a target tracking scaling policy configuration.

Type: [AutoScalingTargetTrackingScalingPolicyConfigurationDescription](#) (p. 265) object

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 V2](#)



# AutoScalingPolicyUpdate

Service: Amazon DynamoDB

Represents the autoscaling policy to be modified.

## Contents

### Note

In the following list, the required parameters are described first.

### TargetTrackingScalingPolicyConfiguration

Represents a target tracking scaling policy configuration.

Type: [AutoScalingTargetTrackingScalingPolicyConfigurationUpdate \(p. 267\)](#) object

Required: Yes

### PolicyName

The name of the scaling policy.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 256.

Pattern: `\p{Print}+`

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 V2](#)

# AutoScalingSettingsDescription

Service: Amazon DynamoDB

Represents the autoscaling settings for a global table or global secondary index.

## Contents

### Note

In the following list, the required parameters are described first.

### AutoScalingDisabled

Disabled autoscaling for this global table or global secondary index.

Type: Boolean

Required: No

### AutoScalingRoleArn

Role ARN used for configuring autoScaling policy.

Type: String

Required: No

### MaximumUnits

The maximum capacity units that a global table or global secondary index should be scaled up to.

Type: Long

Valid Range: Minimum value of 1.

Required: No

### MinimumUnits

The minimum capacity units that a global table or global secondary index should be scaled down to.

Type: Long

Valid Range: Minimum value of 1.

Required: No

### ScalingPolicies

Information about the scaling policies.

Type: Array of [AutoScalingPolicyDescription](#) (p. 259) objects

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 V2](#)

Service: Amazon DynamoDB

# Contents

In the following list, the required parameters are described first.

Disabled autoscaling for this global table or global secondary index.

Required: No

Required: No

Required: No

Required: No

Required: No

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 V2](#)

# AutoScalingTargetTrackingScalingPolicyConfigurationDescription

Service: Amazon DynamoDB

Represents the properties of a target tracking scaling policy.

## Contents

### Note

In the following list, the required parameters are described first.

### TargetValue

The target value for the metric. The range is 8.515920e-109 to 1.174271e+108 (Base 10) or 2e-360 to 2e360 (Base 2).

Type: Double

Required: Yes

### DisableScaleIn

Indicates whether scale in by the target tracking policy is disabled. If the value is true, scale in is disabled and the target tracking policy won't remove capacity from the scalable resource. Otherwise, scale in is enabled and the target tracking policy can remove capacity from the scalable resource. The default value is false.

Type: Boolean

Required: No

### ScaleInCooldown

The amount of time, in seconds, after a scale in activity completes before another scale in activity can start. The cooldown period is used to block subsequent scale in requests until it has expired. You should scale in conservatively to protect your application's availability. However, if another alarm triggers a scale out policy during the cooldown period after a scale-in, application autoscaling scales out your scalable target immediately.

Type: Integer

Required: No

### ScaleOutCooldown

The amount of time, in seconds, after a scale out activity completes before another scale out activity can start. While the cooldown period is in effect, the capacity that has been added by the previous scale out event that initiated the cooldown is calculated as part of the desired capacity for the next scale out. You should continuously (but not excessively) scale out.

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 V2](#)

# AutoScalingTargetTrackingScalingPolicyConfigurationUpdate

Service: Amazon DynamoDB

Represents the settings of a target tracking scaling policy that will be modified.

## Contents

### Note

In the following list, the required parameters are described first.

### TargetValue

The target value for the metric. The range is 8.515920e-109 to 1.174271e+108 (Base 10) or 2e-360 to 2e360 (Base 2).

Type: Double

Required: Yes

### DisableScaleIn

Indicates whether scale in by the target tracking policy is disabled. If the value is true, scale in is disabled and the target tracking policy won't remove capacity from the scalable resource. Otherwise, scale in is enabled and the target tracking policy can remove capacity from the scalable resource. The default value is false.

Type: Boolean

Required: No

### ScaleInCooldown

The amount of time, in seconds, after a scale in activity completes before another scale in activity can start. The cooldown period is used to block subsequent scale in requests until it has expired. You should scale in conservatively to protect your application's availability. However, if another alarm triggers a scale out policy during the cooldown period after a scale-in, application autoscaling scales out your scalable target immediately.

Type: Integer

Required: No

### ScaleOutCooldown

The amount of time, in seconds, after a scale out activity completes before another scale out activity can start. While the cooldown period is in effect, the capacity that has been added by the previous scale out event that initiated the cooldown is calculated as part of the desired capacity for the next scale out. You should continuously (but not excessively) scale out.

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 V2](#)

# BackupDescription

Service: Amazon DynamoDB

Contains the description of the backup created for the table.

## Contents

### Note

In the following list, the required parameters are described first.

### BackupDetails

Contains the details of the backup created for the table.

Type: [BackupDetails \(p. 270\)](#) object

Required: No

### SourceTableDetails

Contains the details of the table when the backup was created.

Type: [SourceTableDetails \(p. 331\)](#) object

Required: No

### SourceTableFeatureDetails

Contains the details of the features enabled on the table when the backup was created. For example, LSIs, GSIs, streams, TTL.

Type: [SourceTableFeatureDetails \(p. 333\)](#) object

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 V2](#)

# BackupDetails

Service: Amazon DynamoDB

Contains the details of the backup created for the table.

## Contents

### Note

In the following list, the required parameters are described first.

### BackupArn

ARN associated with the backup.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: Yes

### BackupCreationDateTime

Time at which the backup was created. This is the request time of the backup.

Type: Timestamp

Required: Yes

### BackupName

Name of the requested backup.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### BackupStatus

Backup can be in one of the following states: CREATING, ACTIVE, DELETED.

Type: String

Valid Values: CREATING | DELETED | AVAILABLE

Required: Yes

### BackupType

BackupType:

- **USER** - On-demand backup created by you.
- **SYSTEM** - On-demand backup automatically created by DynamoDB.

Type: String

Valid Values: USER | SYSTEM

Required: Yes

**BackupExpiryDateTime**

Time at which the automatic on-demand backup created by DynamoDB will expire. This `SYSTEM` on-demand backup expires automatically 35 days after its creation.

Type: Timestamp

Required: No

**BackupSizeBytes**

Size of the backup in bytes.

Type: Long

Valid Range: Minimum value of 0.

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 V2](#)

# BackupSummary

Service: Amazon DynamoDB

Contains details for the backup.

## Contents

### Note

In the following list, the required parameters are described first.

### BackupArn

ARN associated with the backup.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: No

### BackupCreationDateTime

Time at which the backup was created.

Type: Timestamp

Required: No

### BackupExpiryDateTime

Time at which the automatic on-demand backup created by DynamoDB will expire. This `SYSTEM` on-demand backup expires automatically 35 days after its creation.

Type: Timestamp

Required: No

### BackupName

Name of the specified backup.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### BackupSizeBytes

Size of the backup in bytes.

Type: Long

Valid Range: Minimum value of 0.

Required: No

### BackupStatus

Backup can be in one of the following states: `CREATING`, `ACTIVE`, `DELETED`.

Type: String

Valid Values: `CREATING` | `DELETED` | `AVAILABLE`

Required: No

**BackupType**

BackupType:

- `USER` - On-demand backup created by you.
- `SYSTEM` - On-demand backup automatically created by DynamoDB.

Type: String

Valid Values: `USER` | `SYSTEM`

Required: No

**TableArn**

ARN associated with the table.

Type: String

Required: No

**TableId**

Unique identifier for the table.

Type: String

Pattern: `[0-9a-f]{8}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{12}`

Required: No

**TableName**

Name of the table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

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 V2](#)

# Capacity

Service: Amazon DynamoDB

Represents the amount of provisioned throughput capacity consumed on a table or an index.

## Contents

### Note

In the following list, the required parameters are described first.

### CapacityUnits

The total number of capacity units consumed on a table or an index.

Type: Double

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 V2](#)

# Condition

Service: Amazon DynamoDB

Represents the selection criteria for a `Query` or `Scan` operation:

- For a `Query` operation, `Condition` is used for specifying the `KeyConditions` to use when querying a table or an index. For `KeyConditions`, only the following comparison operators are supported:

`EQ` | `LE` | `LT` | `GE` | `GT` | `BEGINS_WITH` | `BETWEEN`

`Condition` is also used in a `QueryFilter`, which evaluates the query results and returns only the desired values.

- For a `Scan` operation, `Condition` is used in a `ScanFilter`, which evaluates the scan results and returns only the desired values.

## Contents

### Note

In the following list, the required parameters are described first.

### ComparisonOperator

A comparator for evaluating attributes. For example, equals, greater than, less than, etc.

The following comparison operators are available:

`EQ` | `NE` | `LE` | `LT` | `GE` | `GT` | `NOT_NULL` | `NULL` | `CONTAINS` | `NOT_CONTAINS` | `BEGINS_WITH` | `IN` | `BETWEEN`

The following are descriptions of each comparison operator.

- `EQ`: Equal. `EQ` is supported for all data types, including lists and maps.

`AttributeValueList` can contain only one `AttributeValue` element of type `String`, `Number`, `Binary`, `String Set`, `Number Set`, or `Binary Set`. If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not equal `{"NS": ["6", "2", "1"]}`.

- `NE`: Not equal. `NE` is supported for all data types, including lists and maps.

`AttributeValueList` can contain only one `AttributeValue` of type `String`, `Number`, `Binary`, `String Set`, `Number Set`, or `Binary Set`. If an item contains an `AttributeValue` of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not equal `{"NS": ["6", "2", "1"]}`.

- `LE`: Less than or equal.

`AttributeValueList` can contain only one `AttributeValue` element of type `String`, `Number`, or `Binary` (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not compare to `{"NS": ["6", "2", "1"]}`.

- `LT`: Less than.

`AttributeValueList` can contain only one `AttributeValue` of type `String`, `Number`, or `Binary` (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not compare to `{"NS": ["6", "2", "1"]}`.



- **GE** : Greater than or equal.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{ "S": "6" }` does not equal `{ "N": "6" }`. Also, `{ "N": "6" }` does not compare to `{ "NS": [ "6", "2", "1" ] }`.

- **GT** : Greater than.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{ "S": "6" }` does not equal `{ "N": "6" }`. Also, `{ "N": "6" }` does not compare to `{ "NS": [ "6", "2", "1" ] }`.

- **NOT\_NULL** : The attribute exists. **NOT\_NULL** is supported for all data types, including lists and maps.

**Note**

This operator tests for the existence of an attribute, not its data type. If the data type of attribute "a" is null, and you evaluate it using **NOT\_NULL**, the result is a Boolean `true`. This result is because the attribute "a" exists; its data type is not relevant to the **NOT\_NULL** comparison operator.

