



Streams API Reference

Amazon Keyspaces



API Version 2024-09-09

Copyright © 2026 Amazon Web Services, Inc. and/or its affiliates. All rights reserved.

Amazon Keyspaces: Streams API Reference

Copyright © 2026 Amazon Web Services, Inc. and/or its affiliates. All rights reserved.

Amazon's trademarks and trade dress may not be used in connection with any product or service that is not Amazon's, in any manner that is likely to cause confusion among customers, or in any manner that disparages or discredits Amazon. All other trademarks not owned by Amazon are the property of their respective owners, who may or may not be affiliated with, connected to, or sponsored by Amazon.

Table of Contents

Welcome	1
Actions	2
GetRecords	3
Request Syntax	3
Request Parameters	3
Response Syntax	4
Response Elements	5
Errors	6
See Also	8
GetShardIterator	9
Request Syntax	9
Request Parameters	9
Response Syntax	10
Response Elements	10
Errors	11
See Also	13
GetStream	14
Request Syntax	14
Request Parameters	14
Response Syntax	15
Response Elements	16
Errors	18
See Also	20
ListStreams	21
Request Syntax	21
Request Parameters	21
Response Syntax	22
Response Elements	23
Errors	23
See Also	25
Data Types	26
KeyspacesCell	27
Contents	27
See Also	27

KeyspacesCellMapDefinition	28
Contents	28
See Also	28
KeyspacesCellValue	30
Contents	30
See Also	34
KeyspacesMetadata	35
Contents	35
See Also	35
KeyspacesRow	36
Contents	36
See Also	36
Record	38
Contents	38
See Also	39
SequenceNumberRange	40
Contents	40
See Also	40
Shard	41
Contents	41
See Also	41
ShardFilter	43
Contents	43
See Also	43
Stream	44
Contents	44
See Also	45
Service-specific Errors	46
AccessDeniedException	47
Contents	47
See Also	47
InternalServerError	48
Contents	48
See Also	48
ResourceNotFoundException	49
Contents	49

See Also	49
ThrottlingException	50
Contents	50
See Also	50
ValidationException	51
Contents	51
See Also	51
Common Parameters	52
Common Errors	55

Welcome

Amazon Keyspaces (for Apache Cassandra) change data capture (CDC) records change events for Amazon Keyspaces tables. The change events captured in a stream are time-ordered and de-duplicated write operations. Using stream data you can build event driven applications that incorporate near-real time change events from Amazon Keyspaces tables.

Amazon Keyspaces CDC is serverless and scales the infrastructure for change events automatically based on the volume of changes on your table.

This API reference describes the Amazon Keyspaces CDC stream API in detail.

For more information about Amazon Keyspaces CDC, see [Working with change data capture \(CDC\) streams in Amazon Keyspaces](#) in the *Amazon Keyspaces Developer Guide*.

To learn how Amazon Keyspaces CDC API actions are recorded with AWS CloudTrail, see [Amazon Keyspaces information in CloudTrail](#) in the *Amazon Keyspaces Developer Guide*.

To see the metrics Amazon Keyspaces CDC sends to Amazon CloudWatch, see [Amazon Keyspaces change data capture \(CDC\) CloudWatch metrics](#) in the *Amazon Keyspaces Developer Guide*.

This document was last published on February 20, 2026.

Actions

The following actions are supported:

- [GetRecords](#)
- [GetShardIterator](#)
- [GetStream](#)
- [ListStreams](#)

GetRecords

Retrieves data records from a specified shard in an Amazon Keyspaces data stream. This operation returns a collection of data records from the shard, including the primary key columns and information about modifications made to the captured table data. Each record represents a single data modification in the Amazon Keyspaces table and includes metadata about when the change occurred.

Request Syntax

```
{  
  "maxResults": number,  
  "shardIterator": "string"  
}
```

Request Parameters

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

The request accepts the following data in JSON format.

maxResults

The maximum number of records to return in a single GetRecords request. The default value is 100. You can specify a limit between 1 and 1000, but the actual number returned might be less than the specified maximum if the size of the data for the returned records exceeds the internal size limit.

Type: Integer

Valid Range: Minimum value of 1. Maximum value of 1000.

Required: No

shardIterator

The unique identifier of the shard iterator. A shard iterator specifies the position in the shard from which you want to start reading data records sequentially. You obtain this value by calling the `GetShardIterator` operation. Each shard iterator is valid for 15 minutes after creation.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 4096.

