Amazon DynamoDB

API Reference

API Version 2012-08-10

Amazon DynamoDB: API Reference

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Welcome

Amazon DynamoDB Streams provides API actions for accessing streams and processing stream records. To learn more about application development with Streams, see Capturing Table Activity with DynamoDB Streams in the Amazon DynamoDB Developer Guide.

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Actions

The following actions are supported:

- DescribeStream (p. 3)
- GetRecords (p. 7)
- GetShardIterator (p. 12)
- ListStreams (p. 15)

DescribeStream

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. 3)
The Amazon Resource Name (ARN) for the stream.

Type: String

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

Required: Yes

ExclusiveStartShardId (p. 3)
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. 3)
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. 3)

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. 26) object

Errors

For information about the errors that are common to all actions, see Common Errors (p. 29).

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": "205000000000000000910398",
                    "StartingSequenceNumber": "205000000000000000910398"
                },
                "ShardId": "shardId-00000001414562045508-2bac9cd2"
            },
            {
                "ParentShardId": "shardId-00000001414562045508-2bac9cd2",
                "SequenceNumberRange": {
                    "EndingSequenceNumber": "820400000000000001192334",
                    "StartingSequenceNumber": "820400000000000001192334"
                },
                "ShardId": "shardId-00000001414576573621-f55eea83"
            },
            {
                "ParentShardId": "shardId-00000001414576573621-f55eea83",
                "SequenceNumberRange": {
                    "EndingSequenceNumber": "168370000000000000001135967",
                    "StartingSequenceNumber": "168370000000000000001135967"
```

```
                },
                "ShardId": "shardId-00000001414592258131-674fd923"
            },
            {
                "ParentShardId": "shardId-00000001414592258131-674fd923",
                "SequenceNumberRange": {"StartingSequenceNumber":
 "257460000000000000935255"},
                "ShardId": "shardId-00000001414608446368-3a1afbaf"
            }
        ],
    }
}
```

GetRecords

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. 7)
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. 7)
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"
        }
     ]
}
```

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. 7)

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. 7)

The stream records from the shard, which were retrieved using the shard iterator.

Type: array of Record (p. 22) objects

Errors

For information about the errors that are common to all actions, see Common Errors (p. 29).

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": "40000000000000499660",
                "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": "50000000000000499661",
                "SizeBytes": 41,
                "StreamViewType": "KEYS_ONLY"
            },
            "eventID": "740280c73a3df7842edab3548a1b08ad",
            "eventName": "REMOVE",
            "eventSource": "aws:dynamodb",
            "eventVersion": "1.0"
        }
    ]
}
```

GetShardIterator

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. 12)
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. 12)
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. 12)
The Amazon Resource Name (ARN) for the stream.

Type: String

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

Required: Yes

SequenceNumber (p. 12)
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. 13)

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. 29).

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> ..."
}
```

ListStreams

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. 15)
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. 15)
The maximum number of streams to return. The upper limit is 100.

Type: Integer

Valid Range: Minimum value of 1.

Required: No

TableName (p. 15)
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. 15)

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. 15)

A list of stream descriptors associated with the current account and endpoint.

Type: array of Stream (p. 25) objects

Errors

For information about the errors that are common to all actions, see Common Errors (p. 29).

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-amz-crc32: <Checksum>
Content-Type: application/x-amz-json-1.0
Content-Length: <PayloadSizeBytes>
Date: <Date>

{
    "Streams": [
        {
            "StreamArn": "arn:aws:dynamodb:us-wesst-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...

    ]
}
```

Data Types

The Amazon DynamoDB Streams API contains several data types that various actions use. This section describes each data type in detail.

> **Note**
> The order of each element in a data type structure is not guaranteed. Applications should not assume a particular order.

The following data types are supported:

- AttributeValue (p. 19)
- KeySchemaElement (p. 21)
- Record (p. 22)
- SequenceNumberRange (p. 23)
- Shard (p. 24)
- Stream (p. 25)
- StreamDescription (p. 26)
- StreamRecord (p. 28)

AttributeValue

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. 19) objects
Required: No

M
A Map data type.
Type: String to AttributeValue (p. 19) object map
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

KeySchemaElement

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

Record

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. 28) 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

SequenceNumberRange

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.
Type: String
Length Constraints: Minimum length of 21. Maximum length of 40.
Required: No

StartingSequenceNumber
The first sequence number.
Type: String
Length Constraints: Minimum length of 21. Maximum length of 40.
Required: No

Shard

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. 23) 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

Stream

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

StreamDescription

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. 21) 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. 24) 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

StreamRecord

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. 19) object map
Required: No

NewImage
The item in the DynamoDB table as it appeared after it was modified.
Type: String to AttributeValue (p. 19) object map
Required: No

OldImage
The item in the DynamoDB table as it appeared before it was modified.
Type: String to AttributeValue (p. 19) object map
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

Common Errors

This section lists the common errors that all actions return. Any action-specific errors are listed in the topic for the action.

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

Throttling
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