- **NULL** : The attribute does not exist. **NULL** is supported for all data types, including lists and maps.

**Note**

This operator tests for the nonexistence of an attribute, not its data type. If the data type of attribute "a" is null, and you evaluate it using **NULL**, the result is a Boolean `false`. This is because the attribute "a" exists; its data type is not relevant to the **NULL** comparison operator.

- **CONTAINS** : Checks for a subsequence, or value in a set.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If the target attribute of the comparison is of type String, then the operator checks for a substring match. If the target attribute of the comparison is of type Binary, then the operator looks for a subsequence of the target that matches the input. If the target attribute of the comparison is a set ("SS", "NS", or "BS"), then the operator evaluates to true if it finds an exact match with any member of the set.

**CONTAINS** is supported for lists: When evaluating `"a" CONTAINS "b"`, "a" can be a list; however, "b" cannot be a set, a map, or a list.

- **NOT\_CONTAINS** : Checks for absence of a subsequence, or absence of a value in a set.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If the target attribute of the comparison is a String, then the operator checks for the absence of a substring match. If the target attribute of the comparison is Binary, then the operator checks for the absence of a subsequence of the target that matches the input. If the target attribute of the comparison is a set ("SS", "NS", or "BS"), then the operator evaluates to true if it *does not* find an exact match with any member of the set.

**NOT\_CONTAINS** is supported for lists: When evaluating `"a" NOT CONTAINS "b"`, "a" can be a list; however, "b" cannot be a set, a map, or a list.

- **BEGINS\_WITH** : Checks for a prefix.

`AttributeValueList` can contain only one `AttributeValue` of type String or Binary (not a Number or a set type). The target attribute of the comparison must be of type String or Binary (not a Number or a set type).

- **IN** : Checks for matching elements in a list.

`AttributeValueList` can contain one or more `AttributeValue` elements of type String, Number, or Binary. These attributes are compared against an existing attribute of an item. If any elements of the input are equal to the item attribute, the expression evaluates to true.

- **BETWEEN** : Greater than or equal to the first value, and less than or equal to the second value.

`AttributeValueList` must contain two `AttributeValue` elements of the same type, either String, Number, or Binary (not a set type). A target attribute matches if the target value is greater than, or equal to, the first element and less than, or equal to, the second element. If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not compare to `{"N": "6"}`. Also, `{"N": "6"}` does not compare to `{"NS": ["6", "2", "1"]}`

For usage examples of `AttributeValueList` and `ComparisonOperator`, see [Legacy Conditional Parameters](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

Valid Values: `EQ` | `NE` | `IN` | `LE` | `LT` | `GE` | `GT` | `BETWEEN` | `NOT_NULL` | `NULL` | `CONTAINS` | `NOT_CONTAINS` | `BEGINS_WITH`

Required: Yes

#### **AttributeValueList**

One or more values to evaluate against the supplied attribute. The number of values in the list depends on the `ComparisonOperator` being used.

For type Number, value comparisons are numeric.

String value comparisons for greater than, equals, or less than are based on ASCII character code values. For example, a is greater than A, and a is greater than B. For a list of code values, see [http://en.wikipedia.org/wiki/ASCII#ASCII\\_printable\\_characters](http://en.wikipedia.org/wiki/ASCII#ASCII_printable_characters).

For Binary, DynamoDB treats each byte of the binary data as unsigned when it compares binary values.

Type: Array of [AttributeValue](#) (p. 254) objects

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 V2](#)

# ConsumedCapacity

Service: Amazon DynamoDB

The capacity units consumed by an operation. The data returned includes the total provisioned throughput consumed, along with statistics for the table and any indexes involved in the operation. `ConsumedCapacity` is only returned if the request asked for it. For more information, see [Provisioned Throughput](#) in the *Amazon DynamoDB Developer Guide*.

## Contents

### Note

In the following list, the required parameters are described first.

### CapacityUnits

The total number of capacity units consumed by the operation.

Type: Double

Required: No

### GlobalSecondaryIndexes

The amount of throughput consumed on each global index affected by the operation.

Type: String to [Capacity \(p. 274\)](#) object map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### LocalSecondaryIndexes

The amount of throughput consumed on each local index affected by the operation.

Type: String to [Capacity \(p. 274\)](#) object map

Key Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### Table

The amount of throughput consumed on the table affected by the operation.

Type: [Capacity \(p. 274\)](#) object

Required: No

### TableName

The name of the table that was affected by the operation.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

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 V2](#)

# ContinuousBackupsDescription

Service: Amazon DynamoDB

Represents the continuous backups and point in time recovery settings on the table.

## Contents

### Note

In the following list, the required parameters are described first.

### ContinuousBackupsStatus

`ContinuousBackupsStatus` can be one of the following states: `ENABLED`, `DISABLED`

Type: String

Valid Values: `ENABLED` | `DISABLED`

Required: Yes

### PointInTimeRecoveryDescription

The description of the point in time recovery settings applied to the table.

Type: [PointInTimeRecoveryDescription \(p. 314\)](#) object

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 V2](#)

# CreateGlobalSecondaryIndexAction

Service: Amazon DynamoDB

Represents a new global secondary index to be added to an existing table.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the global secondary index to be created.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### KeySchema

The key schema for the global secondary index.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: Yes

### Projection

Represents attributes that are copied (projected) from the table into an index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

Type: [Projection](#) (p. 316) object

Required: Yes

### ProvisionedThroughput

Represents the provisioned throughput settings for the specified global secondary index.

For current minimum and maximum provisioned throughput values, see [Limits](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ProvisionedThroughput](#) (p. 317) object

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 V2](#)



# CreateReplicaAction

Service: Amazon DynamoDB

Represents a replica to be added.

## Contents

### Note

In the following list, the required parameters are described first.

### RegionName

The region of the replica to be added.

Type: String

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 V2](#)



# DeleteGlobalSecondaryIndexAction

Service: Amazon DynamoDB

Represents a global secondary index to be deleted from an existing table.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the global secondary index to be deleted.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

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 V2](#)

# DeleteReplicaAction

Service: Amazon DynamoDB

Represents a replica to be removed.

## Contents

### Note

In the following list, the required parameters are described first.

### RegionName

The region of the replica to be removed.

Type: String

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 V2](#)

# DeleteRequest

Service: Amazon DynamoDB

Represents a request to perform a `DeleteItem` operation on an item.

## Contents

### Note

In the following list, the required parameters are described first.

### Key

A map of attribute name to attribute values, representing the primary key of the item to delete. All of the table's primary key attributes must be specified, and their data types must match those of the table's key schema.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

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 V2](#)

# ExpectedAttributeValue

Service: Amazon DynamoDB

Represents a condition to be compared with an attribute value. This condition can be used with `DeleteItem`, `PutItem` or `UpdateItem` operations; if the comparison evaluates to true, the operation succeeds; if not, the operation fails. You can use `ExpectedAttributeValue` in one of two different ways:

- Use `AttributeValueList` to specify one or more values to compare against an attribute. Use `ComparisonOperator` to specify how you want to perform the comparison. If the comparison evaluates to true, then the conditional operation succeeds.
- Use `Value` to specify a value that DynamoDB will compare against an attribute. If the values match, then `ExpectedAttributeValue` evaluates to true and the conditional operation succeeds. Optionally, you can also set `Exists` to false, indicating that you *do not* expect to find the attribute value in the table. In this case, the conditional operation succeeds only if the comparison evaluates to false.

`Value` and `Exists` are incompatible with `AttributeValueList` and `ComparisonOperator`. Note that if you use both sets of parameters at once, DynamoDB will return a `ValidationException` exception.

## Contents

### Note

In the following list, the required parameters are described first.

### AttributeValueList

One or more values to evaluate against the supplied attribute. The number of values in the list depends on the `ComparisonOperator` being used.

For type `Number`, value comparisons are numeric.

String value comparisons for greater than, equals, or less than are based on ASCII character code values. For example, `a` is greater than `A`, and `a` is greater than `B`. For a list of code values, see [http://en.wikipedia.org/wiki/ASCII#ASCII\\_printable\\_characters](http://en.wikipedia.org/wiki/ASCII#ASCII_printable_characters).

For `Binary`, DynamoDB treats each byte of the binary data as unsigned when it compares binary values.

For information on specifying data types in JSON, see [JSON Data Format](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of [AttributeValue](#) (p. 254) objects

Required: No

### ComparisonOperator

A comparator for evaluating attributes in the `AttributeValueList`. For example, equals, greater than, less than, etc.

The following comparison operators are available:

`EQ` | `NE` | `LE` | `LT` | `GE` | `GT` | `NOT_NULL` | `NULL` | `CONTAINS` | `NOT_CONTAINS` | `BEGINS_WITH` | `IN` | `BETWEEN`

The following are descriptions of each comparison operator.

- `EQ`: Equal. `EQ` is supported for all data types, including lists and maps.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, Binary, String Set, Number Set, or Binary Set. If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not equal `{"NS": ["6", "2", "1"]}`.

- **NE** : Not equal. **NE** is supported for all data types, including lists and maps.

`AttributeValueList` can contain only one `AttributeValue` of type String, Number, Binary, String Set, Number Set, or Binary Set. If an item contains an `AttributeValue` of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not equal `{"NS": ["6", "2", "1"]}`.

- **LE** : Less than or equal.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not compare to `{"NS": ["6", "2", "1"]}`.

- **LT** : Less than.

`AttributeValueList` can contain only one `AttributeValue` of type String, Number, or Binary (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not compare to `{"NS": ["6", "2", "1"]}`.

- **GE** : Greater than or equal.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not compare to `{"NS": ["6", "2", "1"]}`.

- **GT** : Greater than.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, `{"S": "6"}` does not equal `{"N": "6"}`. Also, `{"N": "6"}` does not compare to `{"NS": ["6", "2", "1"]}`.

- **NOT\_NULL** : The attribute exists. **NOT\_NULL** is supported for all data types, including lists and maps.

**Note**

This operator tests for the existence of an attribute, not its data type. If the data type of attribute "a" is null, and you evaluate it using **NOT\_NULL**, the result is a Boolean `true`. This result is because the attribute "a" exists; its data type is not relevant to the **NOT\_NULL** comparison operator.

- **NULL** : The attribute does not exist. **NULL** is supported for all data types, including lists and maps.

**Note**

This operator tests for the nonexistence of an attribute, not its data type. If the data type of attribute "a" is null, and you evaluate it using **NULL**, the result is a Boolean `false`. This is because the attribute "a" exists; its data type is not relevant to the **NULL** comparison operator.

- **CONTAINS** : Checks for a subsequence, or value in a set.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If the target attribute of the comparison is of type String, then the operator checks for a substring match. If the target attribute of the comparison is of type Binary, then the operator looks for a subsequence of the target that matches the input. If the target attribute of the comparison is a set ("SS", "NS", or "BS"), then the operator evaluates to true if it finds an exact match with any member of the set.