Required: Yes

Response Syntax

```
{
  "changeRecords": [
    {
      "clusteringKeys": {
        "string" : { ... }
      },
      "createdAt": number,
      "eventVersion": "string",
      "newImage": {
        "rowMetadata": {
          "expirationTime": "string",
          "writeTime": "string"
        },
        "staticCells": {
          "string" : {
            "metadata": {
              "expirationTime": "string",
              "writeTime": "string"
            },
            "value": { ... }
          }
        },
        "valueCells": {
          "string" : {
            "metadata": {
              "expirationTime": "string",
              "writeTime": "string"
            },
            "value": { ... }
          }
        }
      },
      "oldImage": {
        "rowMetadata": {
          "expirationTime": "string",
          "writeTime": "string"
        }
      }
    }
  ]
}
```

```

    "staticCells": {
      "string" : {
        "metadata": {
          "expirationTime": "string",
          "writeTime": "string"
        },
        "value": { ... }
      }
    },
    "valueCells": {
      "string" : {
        "metadata": {
          "expirationTime": "string",
          "writeTime": "string"
        },
        "value": { ... }
      }
    },
    "origin": "string",
    "partitionKeys": {
      "string" : { ... }
    },
    "sequenceNumber": "string"
  },
  "nextShardIterator": "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.

changeRecords

An array of change data records retrieved from the specified shard. Each record represents a single data modification (insert, update, or delete) to a row in the Amazon Keyspaces table. Records include the primary key columns and information about what data was modified.

Type: Array of [Record](#) objects

nextShardIterator

The next position in the shard from which to start sequentially reading data records. If 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 4096.

Errors

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

AccessDeniedException

You don't have sufficient access permissions to perform this operation.

This exception occurs when your IAM user or role lacks the required permissions to access the Amazon Keyspaces resource or perform the requested action. Check your IAM policies and ensure they grant the necessary permissions.

message

You don't have sufficient permissions to perform this action.

HTTP Status Code: 400

InternalServerError

The Amazon Keyspaces service encountered an unexpected error while processing the request.

This internal server error is not related to your request parameters. Retry your request after a brief delay. If the issue persists, contact AWS Support with details of your request to help identify and resolve the problem.

message

The service encountered an internal error. Try your request again.

HTTP Status Code: 500

ResourceNotFoundException

The requested resource doesn't exist or could not be found.

This exception occurs when you attempt to access a keyspace, table, stream, or other Amazon Keyspaces resource that doesn't exist or that has been deleted. Verify that the resource identifier is correct and that the resource exists in your account.

message

The requested resource wasn't found. Verify that the resource exists and try again.

HTTP Status Code: 400

[ThrottlingException](#)

The request rate is too high and exceeds the service's throughput limits.

This exception occurs when you send too many requests in a short period of time. Implement exponential backoff in your retry strategy to handle this exception. Reducing your request frequency or distributing requests more evenly can help avoid throughput exceptions.

This exception can also occur when more than two processes are reading from the same stream shard at the same time. Ensure that only one process reads from a stream shard at the same time.

message

The request was denied due to request throttling. Reduce the frequency of requests and try again.

HTTP Status Code: 400

[ValidationException](#)

The request validation failed because one or more input parameters failed validation.

This exception occurs when there are syntax errors in the request, field constraints are violated, or required parameters are missing. To help you fix the issue, the exception message provides details about which parameter failed and why.

errorCode

An error occurred validating your request. See the error message for details.

message

The input fails to satisfy the constraints specified by the service. Check the error details and modify your request.

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 V2](#)
- [AWS SDK for .NET V4](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go v2](#)
- [AWS SDK for Java V2](#)
- [AWS SDK for JavaScript V3](#)
- [AWS SDK for Kotlin](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

GetShardIterator

Returns a shard iterator that serves as a bookmark for reading data from a specific position in an Amazon Keyspaces data stream's shard. The shard iterator specifies the shard position from which to start reading data records sequentially. You can specify whether to begin reading at the latest record, the oldest record, or at a particular sequence number within the shard.

Request Syntax