CONTAINS is supported for lists: When evaluating "a CONTAINS b", "a" can be a list; however, "b" cannot be a set, a map, or a list.

- `NOT_CONTAINS` : Checks for absence of a subsequence, or absence of a value in a set.

`AttributeValueList` can contain only one `AttributeValue` element of type String, Number, or Binary (not a set type). If the target attribute of the comparison is a String, then the operator checks for the absence of a substring match. If the target attribute of the comparison is Binary, then the operator checks for the absence of a subsequence of the target that matches the input. If the target attribute of the comparison is a set ("SS", "NS", or "BS"), then the operator evaluates to true if it *does not* find an exact match with any member of the set.

NOT\_CONTAINS is supported for lists: When evaluating "a NOT CONTAINS b", "a" can be a list; however, "b" cannot be a set, a map, or a list.

- `BEGINS_WITH` : Checks for a prefix.

`AttributeValueList` can contain only one `AttributeValue` of type String or Binary (not a Number or a set type). The target attribute of the comparison must be of type String or Binary (not a Number or a set type).

- `IN` : Checks for matching elements in a list.

`AttributeValueList` can contain one or more `AttributeValue` elements of type String, Number, or Binary. These attributes are compared against an existing attribute of an item. If any elements of the input are equal to the item attribute, the expression evaluates to true.

- `BETWEEN` : Greater than or equal to the first value, and less than or equal to the second value.

`AttributeValueList` must contain two `AttributeValue` elements of the same type, either String, Number, or Binary (not a set type). A target attribute matches if the target value is greater than, or equal to, the first element and less than, or equal to, the second element. If an item contains an `AttributeValue` element of a different type than the one provided in the request, the value does not match. For example, {"S": "6"} does not compare to {"N": "6"}. Also, {"N": "6"} does not compare to {"NS": ["6", "2", "1"]}

Type: String

Valid Values: `EQ` | `NE` | `IN` | `LE` | `LT` | `GE` | `GT` | `BETWEEN` | `NOT_NULL` | `NULL` | `CONTAINS` | `NOT_CONTAINS` | `BEGINS_WITH`

Required: No

## Exists

Causes DynamoDB to evaluate the value before attempting a conditional operation:

- If `Exists` is true, DynamoDB will check to see if that attribute value already exists in the table. If it is found, then the operation succeeds. If it is not found, the operation fails with a `ConditionalCheckFailedException`.
- If `Exists` is false, DynamoDB assumes that the attribute value does not exist in the table. If in fact the value does not exist, then the assumption is valid and the operation succeeds. If the value is found, despite the assumption that it does not exist, the operation fails with a `ConditionalCheckFailedException`.

The default setting for `Exists` is `true`. If you supply a `Value` all by itself, DynamoDB assumes the attribute exists: You don't have to set `Exists` to `true`, because it is implied.

DynamoDB returns a `ValidationException` if:

- `Exists` is `true` but there is no `Value` to check. (You expect a value to exist, but don't specify what that value is.)
- `Exists` is `false` but you also provide a `Value`. (You cannot expect an attribute to have a value, while also expecting it not to exist.)

Type: Boolean

Required: No

### Value

Represents the data for the expected attribute.

Each attribute value is described as a name-value pair. The name is the data type, and the value is the data itself.

For more information, see [Data Types](#) in the *Amazon DynamoDB Developer Guide*.

Type: [AttributeValue \(p. 254\)](#) object

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 V2](#)

# GlobalSecondaryIndex

Service: Amazon DynamoDB

Represents the properties of a global secondary index.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the global secondary index. The name must be unique among all other indexes on this table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### KeySchema

The complete key schema for a global secondary index, which consists of one or more pairs of attribute names and key types:

- `HASH` - partition key
- `RANGE` - sort key

### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: Yes

### Projection

Represents attributes that are copied (projected) from the table into the global secondary index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

Type: [Projection](#) (p. 316) object

Required: Yes

### ProvisionedThroughput

Represents the provisioned throughput settings for the specified global secondary index.

For current minimum and maximum provisioned throughput values, see [Limits](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ProvisionedThroughput](#) (p. 317) object



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 V2](#)

# GlobalSecondaryIndexDescription

Service: Amazon DynamoDB

Represents the properties of a global secondary index.

## Contents

### Note

In the following list, the required parameters are described first.

### Backfilling

Indicates whether the index is currently backfilling. *Backfilling* is the process of reading items from the table and determining whether they can be added to the index. (Not all items will qualify: For example, a partition key cannot have any duplicate values.) If an item can be added to the index, DynamoDB will do so. After all items have been processed, the backfilling operation is complete and *Backfilling* is false.

### Note

For indexes that were created during a `CreateTable` operation, the *Backfilling* attribute does not appear in the *DescribeTable* output.

Type: Boolean

Required: No

### IndexArn

The Amazon Resource Name (ARN) that uniquely identifies the index.

Type: String

Required: No

### IndexName

The name of the global secondary index.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### IndexSizeBytes

The total size of the specified index, in bytes. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.

Type: Long

Required: No

### IndexStatus

The current state of the global secondary index:

- `CREATING` - The index is being created.
- `UPDATING` - The index is being updated.
- `DELETING` - The index is being deleted.
- `ACTIVE` - The index is ready for use.

Type: String

Valid Values: CREATING | UPDATING | DELETING | ACTIVE

Required: No

#### ItemCount

The number of items in the specified index. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.

Type: Long

Required: No

#### KeySchema

The complete key schema for a global secondary index, which consists of one or more pairs of attribute names and key types:

- HASH - partition key
- RANGE - sort key

##### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: No

#### Projection

Represents attributes that are copied (projected) from the table into the global secondary index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

Type: [Projection](#) (p. 316) object

Required: No

#### ProvisionedThroughput

Represents the provisioned throughput settings for the specified global secondary index.

For current minimum and maximum provisioned throughput values, see [Limits](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ProvisionedThroughputDescription](#) (p. 318) object

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 V2](#)

# GlobalSecondaryIndexInfo

Service: Amazon DynamoDB

Represents the properties of a global secondary index for the table when the backup was created.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the global secondary index.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### KeySchema

The complete key schema for a global secondary index, which consists of one or more pairs of attribute names and key types:

- `HASH` - partition key
- `RANGE` - sort key

### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: No

### Projection

Represents attributes that are copied (projected) from the table into the global secondary index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

Type: [Projection](#) (p. 316) object

Required: No

### ProvisionedThroughput

Represents the provisioned throughput settings for the specified global secondary index.

Type: [ProvisionedThroughput](#) (p. 317) object

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 V2](#)

# GlobalSecondaryIndexUpdate

Service: Amazon DynamoDB

Represents one of the following:

- A new global secondary index to be added to an existing table.
- New provisioned throughput parameters for an existing global secondary index.
- An existing global secondary index to be removed from an existing table.

## Contents

### Note

In the following list, the required parameters are described first.

### Create

The parameters required for creating a global secondary index on an existing table:

- `IndexName`
- `KeySchema`
- `AttributeDefinitions`
- `Projection`
- `ProvisionedThroughput`

Type: [CreateGlobalSecondaryIndexAction](#) (p. 281) object

Required: No

### Delete

The name of an existing global secondary index to be removed.

Type: [DeleteGlobalSecondaryIndexAction](#) (p. 284) object

Required: No

### Update

The name of an existing global secondary index, along with new provisioned throughput settings to be applied to that index.

Type: [UpdateGlobalSecondaryIndexAction](#) (p. 346) object

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 V2](#)

# GlobalTable

Service: Amazon DynamoDB

Represents the properties of a global table.

## Contents

### Note

In the following list, the required parameters are described first.

### GlobalTableName

The global table name.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### ReplicationGroup

The regions where the global table has replicas.

Type: Array of [Replica \(p. 321\)](#) objects

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 V2](#)



# GlobalTableDescription

Service: Amazon DynamoDB

Contains details about the global table.

## Contents

### Note

In the following list, the required parameters are described first.

### CreationDateTime

The creation time of the global table.

Type: Timestamp

Required: No

### GlobalTableArn

The unique identifier of the global table.

Type: String

Required: No

### GlobalTableName

The global table name.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### GlobalTableStatus

The current state of the global table:

- **CREATING** - The global table is being created.
- **UPDATING** - The global table is being updated.
- **DELETING** - The global table is being deleted.
- **ACTIVE** - The global table is ready for use.

Type: String

Valid Values: **CREATING** | **ACTIVE** | **DELETING** | **UPDATING**

Required: No

### ReplicationGroup

The regions where the global table has replicas.

Type: Array of [ReplicaDescription](#) (p. 322) objects

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 V2](#)

# GlobalTableGlobalSecondaryIndexSettingsUpdate

Service: Amazon DynamoDB

Represents the settings of a global secondary index for a global table that will be modified.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the global secondary index. The name must be unique among all other indexes on this table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### ProvisionedWriteCapacityAutoScalingSettingsUpdate

AutoScaling settings for managing a global secondary index's write capacity units.

Type: [AutoScalingSettingsUpdate](#) (p. 263) object

Required: No

### ProvisionedWriteCapacityUnits

The maximum number of writes consumed per second before DynamoDB returns a `ThrottlingException`.

Type: Long

Valid Range: Minimum value of 1.

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 V2](#)

# ItemCollectionMetrics

Service: Amazon DynamoDB

Information about item collections, if any, that were affected by the operation.

`ItemCollectionMetrics` is only returned if the request asked for it. If the table does not have any local secondary indexes, this information is not returned in the response.

## Contents

### Note

In the following list, the required parameters are described first.

### ItemCollectionKey

The partition key value of the item collection. This value is the same as the partition key value of the item.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### SizeEstimateRangeGB

An estimate of item collection size, in gigabytes. This value is a two-element array containing a lower bound and an upper bound for the estimate. The estimate includes the size of all the items in the table, plus the size of all attributes projected into all of the local secondary indexes on that table. Use this estimate to measure whether a local secondary index is approaching its size limit.

The estimate is subject to change over time; therefore, do not rely on the precision or accuracy of the estimate.

Type: Array of doubles

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 V2](#)

# KeysAndAttributes

Service: Amazon DynamoDB

Represents a set of primary keys and, for each key, the attributes to retrieve from the table.

For each primary key, you must provide *all* of the key attributes. For example, with a simple primary key, you only need to provide the partition key. For a composite primary key, you must provide *both* the partition key and the sort key.

## Contents

### Note

In the following list, the required parameters are described first.

### Keys

The primary key attribute values that define the items and the attributes associated with the items.

Type: Array of string to [AttributeValue \(p. 254\)](#) object maps

Array Members: Minimum number of 1 item. Maximum number of 100 items.

Key Length Constraints: Maximum length of 65535.

Required: Yes

### AttributesToGet

This is a legacy parameter. Use `ProjectionExpression` instead. For more information, see [Legacy Conditional Parameters](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of strings

Array Members: Minimum number of 1 item.

Length Constraints: Maximum length of 65535.

Required: No

### ConsistentRead

The consistency of a read operation. If set to `true`, then a strongly consistent read is used; otherwise, an eventually consistent read is used.

Type: Boolean

Required: No

### ExpressionAttributeNames

One or more substitution tokens for attribute names in an expression. The following are some use cases for using `ExpressionAttributeNames`:

- To access an attribute whose name conflicts with a DynamoDB reserved word.
- To create a placeholder for repeating occurrences of an attribute name in an expression.
- To prevent special characters in an attribute name from being misinterpreted in an expression.

Use the `#` character in an expression to dereference an attribute name. For example, consider the following attribute name:

- Percentile

The name of this attribute conflicts with a reserved word, so it cannot be used directly in an expression. (For the complete list of reserved words, see [Reserved Words](#) in the *Amazon*

*DynamoDB Developer Guide*). To work around this, you could specify the following for `ExpressionAttributeNames`:

- `{"#P": "Percentile"}`

You could then use this substitution in an expression, as in this example:

- `#P = :val`

#### Note

Tokens that begin with the `:` character are *expression attribute values*, which are placeholders for the actual value at runtime.

For more information on expression attribute names, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String to string map

Value Length Constraints: Maximum length of 65535.

Required: No

#### ProjectionExpression

A string that identifies one or more attributes to retrieve from the table. These attributes can include scalars, sets, or elements of a JSON document. The attributes in the `ProjectionExpression` must be separated by commas.

If no attribute names are specified, then all attributes will be returned. If any of the requested attributes are not found, they will not appear in the result.

For more information, see [Accessing Item Attributes](#) in the *Amazon DynamoDB Developer Guide*.

Type: String

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 V2](#)

# KeySchemaElement

Service: Amazon DynamoDB

Represents a *single element* of a key schema. A key schema specifies the attributes that make up the primary key of a table, or the key attributes of an index.

A `KeySchemaElement` represents exactly one attribute of the primary key. For example, a simple primary key would be represented by one `KeySchemaElement` (for the partition key). A composite primary key would require one `KeySchemaElement` for the partition key, and another `KeySchemaElement` for the sort key.

A `KeySchemaElement` must be a scalar, top-level attribute (not a nested attribute). The data type must be one of String, Number, or Binary. The attribute cannot be nested within a List or a Map.

## Contents

### Note

In the following list, the required parameters are described first.

### AttributeName

The name of a key attribute.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: Yes

### KeyType

The role that this key attribute will assume:

- `HASH` - partition key
- `RANGE` - sort key

### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

Type: String

Valid Values: `HASH` | `RANGE`

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 V2](#)





# LocalSecondaryIndex

Service: Amazon DynamoDB

Represents the properties of a local secondary index.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the local secondary index. The name must be unique among all other indexes on this table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### KeySchema

The complete key schema for the local secondary index, consisting of one or more pairs of attribute names and key types:

- `HASH` - partition key
- `RANGE` - sort key

### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: Yes

### Projection

Represents attributes that are copied (projected) from the table into the local secondary index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

Type: [Projection](#) (p. 316) object

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 V2](#)

# LocalSecondaryIndexDescription

Service: Amazon DynamoDB

Represents the properties of a local secondary index.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexArn

The Amazon Resource Name (ARN) that uniquely identifies the index.

Type: String

Required: No

### IndexName

Represents the name of the local secondary index.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### IndexSizeBytes

The total size of the specified index, in bytes. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.

Type: Long

Required: No

### ItemCount

The number of items in the specified index. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.

Type: Long

Required: No

### KeySchema

The complete key schema for the local secondary index, consisting of one or more pairs of attribute names and key types:

- `HASH` - partition key
- `RANGE` - sort key

### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: No

### **Projection**

Represents attributes that are copied (projected) from the table into the global secondary index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

Type: [Projection](#) (p. 316) object

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 V2](#)

# LocalSecondaryIndexInfo

Service: Amazon DynamoDB

Represents the properties of a local secondary index for the table when the backup was created.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

Represents the name of the local secondary index.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

### KeySchema

The complete key schema for a local secondary index, which consists of one or more pairs of attribute names and key types:

- `HASH` - partition key
- `RANGE` - sort key

### Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: No

### Projection

Represents attributes that are copied (projected) from the table into the global secondary index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

Type: [Projection](#) (p. 316) object

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 V2](#)

# PointInTimeRecoveryDescription

Service: Amazon DynamoDB

The description of the point in time settings applied to the table.

## Contents

### Note

In the following list, the required parameters are described first.

### **EarliestRestorableDateTime**

Specifies the earliest point in time you can restore your table to. It You can restore your table to any point in time during the last 35 days.

Type: Timestamp

Required: No

### **LatestRestorableDateTime**

LatestRestorableDateTime is typically 5 minutes before the current time.

Type: Timestamp

Required: No

### **PointInTimeRecoveryStatus**

The current state of point in time recovery:

- **ENABLING** - Point in time recovery is being enabled.
- **ENABLED** - Point in time recovery is enabled.
- **DISABLED** - Point in time recovery is disabled.

Type: String

Valid Values: **ENABLED** | **DISABLED**

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 V2](#)

# PointInTimeRecoverySpecification

Service: Amazon DynamoDB

Represents the settings used to enable point in time recovery.

## Contents

### Note

In the following list, the required parameters are described first.

### PointInTimeRecoveryEnabled

Indicates whether point in time recovery is enabled (true) or disabled (false) on the table.

Type: Boolean

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 V2](#)



# Projection

Service: Amazon DynamoDB

Represents attributes that are copied (projected) from the table into an index. These are in addition to the primary key attributes and index key attributes, which are automatically projected.

## Contents

### Note

In the following list, the required parameters are described first.

### NonKeyAttributes

Represents the non-key attribute names which will be projected into the index.

For local secondary indexes, the total count of `NonKeyAttributes` summed across all of the local secondary indexes, must not exceed 20. If you project the same attribute into two different indexes, this counts as two distinct attributes when determining the total.

Type: Array of strings

Array Members: Minimum number of 1 item. Maximum number of 20 items.

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: No

### ProjectionType

The set of attributes that are projected into the index:

- `KEYS_ONLY` - Only the index and primary keys are projected into the index.
- `INCLUDE` - Only the specified table attributes are projected into the index. The list of projected attributes are in `NonKeyAttributes`.
- `ALL` - All of the table attributes are projected into the index.

Type: String

Valid Values: `ALL` | `KEYS_ONLY` | `INCLUDE`

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 V2](#)

# ProvisionedThroughput

Service: Amazon DynamoDB

Represents the provisioned throughput settings for a specified table or index. The settings can be modified using the `UpdateTable` operation.

For current minimum and maximum provisioned throughput values, see [Limits](#) in the *Amazon DynamoDB Developer Guide*.

## Contents

### Note

In the following list, the required parameters are described first.

### ReadCapacityUnits

The maximum number of strongly consistent reads consumed per second before DynamoDB returns a `ThrottlingException`. For more information, see [Specifying Read and Write Requirements](#) in the *Amazon DynamoDB Developer Guide*.

Type: Long

Valid Range: Minimum value of 1.

Required: Yes

### WriteCapacityUnits

The maximum number of writes consumed per second before DynamoDB returns a `ThrottlingException`. For more information, see [Specifying Read and Write Requirements](#) in the *Amazon DynamoDB Developer Guide*.

Type: Long

Valid Range: Minimum value of 1.

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 V2](#)

## ProvisionedThroughputDescription

Service: Amazon DynamoDB

Represents the provisioned throughput settings for the table, consisting of read and write capacity units, along with data about increases and decreases.

### Contents

#### Note

In the following list, the required parameters are described first.

#### LastDecreaseDateTime

The date and time of the last provisioned throughput decrease for this table.

Type: Timestamp

Required: No

#### LastIncreaseDateTime

The date and time of the last provisioned throughput increase for this table.

Type: Timestamp

Required: No

#### NumberOfDecreasesToday

The number of provisioned throughput decreases for this table during this UTC calendar day. For current maximums on provisioned throughput decreases, see [Limits](#) in the *Amazon DynamoDB Developer Guide*.

Type: Long

Valid Range: Minimum value of 1.

Required: No

#### ReadCapacityUnits

The maximum number of strongly consistent reads consumed per second before DynamoDB returns a `ThrottlingException`. Eventually consistent reads require less effort than strongly consistent reads, so a setting of 50 `ReadCapacityUnits` per second provides 100 eventually consistent `ReadCapacityUnits` per second.

Type: Long

Valid Range: Minimum value of 1.

Required: No

#### WriteCapacityUnits

The maximum number of writes consumed per second before DynamoDB returns a `ThrottlingException`.

Type: Long

Valid Range: Minimum value of 1.

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 V2](#)

# PutRequest

Service: Amazon DynamoDB

Represents a request to perform a `PutItem` operation on an item.

## Contents

### Note

In the following list, the required parameters are described first.

### Item

A map of attribute name to attribute values, representing the primary key of an item to be processed by `PutItem`. All of the table's primary key attributes must be specified, and their data types must match those of the table's key schema. If any attributes are present in the item which are part of an index key schema for the table, their types must match the index key schema.

Type: String to [AttributeValue \(p. 254\)](#) object map

Key Length Constraints: Maximum length of 65535.

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 V2](#)

# Replica

Service: Amazon DynamoDB

Represents the properties of a replica.

## Contents

### Note

In the following list, the required parameters are described first.

### RegionName

The region where the replica needs to be created.

Type: String

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 V2](#)

# ReplicaDescription

Service: Amazon DynamoDB

Contains the details of the replica.

## Contents

### Note

In the following list, the required parameters are described first.

### RegionName

The name of the region.

Type: String

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 V2](#)

# ReplicaGlobalSecondaryIndexSettingsDescription

Service: Amazon DynamoDB

Represents the properties of a global secondary index.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the global secondary index. The name must be unique among all other indexes on this table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### IndexStatus

The current status of the global secondary index:

- **CREATING** - The global secondary index is being created.
- **UPDATING** - The global secondary index is being updated.
- **DELETING** - The global secondary index is being deleted.
- **ACTIVE** - The global secondary index is ready for use.

Type: String

Valid Values: **CREATING** | **UPDATING** | **DELETING** | **ACTIVE**

Required: No

### ProvisionedReadCapacityAutoScalingSettings

Autoscaling settings for a global secondary index replica's read capacity units.

Type: [AutoScalingSettingsDescription](#) (p. 261) object

Required: No

### ProvisionedReadCapacityUnits

The maximum number of strongly consistent reads consumed per second before DynamoDB returns a `ThrottlingException`.

Type: Long

Valid Range: Minimum value of 1.

Required: No

### ProvisionedWriteCapacityAutoScalingSettings

AutoScaling settings for a global secondary index replica's write capacity units.

Type: [AutoScalingSettingsDescription](#) (p. 261) object



Required: No

**ProvisionedWriteCapacityUnits**

The maximum number of writes consumed per second before DynamoDB returns a `ThrottlingException`.

Type: Long

Valid Range: Minimum value of 1.

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 V2](#)

# ReplicaGlobalSecondaryIndexSettingsUpdate

Service: Amazon DynamoDB

Represents the settings of a global secondary index for a global table that will be modified.

## Contents

### Note

In the following list, the required parameters are described first.

### IndexName

The name of the global secondary index. The name must be unique among all other indexes on this table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### ProvisionedReadCapacityAutoScalingSettingsUpdate

Autoscaling settings for managing a global secondary index replica's read capacity units.

Type: [AutoScalingSettingsUpdate](#) (p. 263) object

Required: No

### ProvisionedReadCapacityUnits

The maximum number of strongly consistent reads consumed per second before DynamoDB returns a `ThrottlingException`.

Type: Long

Valid Range: Minimum value of 1.

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 V2](#)

# ReplicaSettingsDescription

Service: Amazon DynamoDB

Represents the properties of a replica.

## Contents

### Note

In the following list, the required parameters are described first.

#### RegionName

The region name of the replica.

Type: String

Required: Yes

#### ReplicaGlobalSecondaryIndexSettings

Replica global secondary index settings for the global table.

Type: Array of [ReplicaGlobalSecondaryIndexSettingsDescription](#) (p. 323) objects

Required: No

#### ReplicaProvisionedReadCapacityAutoScalingSettings

Autoscaling settings for a global table replica's read capacity units.

Type: [AutoScalingSettingsDescription](#) (p. 261) object

Required: No

#### ReplicaProvisionedReadCapacityUnits

The maximum number of strongly consistent reads consumed per second before DynamoDB returns a `ThrottlingException`. For more information, see [Specifying Read and Write Requirements](#) in the *Amazon DynamoDB Developer Guide*.

Type: Long

Valid Range: Minimum value of 1.

Required: No

#### ReplicaProvisionedWriteCapacityAutoScalingSettings

AutoScaling settings for a global table replica's write capacity units.

Type: [AutoScalingSettingsDescription](#) (p. 261) object

Required: No

#### ReplicaProvisionedWriteCapacityUnits

The maximum number of writes consumed per second before DynamoDB returns a `ThrottlingException`. For more information, see [Specifying Read and Write Requirements](#) in the *Amazon DynamoDB Developer Guide*.

Type: Long

Valid Range: Minimum value of 1.

Required: No

### **ReplicaStatus**

The current state of the region:

- `CREATING` - The region is being created.
- `UPDATING` - The region is being updated.
- `DELETING` - The region is being deleted.
- `ACTIVE` - The region is ready for use.

Type: String

Valid Values: `CREATING` | `UPDATING` | `DELETING` | `ACTIVE`

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 V2](#)

# ReplicaSettingsUpdate

Service: Amazon DynamoDB

Represents the settings for a global table in a region that will be modified.

## Contents

### Note

In the following list, the required parameters are described first.

#### RegionName

The region of the replica to be added.

Type: String

Required: Yes

#### ReplicaGlobalSecondaryIndexSettingsUpdate

Represents the settings of a global secondary index for a global table that will be modified.

Type: Array of [ReplicaGlobalSecondaryIndexSettingsUpdate \(p. 325\)](#) objects

Array Members: Minimum number of 1 item. Maximum number of 20 items.

Required: No

#### ReplicaProvisionedReadCapacityAutoScalingSettingsUpdate

Autoscaling settings for managing a global table replica's read capacity units.

Type: [AutoScalingSettingsUpdate \(p. 263\)](#) object

Required: No

#### ReplicaProvisionedReadCapacityUnits

The maximum number of strongly consistent reads consumed per second before DynamoDB returns a `ThrottlingException`. For more information, see [Specifying Read and Write Requirements](#) in the *Amazon DynamoDB Developer Guide*.

Type: Long

Valid Range: Minimum value of 1.

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 V2](#)

# ReplicaUpdate

Service: Amazon DynamoDB

Represents one of the following:

- A new replica to be added to an existing global table.
- New parameters for an existing replica.
- An existing replica to be removed from an existing global table.

## Contents

### Note

In the following list, the required parameters are described first.

### Create

The parameters required for creating a replica on an existing global table.

Type: [CreateReplicaAction \(p. 283\)](#) object

Required: No

### Delete

The name of the existing replica to be removed.

Type: [DeleteReplicaAction \(p. 285\)](#) object

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 V2](#)

# RestoreSummary

Service: Amazon DynamoDB

Contains details for the restore.

## Contents

### Note

In the following list, the required parameters are described first.

### RestoreDateTime

Point in time or source backup time.

Type: Timestamp

Required: Yes

### RestoreInProgress

Indicates if a restore is in progress or not.

Type: Boolean

Required: Yes

### SourceBackupArn

ARN of the backup from which the table was restored.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: No

### SourceTableArn

ARN of the source table of the backup that is being restored.

Type: String

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 V2](#)

# SourceTableDetails

Service: Amazon DynamoDB

Contains the details of the table when the backup was created.

## Contents

### Note

In the following list, the required parameters are described first.

### KeySchema

Schema of the table.

Type: Array of [KeySchemaElement](#) (p. 306) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: Yes

### ProvisionedThroughput

Read IOPs and Write IOPS on the table when the backup was created.

Type: [ProvisionedThroughput](#) (p. 317) object

Required: Yes

### TableCreationDateTime

Time when the source table was created.

Type: Timestamp

Required: Yes

### TableId

Unique identifier for the table for which the backup was created.

Type: String

Pattern: [0-9a-f]{8}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{12}

Required: Yes

### TableName

The name of the table for which the backup was created.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

### ItemCount

Number of items in the table. Please note this is an approximate value.

Type: Long

Valid Range: Minimum value of 0.



Required: No

**TableArn**

ARN of the table for which backup was created.

Type: String

Required: No

**TableSizeBytes**

Size of the table in bytes. Please note this is an approximate value.

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 V2](#)

# SourceTableFeatureDetails

Service: Amazon DynamoDB

Contains the details of the features enabled on the table when the backup was created. For example, LSIs, GSIs, streams, TTL.

## Contents

### Note

In the following list, the required parameters are described first.

### GlobalSecondaryIndexes

Represents the GSI properties for the table when the backup was created. It includes the IndexName, KeySchema, Projection and ProvisionedThroughput for the GSIs on the table at the time of backup.

Type: Array of [GlobalSecondaryIndexInfo \(p. 296\)](#) objects

Required: No

### LocalSecondaryIndexes

Represents the LSI properties for the table when the backup was created. It includes the IndexName, KeySchema and Projection for the LSIs on the table at the time of backup.

Type: Array of [LocalSecondaryIndexInfo \(p. 312\)](#) objects

Required: No

### SSEDescription

The description of the server-side encryption status on the table when the backup was created.

Type: [SSEDescription \(p. 335\)](#) object

Required: No

### StreamDescription

Stream settings on the table when the backup was created.

Type: [StreamSpecification \(p. 337\)](#) object

Required: No

### TimeToLiveDescription

Time to Live settings on the table when the backup was created.

Type: [TimeToLiveDescription \(p. 344\)](#) object

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 V2](#)



# SSEDescription

Service: Amazon DynamoDB

The description of the server-side encryption status on the specified table.

## Contents

### Note

In the following list, the required parameters are described first.

### KMSMasterKeyArn

The KMS master key ARN used for the KMS encryption.

Type: String

Required: No

### SSEType

Server-side encryption type:

- `AES256` - Server-side encryption which uses the AES256 algorithm.
- `KMS` - Server-side encryption which uses AWS Key Management Service.

Type: String

Valid Values: `AES256` | `KMS`

Required: No

### Status

The current state of server-side encryption:

- `ENABLING` - Server-side encryption is being enabled.
- `ENABLED` - Server-side encryption is enabled.
- `DISABLING` - Server-side encryption is being disabled.
- `DISABLED` - Server-side encryption is disabled.
- `UPDATING` - Server-side encryption is being updated.

Type: String

Valid Values: `ENABLING` | `ENABLED` | `DISABLING` | `DISABLED` | `UPDATING`

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 V2](#)

# SSESpecification

Service: Amazon DynamoDB

Represents the settings used to enable server-side encryption.

## Contents

### Note

In the following list, the required parameters are described first.

### Enabled

Indicates whether server-side encryption is enabled (true) or disabled (false) on the table. If enabled (true), server-side encryption type is set to `KMS`. If disabled (false) or not specified, server-side encryption is set to AWS owned CMK.

Type: Boolean

Required: No

### KMSMasterKeyId

The KMS Master Key (CMK) which should be used for the KMS encryption. To specify a CMK, use its key ID, Amazon Resource Name (ARN), alias name, or alias ARN. Note that you should only provide this parameter if the key is different from the default DynamoDB KMS Master Key alias/`aws/dynamodb`.

Type: String

Required: No

### SSEType

Server-side encryption type:

- `AES256` - Server-side encryption which uses the AES256 algorithm (not applicable).
- `KMS` - Server-side encryption which uses AWS Key Management Service. Key is stored in your account and is managed by AWS KMS (KMS charges apply).

Type: String

Valid Values: `AES256` | `KMS`

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 V2](#)

# StreamSpecification

Service: Amazon DynamoDB

Represents the DynamoDB Streams configuration for a table in DynamoDB.

## Contents

### Note

In the following list, the required parameters are described first.

### StreamEnabled

Indicates whether DynamoDB Streams is enabled (true) or disabled (false) on the table.

Type: Boolean

Required: No

### StreamViewType

When an item in the table is modified, `StreamViewType` determines what information is written to the stream for this table. Valid values for `StreamViewType` are:

- `KEYS_ONLY` - Only the key attributes of the modified item are written to the stream.
- `NEW_IMAGE` - The entire item, as it appears after it was modified, is written to the stream.
- `OLD_IMAGE` - The entire item, as it appeared before it was modified, is written to the stream.
- `NEW_AND_OLD_IMAGES` - Both the new and the old item images of the item are written to the stream.

Type: String

Valid Values: `NEW_IMAGE` | `OLD_IMAGE` | `NEW_AND_OLD_IMAGES` | `KEYS_ONLY`

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 V2](#)

# TableDescription

Service: Amazon DynamoDB

Represents the properties of a table.

## Contents

### Note

In the following list, the required parameters are described first.

### AttributeDefinitions

An array of `AttributeDefinition` objects. Each of these objects describes one attribute in the table and index key schema.

Each `AttributeDefinition` object in this array is composed of:

- `AttributeName` - The name of the attribute.
- `AttributeType` - The data type for the attribute.

Type: Array of [AttributeDefinition](#) (p. 253) objects

Required: No

### CreationDateTime

The date and time when the table was created, in [UNIX epoch time](#) format.

Type: Timestamp

Required: No

### GlobalSecondaryIndexes

The global secondary indexes, if any, on the table. Each index is scoped to a given partition key value. Each element is composed of:

- `Backfilling` - If true, then the index is currently in the backfilling phase. Backfilling occurs only when a new global secondary index is added to the table; it is the process by which DynamoDB populates the new index with data from the table. (This attribute does not appear for indexes that were created during a `CreateTable` operation.)
- `IndexName` - The name of the global secondary index.
- `IndexSizeBytes` - The total size of the global secondary index, in bytes. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.
- `IndexStatus` - The current status of the global secondary index:
  - `CREATING` - The index is being created.
  - `UPDATING` - The index is being updated.
  - `DELETING` - The index is being deleted.
  - `ACTIVE` - The index is ready for use.
- `ItemCount` - The number of items in the global secondary index. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.
- `KeySchema` - Specifies the complete index key schema. The attribute names in the key schema must be between 1 and 255 characters (inclusive). The key schema must begin with the same partition key as the table.
- `Projection` - Specifies attributes that are copied (projected) from the table into the index. These are in addition to the primary key attributes and index key attributes, which are automatically projected. Each attribute specification is composed of:

- **ProjectionType** - One of the following:
  - **KEYS\_ONLY** - Only the index and primary keys are projected into the index.
  - **INCLUDE** - Only the specified table attributes are projected into the index. The list of projected attributes are in **NonKeyAttributes**.
  - **ALL** - All of the table attributes are projected into the index.
- **NonKeyAttributes** - A list of one or more non-key attribute names that are projected into the secondary index. The total count of attributes provided in **NonKeyAttributes**, summed across all of the secondary indexes, must not exceed 20. If you project the same attribute into two different indexes, this counts as two distinct attributes when determining the total.
- **ProvisionedThroughput** - The provisioned throughput settings for the global secondary index, consisting of read and write capacity units, along with data about increases and decreases.

If the table is in the **DELETING** state, no information about indexes will be returned.

Type: Array of [GlobalSecondaryIndexDescription \(p. 293\)](#) objects

Required: No

#### **ItemCount**

The number of items in the specified table. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.

Type: Long

Required: No

#### **KeySchema**

The primary key structure for the table. Each **KeySchemaElement** consists of:

- **AttributeName** - The name of the attribute.
- **KeyType** - The role of the attribute:
  - **HASH** - partition key
  - **RANGE** - sort key

##### **Note**

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

For more information about primary keys, see [Primary Key](#) in the *Amazon DynamoDB Developer Guide*.

Type: Array of [KeySchemaElement \(p. 306\)](#) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: No

#### **LatestStreamArn**

The Amazon Resource Name (ARN) that uniquely identifies the latest stream for this table.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.



Required: No

#### **LatestStreamLabel**

A timestamp, in ISO 8601 format, for this stream.

Note that `LatestStreamLabel` is not a unique identifier for the stream, because it is possible that a stream from another table might have the same timestamp. However, the combination of the following three elements is guaranteed to be unique:

- the AWS customer ID.
- the table name.
- the `StreamLabel`.

Type: String

Required: No

#### **LocalSecondaryIndexes**

Represents one or more local secondary indexes on the table. Each index is scoped to a given partition key value. Tables with one or more local secondary indexes are subject to an item collection size limit, where the amount of data within a given item collection cannot exceed 10 GB. Each element is composed of:

- `IndexName` - The name of the local secondary index.
- `KeySchema` - Specifies the complete index key schema. The attribute names in the key schema must be between 1 and 255 characters (inclusive). The key schema must begin with the same partition key as the table.
- `Projection` - Specifies attributes that are copied (projected) from the table into the index. These are in addition to the primary key attributes and index key attributes, which are automatically projected. Each attribute specification is composed of:
  - `ProjectionType` - One of the following:
    - `KEYS_ONLY` - Only the index and primary keys are projected into the index.
    - `INCLUDE` - Only the specified table attributes are projected into the index. The list of projected attributes are in `NonKeyAttributes`.
    - `ALL` - All of the table attributes are projected into the index.
  - `NonKeyAttributes` - A list of one or more non-key attribute names that are projected into the secondary index. The total count of attributes provided in `NonKeyAttributes`, summed across all of the secondary indexes, must not exceed 20. If you project the same attribute into two different indexes, this counts as two distinct attributes when determining the total.
- `IndexSizeBytes` - Represents the total size of the index, in bytes. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.
- `ItemCount` - Represents the number of items in the index. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.

If the table is in the `DELETING` state, no information about indexes will be returned.

Type: Array of [LocalSecondaryIndexDescription \(p. 310\)](#) objects

Required: No

#### **ProvisionedThroughput**

The provisioned throughput settings for the table, consisting of read and write capacity units, along with data about increases and decreases.

Type: [ProvisionedThroughputDescription \(p. 318\)](#) object

Required: No

**RestoreSummary**

Contains details for the restore.

Type: [RestoreSummary \(p. 330\)](#) object

Required: No

**SSEDescription**

The description of the server-side encryption status on the specified table.

Type: [SSEDescription \(p. 335\)](#) object

Required: No

**StreamSpecification**

The current DynamoDB Streams configuration for the table.

Type: [StreamSpecification \(p. 337\)](#) object

Required: No

**TableArn**

The Amazon Resource Name (ARN) that uniquely identifies the table.

Type: String

Required: No

**TableId**

Unique identifier for the table for which the backup was created.

Type: String

Pattern: [0-9a-f]{8}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{12}

Required: No

**TableName**

The name of the table.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: No

**TableSizeBytes**

The total size of the specified table, in bytes. DynamoDB updates this value approximately every six hours. Recent changes might not be reflected in this value.

Type: Long

Required: No

**TableStatus**

The current state of the table:

- `CREATING` - The table is being created.

- `UPDATING` - The table is being updated.
- `DELETING` - The table is being deleted.
- `ACTIVE` - The table is ready for use.

Type: String

Valid Values: `CREATING` | `UPDATING` | `DELETING` | `ACTIVE`

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 V2](#)

# Tag

Service: Amazon DynamoDB

Describes a tag. A tag is a key-value pair. You can add up to 50 tags to a single DynamoDB table.

AWS-assigned tag names and values are automatically assigned the `aws:` prefix, which the user cannot assign. AWS-assigned tag names do not count towards the tag limit of 50. User-assigned tag names have the prefix `user:` in the Cost Allocation Report. You cannot backdate the application of a tag.

For an overview on tagging DynamoDB resources, see [Tagging for DynamoDB](#) in the *Amazon DynamoDB Developer Guide*.

## Contents

### Note

In the following list, the required parameters are described first.

### Key

The key of the tag. Tag keys are case sensitive. Each DynamoDB table can only have up to one tag with the same key. If you try to add an existing tag (same key), the existing tag value will be updated to the new value.

Type: String

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

Required: Yes

### Value

The value of the tag. Tag values are case-sensitive and can be null.

Type: String

Length Constraints: Minimum length of 0. Maximum length of 256.

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 V2](#)

# TimeToLiveDescription

Service: Amazon DynamoDB

The description of the Time to Live (TTL) status on the specified table.

## Contents

### Note

In the following list, the required parameters are described first.

#### AttributeName

The name of the Time to Live attribute for items in the table.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: No

#### TimeToLiveStatus

The Time to Live status for the table.

Type: String

Valid Values: `ENABLING` | `DISABLING` | `ENABLED` | `DISABLED`

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 V2](#)

# TimeToLiveSpecification

Service: Amazon DynamoDB

Represents the settings used to enable or disable Time to Live for the specified table.

## Contents

### Note

In the following list, the required parameters are described first.

### AttributeName

The name of the Time to Live attribute used to store the expiration time for items in the table.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: Yes

### Enabled

Indicates whether Time To Live is to be enabled (true) or disabled (false) on the table.

Type: Boolean

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 V2](#)

# UpdateGlobalSecondaryIndexAction

Service: Amazon DynamoDB

Represents the new provisioned throughput settings to be applied to a global secondary index.

## Contents

### Note

In the following list, the required parameters are described first.

#### IndexName

The name of the global secondary index to be updated.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

Required: Yes

#### ProvisionedThroughput

Represents the provisioned throughput settings for the specified global secondary index.

For current minimum and maximum provisioned throughput values, see [Limits](#) in the *Amazon DynamoDB Developer Guide*.

Type: [ProvisionedThroughput \(p. 317\)](#) object

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 V2](#)

## WriteRequest

Service: Amazon DynamoDB

Represents an operation to perform - either `DeleteItem` or `PutItem`. You can only request one of these operations, not both, in a single `WriteRequest`. If you do need to perform both of these operations, you will need to provide two separate `WriteRequest` objects.

### Contents

#### Note

In the following list, the required parameters are described first.

#### DeleteRequest

A request to perform a `DeleteItem` operation.

Type: [DeleteRequest \(p. 286\)](#) object

Required: No

#### PutRequest

A request to perform a `PutItem` operation.

Type: [PutRequest \(p. 320\)](#) object

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 V2](#)

## Amazon DynamoDB Accelerator

The following data types are supported by Amazon DynamoDB Accelerator:

- [Cluster \(p. 349\)](#)
- [Endpoint \(p. 352\)](#)
- [Event \(p. 353\)](#)
- [Node \(p. 354\)](#)
- [NodeTypeSpecificValue \(p. 356\)](#)
- [NotificationConfiguration \(p. 357\)](#)
- [Parameter \(p. 358\)](#)
- [ParameterGroup \(p. 360\)](#)
- [ParameterGroupStatus \(p. 361\)](#)
- [ParameterNameValue \(p. 362\)](#)
- [SecurityGroupMembership \(p. 363\)](#)



- [SSEDescription](#) (p. 364)
- [SSESpecification](#) (p. 365)
- [Subnet](#) (p. 366)
- [SubnetGroup](#) (p. 367)
- [Tag](#) (p. 368)

# Cluster

Service: Amazon DynamoDB Accelerator

Contains all of the attributes of a specific DAX cluster.

## Contents

### Note

In the following list, the required parameters are described first.

### ActiveNodes

The number of nodes in the cluster that are active (i.e., capable of serving requests).

Type: Integer

Required: No

### ClusterArn

The Amazon Resource Name (ARN) that uniquely identifies the cluster.

Type: String

Required: No

### ClusterDiscoveryEndpoint

The configuration endpoint for this DAX cluster, consisting of a DNS name and a port number. Client applications can specify this endpoint, rather than an individual node endpoint, and allow the DAX client software to intelligently route requests and responses to nodes in the DAX cluster.

Type: [Endpoint \(p. 352\)](#) object

Required: No

### ClusterName

The name of the DAX cluster.

Type: String

Required: No

### Description

The description of the cluster.

Type: String

Required: No

### IamRoleArn

*This member has been deprecated.*

A valid Amazon Resource Name (ARN) that identifies an IAM role. At runtime, DAX will assume this role and use the role's permissions to access DynamoDB on your behalf.

Type: String

Required: No

### NodeIdsToRemove

A list of nodes to be removed from the cluster.

Type: Array of strings

Required: No

#### **Nodes**

A list of nodes that are currently in the cluster.

Type: Array of [Node \(p. 354\)](#) objects

Required: No

#### **NodeType**

The node type for the nodes in the cluster. (All nodes in a DAX cluster are of the same type.)

Type: String

Required: No

#### **NotificationConfiguration**

Describes a notification topic and its status. Notification topics are used for publishing DAX events to subscribers using Amazon Simple Notification Service (SNS).

Type: [NotificationConfiguration \(p. 357\)](#) object

Required: No

#### **ParameterGroup**

The parameter group being used by nodes in the cluster.

Type: [ParameterGroupStatus \(p. 361\)](#) object

Required: No

#### **PreferredMaintenanceWindow**

A range of time when maintenance of DAX cluster software will be performed. For example: `sun:01:00–sun:09:00`. Cluster maintenance normally takes less than 30 minutes, and is performed automatically within the maintenance window.

Type: String

Required: No

#### **SecurityGroups**

A list of security groups, and the status of each, for the nodes in the cluster.

Type: Array of [SecurityGroupMembership \(p. 363\)](#) objects

Required: No

#### **SSEDescription**

The description of the server-side encryption status on the specified DAX cluster.

Type: [SSEDescription \(p. 364\)](#) object

Required: No

#### **Status**

The current status of the cluster.

Type: String

Required: No

**SubnetGroup**

The subnet group where the DAX cluster is running.

Type: String

Required: No

**TotalNodes**

The total number of nodes in the cluster.

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 V2](#)

## Endpoint

Service: Amazon DynamoDB Accelerator

Represents the information required for client programs to connect to the configuration endpoint for a DAX cluster, or to an individual node within the cluster.

## Contents

### Note

In the following list, the required parameters are described first.

### Address

The DNS hostname of the endpoint.

Type: String

Required: No

### Port

The port number that applications should use to connect to the endpoint.

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 V2](#)

## Event

Service: Amazon DynamoDB Accelerator

Represents a single occurrence of something interesting within the system. Some examples of events are creating a DAX cluster, adding or removing a node, or rebooting a node.

## Contents

### Note

In the following list, the required parameters are described first.

### Date

The date and time when the event occurred.

Type: Timestamp

Required: No

### Message

A user-defined message associated with the event.

Type: String

Required: No

### SourceName

The source of the event. For example, if the event occurred at the node level, the source would be the node ID.

Type: String

Required: No

### SourceType

Specifies the origin of this event - a cluster, a parameter group, a node ID, etc.

Type: String

Valid Values: `CLUSTER` | `PARAMETER_GROUP` | `SUBNET_GROUP`

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 V2](#)

## Node

Service: Amazon DynamoDB Accelerator

Represents an individual node within a DAX cluster.

## Contents

### Note

In the following list, the required parameters are described first.

### AvailabilityZone

The Availability Zone (AZ) in which the node has been deployed.

Type: String

Required: No

### Endpoint

The endpoint for the node, consisting of a DNS name and a port number. Client applications can connect directly to a node endpoint, if desired (as an alternative to allowing DAX client software to intelligently route requests and responses to nodes in the DAX cluster).

Type: [Endpoint \(p. 352\)](#) object

Required: No

### NodeCreateTime

The date and time (in UNIX epoch format) when the node was launched.

Type: Timestamp

Required: No

### NodeId

A system-generated identifier for the node.

Type: String

Required: No

### NodeStatus

The current status of the node. For example: `available`.

Type: String

Required: No

### ParameterGroupStatus

The status of the parameter group associated with this node. For example, `in-sync`.

Type: String

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 V2](#)



# NodeTypeSpecificValue

Service: Amazon DynamoDB Accelerator

Represents a parameter value that is applicable to a particular node type.

## Contents

### Note

In the following list, the required parameters are described first.

### NodeType

A node type to which the parameter value applies.

Type: String

Required: No

### Value

The parameter value for this node type.

Type: String

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 V2](#)

# NotificationConfiguration

Service: Amazon DynamoDB Accelerator

Describes a notification topic and its status. Notification topics are used for publishing DAX events to subscribers using Amazon Simple Notification Service (SNS).

## Contents

### Note

In the following list, the required parameters are described first.

### TopicArn

The Amazon Resource Name (ARN) that identifies the topic.

Type: String

Required: No

### TopicStatus

The current state of the topic.

Type: String

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 V2](#)

# Parameter

Service: Amazon DynamoDB Accelerator

Describes an individual setting that controls some aspect of DAX behavior.

## Contents

### Note

In the following list, the required parameters are described first.

### AllowedValues

A range of values within which the parameter can be set.

Type: String

Required: No

### ChangeType

The conditions under which changes to this parameter can be applied. For example, `requires-reboot` indicates that a new value for this parameter will only take effect if a node is rebooted.

Type: String

Valid Values: `IMMEDIATE` | `REQUIRES_REBOOT`

Required: No

### DataType

The data type of the parameter. For example, `integer`:

Type: String

Required: No

### Description

A description of the parameter

Type: String

Required: No

### IsModifiable

Whether the customer is allowed to modify the parameter.

Type: String

Valid Values: `TRUE` | `FALSE` | `CONDITIONAL`

Required: No

### NodeTypeSpecificValues

A list of node types, and specific parameter values for each node.

Type: Array of [NodeTypeSpecificValue](#) (p. 356) objects

Required: No

### ParameterName

The name of the parameter.

Type: String

Required: No

**ParameterType**

Determines whether the parameter can be applied to any nodes, or only nodes of a particular type.

Type: String

Valid Values: `DEFAULT` | `NODE_TYPE_SPECIFIC`

Required: No

**ParameterValue**

The value for the parameter.

Type: String

Required: No

**Source**

How the parameter is defined. For example, `system` denotes a system-defined parameter.

Type: String

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 V2](#)

# ParameterGroup

Service: Amazon DynamoDB Accelerator

A named set of parameters that are applied to all of the nodes in a DAX cluster.

## Contents

### Note

In the following list, the required parameters are described first.

### Description

A description of the parameter group.

Type: String

Required: No

### ParameterGroupName

The name of the parameter group.

Type: String

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 V2](#)

# ParameterGroupStatus

Service: Amazon DynamoDB Accelerator

The status of a parameter group.

## Contents

### Note

In the following list, the required parameters are described first.

### NodeIdsToReboot

The node IDs of one or more nodes to be rebooted.

Type: Array of strings

Required: No

### ParameterApplyStatus

The status of parameter updates.

Type: String

Required: No

### ParameterGroupName

The name of the parameter group.

Type: String

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 V2](#)

# ParameterNameValue

Service: Amazon DynamoDB Accelerator

An individual DAX parameter.

## Contents

### Note

In the following list, the required parameters are described first.

### ParameterName

The name of the parameter.

Type: String

Required: No

### ParameterValue

The value of the parameter.

Type: String

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 V2](#)

# SecurityGroupMembership

Service: Amazon DynamoDB Accelerator

An individual VPC security group and its status.

## Contents

### Note

In the following list, the required parameters are described first.

### SecurityGroupIdIdentifier

The unique ID for this security group.

Type: String

Required: No

### Status

The status of this security group.

Type: String

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 V2](#)



## SSEDescription

Service: Amazon DynamoDB Accelerator

The description of the server-side encryption status on the specified DAX cluster.

### Contents

#### Note

In the following list, the required parameters are described first.

#### Status

The current state of server-side encryption:

- `ENABLING` - Server-side encryption is being enabled.
- `ENABLED` - Server-side encryption is enabled.
- `DISABLING` - Server-side encryption is being disabled.
- `DISABLED` - Server-side encryption is disabled.

Type: String

Valid Values: `ENABLING` | `ENABLED` | `DISABLING` | `DISABLED`

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 V2](#)

## SSESpecification

Service: Amazon DynamoDB Accelerator

Represents the settings used to enable server-side encryption.

### Contents

#### **Note**

In the following list, the required parameters are described first.

#### **Enabled**

Indicates whether server-side encryption is enabled (true) or disabled (false) on the cluster.

Type: Boolean

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 V2](#)

## Subnet

Service: Amazon DynamoDB Accelerator

Represents the subnet associated with a DAX cluster. This parameter refers to subnets defined in Amazon Virtual Private Cloud (Amazon VPC) and used with DAX.

## Contents

### Note

In the following list, the required parameters are described first.

### **SubnetAvailabilityZone**

The Availability Zone (AZ) for subnet subnet.

Type: String

Required: No

### **SubnetIdentifier**

The system-assigned identifier for the subnet.

Type: String

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 V2](#)

# SubnetGroup

Service: Amazon DynamoDB Accelerator

Represents the output of one of the following actions:

- *CreateSubnetGroup*
- *ModifySubnetGroup*

## Contents

### Note

In the following list, the required parameters are described first.

### Description

The description of the subnet group.

Type: String

Required: No

### SubnetGroupName

The name of the subnet group.

Type: String

Required: No

### Subnets

A list of subnets associated with the subnet group.

Type: Array of [Subnet](#) (p. 366) objects

Required: No

### VpcId

The Amazon Virtual Private Cloud identifier (VPC ID) of the subnet group.

Type: String

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 V2](#)

## Tag

Service: Amazon DynamoDB Accelerator

A description of a tag. Every tag is a key-value pair. You can add up to 50 tags to a single DAX cluster.

AWS-assigned tag names and values are automatically assigned the `aws :` prefix, which the user cannot assign. AWS-assigned tag names do not count towards the tag limit of 50. User-assigned tag names have the prefix `user :`.

You cannot backdate the application of a tag.

## Contents

### Note

In the following list, the required parameters are described first.

### Key

The key for the tag. Tag keys are case sensitive. Every DAX cluster can only have one tag with the same key. If you try to add an existing tag (same key), the existing tag value will be updated to the new value.

Type: String

Required: No

### Value

The value of the tag. Tag values are case-sensitive and can be null.

Type: String

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 V2](#)

# Amazon DynamoDB Streams

The following data types are supported by Amazon DynamoDB Streams:

- [AttributeValue](#) (p. 370)
- [Identity](#) (p. 372)
- [KeySchemaElement](#) (p. 373)
- [Record](#) (p. 374)
- [SequenceNumberRange](#) (p. 376)
- [Shard](#) (p. 377)
- [Stream](#) (p. 378)

- [StreamDescription](#) (p. 379)
- [StreamRecord](#) (p. 382)

# AttributeValue

Service: Amazon DynamoDB Streams

Represents the data for an attribute. You can set one, and only one, of the elements.

Each attribute in an item is a name-value pair. An attribute can be single-valued or multi-valued set. For example, a book item can have title and authors attributes. Each book has one title but can have many authors. The multi-valued attribute is a set; duplicate values are not allowed.

## Contents

### Note

In the following list, the required parameters are described first.

### B

A Binary data type.

Type: Base64-encoded binary data object

Required: No

### BOOL

A Boolean data type.

Type: Boolean

Required: No

### BS

A Binary Set data type.

Type: Array of Base64-encoded binary data objects

Required: No

### L

A List data type.

Type: Array of [AttributeValue \(p. 370\)](#) objects

Required: No

### M

A Map data type.

Type: String to [AttributeValue \(p. 370\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### N

A Number data type.

Type: String

Required: No

### **NS**

A Number Set data type.

Type: Array of strings

Required: No

### **NULL**

A Null data type.

Type: Boolean

Required: No

### **S**

A String data type.

Type: String

Required: No

### **SS**

A String Set data type.

Type: Array of strings

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 V2](#)



## Identity

Service: Amazon DynamoDB Streams

Contains details about the type of identity that made the request.

## Contents

### Note

In the following list, the required parameters are described first.

### PrincipalId

A unique identifier for the entity that made the call. For Time To Live, the principalId is "dynamodb.amazonaws.com".

Type: String

Required: No

### Type

The type of the identity. For Time To Live, the type is "Service".

Type: String

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 V2](#)

# KeySchemaElement

Service: Amazon DynamoDB Streams

Represents a *single element* of a key schema. A key schema specifies the attributes that make up the primary key of a table, or the key attributes of an index.

A `KeySchemaElement` represents exactly one attribute of the primary key. For example, a simple primary key (partition key) would be represented by one `KeySchemaElement`. A composite primary key (partition key and sort key) would require one `KeySchemaElement` for the partition key, and another `KeySchemaElement` for the sort key.

## Note

The partition key of an item is also known as its *hash attribute*. The term "hash attribute" derives from DynamoDB's usage of an internal hash function to evenly distribute data items across partitions, based on their partition key values.

The sort key of an item is also known as its *range attribute*. The term "range attribute" derives from the way DynamoDB stores items with the same partition key physically close together, in sorted order by the sort key value.

## Contents

### Note

In the following list, the required parameters are described first.

#### AttributeName

The name of a key attribute.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 255.

Required: Yes

#### KeyType

The attribute data, consisting of the data type and the attribute value itself.

Type: String

Valid Values: `HASH` | `RANGE`

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 V2](#)

# Record

Service: Amazon DynamoDB Streams

A description of a unique event within a stream.

## Contents

### Note

In the following list, the required parameters are described first.

#### **awsRegion**

The region in which the `GetRecords` request was received.

Type: String

Required: No

#### **dynamodb**

The main body of the stream record, containing all of the DynamoDB-specific fields.

Type: [StreamRecord](#) (p. 382) object

Required: No

#### **eventID**

A globally unique identifier for the event that was recorded in this stream record.

Type: String

Required: No

#### **eventName**

The type of data modification that was performed on the DynamoDB table:

- `INSERT` - a new item was added to the table.
- `MODIFY` - one or more of an existing item's attributes were modified.
- `REMOVE` - the item was deleted from the table

Type: String

Valid Values: `INSERT` | `MODIFY` | `REMOVE`

Required: No

#### **eventSource**

The AWS service from which the stream record originated. For DynamoDB Streams, this is `aws:dynamodb`.

Type: String

Required: No

#### **eventVersion**

The version number of the stream record format. This number is updated whenever the structure of `Record` is modified.

Client applications must not assume that `eventVersion` will remain at a particular value, as this number is subject to change at any time. In general, `eventVersion` will only increase as the low-level DynamoDB Streams API evolves.

Type: String

Required: No

**userIdentity**

Items that are deleted by the Time to Live process after expiration have the following fields:

- `Records[].userIdentity.type`  
"Service"
- `Records[].userIdentity.principalId`  
"dynamodb.amazonaws.com"

Type: [Identity \(p. 372\)](#) object

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 V2](#)

# SequenceNumberRange

Service: Amazon DynamoDB Streams

The beginning and ending sequence numbers for the stream records contained within a shard.

## Contents

### Note

In the following list, the required parameters are described first.

### EndingSequenceNumber

The last sequence number for the stream records contained within a shard. String contains numeric characters only.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 40.

Required: No

### StartingSequenceNumber

The first sequence number for the stream records contained within a shard. String contains numeric characters only.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 40.

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 V2](#)

# Shard

Service: Amazon DynamoDB Streams

A uniquely identified group of stream records within a stream.

## Contents

### Note

In the following list, the required parameters are described first.

#### ParentShardId

The shard ID of the current shard's parent.

Type: String

Length Constraints: Minimum length of 28. Maximum length of 65.

Required: No

#### SequenceNumberRange

The range of possible sequence numbers for the shard.

Type: [SequenceNumberRange](#) (p. 376) object

Required: No

#### ShardId

The system-generated identifier for this shard.

Type: String

Length Constraints: Minimum length of 28. Maximum length of 65.

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 V2](#)

# Stream

Service: Amazon DynamoDB Streams

Represents all of the data describing a particular stream.

## Contents

### Note

In the following list, the required parameters are described first.

### StreamArn

The Amazon Resource Name (ARN) for the stream.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: No

### StreamLabel

A timestamp, in ISO 8601 format, for this stream.

Note that `LatestStreamLabel` is not a unique identifier for the stream, because it is possible that a stream from another table might have the same timestamp. However, the combination of the following three elements is guaranteed to be unique:

- the AWS customer ID.
- the table name
- the `StreamLabel`

Type: String

Required: No

### TableName

The DynamoDB table with which the stream is associated.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

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 V2](#)

# StreamDescription

Service: Amazon DynamoDB Streams

Represents all of the data describing a particular stream.

## Contents

### Note

In the following list, the required parameters are described first.

### CreationRequestDateTime

The date and time when the request to create this stream was issued.

Type: Timestamp

Required: No

### KeySchema

The key attribute(s) of the stream's DynamoDB table.

Type: Array of [KeySchemaElement \(p. 373\)](#) objects

Array Members: Minimum number of 1 item. Maximum number of 2 items.

Required: No

### LastEvaluatedShardId

The shard ID of the item where the operation stopped, inclusive of the previous result set. Use this value to start a new operation, excluding this value in the new request.

If `LastEvaluatedShardId` is empty, then the "last page" of results has been processed and there is currently no more data to be retrieved.

If `LastEvaluatedShardId` is not empty, it does not necessarily mean that there is more data in the result set. The only way to know when you have reached the end of the result set is when `LastEvaluatedShardId` is empty.

Type: String

Length Constraints: Minimum length of 28. Maximum length of 65.

Required: No

### Shards

The shards that comprise the stream.

Type: Array of [Shard \(p. 377\)](#) objects

Required: No

### StreamArn

The Amazon Resource Name (ARN) for the stream.

Type: String

Length Constraints: Minimum length of 37. Maximum length of 1024.

Required: No



### StreamLabel

A timestamp, in ISO 8601 format, for this stream.

Note that `LatestStreamLabel` is not a unique identifier for the stream, because it is possible that a stream from another table might have the same timestamp. However, the combination of the following three elements is guaranteed to be unique:

- the AWS customer ID.
- the table name
- the `StreamLabel`

Type: String

Required: No

### StreamStatus

Indicates the current status of the stream:

- `ENABLING` - Streams is currently being enabled on the DynamoDB table.
- `ENABLED` - the stream is enabled.
- `DISABLING` - Streams is currently being disabled on the DynamoDB table.
- `DISABLED` - the stream is disabled.

Type: String

Valid Values: `ENABLING` | `ENABLED` | `DISABLING` | `DISABLED`

Required: No

### StreamViewType

Indicates the format of the records within this stream:

- `KEYS_ONLY` - only the key attributes of items that were modified in the DynamoDB table.
- `NEW_IMAGE` - entire items from the table, as they appeared after they were modified.
- `OLD_IMAGE` - entire items from the table, as they appeared before they were modified.
- `NEW_AND_OLD_IMAGES` - both the new and the old images of the items from the table.

Type: String

Valid Values: `NEW_IMAGE` | `OLD_IMAGE` | `NEW_AND_OLD_IMAGES` | `KEYS_ONLY`

Required: No

### TableName

The DynamoDB table with which the stream is associated.

Type: String

Length Constraints: Minimum length of 3. Maximum length of 255.

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

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 V2](#)

# StreamRecord

Service: Amazon DynamoDB Streams

A description of a single data modification that was performed on an item in a DynamoDB table.

## Contents

### Note

In the following list, the required parameters are described first.

### ApproximateCreationDateTime

The approximate date and time when the stream record was created, in [UNIX epoch time](#) format.

Type: Timestamp

Required: No

### Keys

The primary key attribute(s) for the DynamoDB item that was modified.

Type: String to [AttributeValue \(p. 370\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### NewImage

The item in the DynamoDB table as it appeared after it was modified.

Type: String to [AttributeValue \(p. 370\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### OldImage

The item in the DynamoDB table as it appeared before it was modified.

Type: String to [AttributeValue \(p. 370\)](#) object map

Key Length Constraints: Maximum length of 65535.

Required: No

### SequenceNumber

The sequence number of the stream record.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 40.

Required: No

### SizeBytes

The size of the stream record, in bytes.

Type: Long

Valid Range: Minimum value of 1.

Required: No

### **StreamViewType**

The type of data from the modified DynamoDB item that was captured in this stream record:

- `KEYS_ONLY` - only the key attributes of the modified item.
- `NEW_IMAGE` - the entire item, as it appeared after it was modified.
- `OLD_IMAGE` - the entire item, as it appeared before it was modified.
- `NEW_AND_OLD_IMAGES` - both the new and the old item images of the item.

Type: String

Valid Values: `NEW_IMAGE` | `OLD_IMAGE` | `NEW_AND_OLD_IMAGES` | `KEYS_ONLY`

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 V2](#)

# 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