```
{
  "sequenceNumber": "string",
  "shardId": "string",
  "shardIteratorType": "string",
  "streamArn": "string"
}
```

Request Parameters

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

The request accepts the following data in JSON format.

sequenceNumber

The sequence number of the data record in the shard from which to start reading. Required if `ShardIteratorType` is `AT_SEQUENCE_NUMBER` or `AFTER_SEQUENCE_NUMBER`. This parameter is ignored for other iterator types.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 48.

Required: No

shardId

The identifier of the shard within the stream. The shard ID uniquely identifies a subset of the stream's data records that you want to access.

Type: String

Length Constraints: Minimum length of 28. Maximum length of 65.

Required: Yes

shardIteratorType

Determines how the shard iterator is positioned. Must be one of the following:

- TRIM_HORIZON - Start reading at the last untrimmed record in the shard, which is the oldest data record in the shard.
- AT_SEQUENCE_NUMBER - Start reading exactly from the specified sequence number.
- AFTER_SEQUENCE_NUMBER - Start reading right after the specified sequence number.
- LATEST - Start reading just after the most recent record in the shard, so that you always read the most recent data.

Type: String

Valid Values: TRIM_HORIZON | LATEST | AT_SEQUENCE_NUMBER | AFTER_SEQUENCE_NUMBER

Required: Yes

streamArn

The Amazon Resource Name (ARN) of the stream for which to get the shard iterator. The ARN uniquely identifies the stream within Amazon Keyspaces.

Type: String

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

Required: Yes

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

The unique identifier for the shard iterator. This value is used in the `GetRecords` operation to retrieve data records from the specified shard. Each shard iterator expires 15 minutes after it is returned to the requester.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 4096.

Errors

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

AccessDeniedException

You don't have sufficient access permissions to perform this operation.

This exception occurs when your IAM user or role lacks the required permissions to access the Amazon Keyspaces resource or perform the requested action. Check your IAM policies and ensure they grant the necessary permissions.

message

You don't have sufficient permissions to perform this action.

HTTP Status Code: 400

InternalServerErrorException

The Amazon Keyspaces service encountered an unexpected error while processing the request.

This internal server error is not related to your request parameters. Retry your request after a brief delay. If the issue persists, contact AWS Support with details of your request to help identify and resolve the problem.

message

The service encountered an internal error. Try your request again.

HTTP Status Code: 500

ResourceNotFoundException

The requested resource doesn't exist or could not be found.

This exception occurs when you attempt to access a keyspace, table, stream, or other Amazon Keyspaces resource that doesn't exist or that has been deleted. Verify that the resource identifier is correct and that the resource exists in your account.

message

The requested resource wasn't found. Verify that the resource exists and try again.

HTTP Status Code: 400

[ThrottlingException](#)

The request rate is too high and exceeds the service's throughput limits.

This exception occurs when you send too many requests in a short period of time. Implement exponential backoff in your retry strategy to handle this exception. Reducing your request frequency or distributing requests more evenly can help avoid throughput exceptions.

This exception can also occur when more than two processes are reading from the same stream shard at the same time. Ensure that only one process reads from a stream shard at the same time.

message

The request was denied due to request throttling. Reduce the frequency of requests and try again.

HTTP Status Code: 400

[ValidationException](#)

The request validation failed because one or more input parameters failed validation.

This exception occurs when there are syntax errors in the request, field constraints are violated, or required parameters are missing. To help you fix the issue, the exception message provides details about which parameter failed and why.

errorCode

An error occurred validating your request. See the error message for details.

message

The input fails to satisfy the constraints specified by the service. Check the error details and modify your request.

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 V2](#)
- [AWS SDK for .NET V4](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go v2](#)
- [AWS SDK for Java V2](#)
- [AWS SDK for JavaScript V3](#)
- [AWS SDK for Kotlin](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

GetStream

Returns detailed information about a specific data capture stream for an Amazon Keyspaces table. The information includes the stream's Amazon Resource Name (ARN), creation time, current status, retention period, shard composition, and associated table details. This operation helps you monitor and manage the configuration of your Amazon Keyspaces data streams.

Request Syntax

```
{
  "maxResults": number,
  "nextToken": "string",
  "shardFilter": {
    "shardId": "string",
    "type": "string"
  },
  "streamArn": "string"
}
```

Request Parameters

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

The request accepts the following data in JSON format.

maxResults

The maximum number of shard objects to return in a single GetStream request. The default value is 100. The minimum value is 1 and the maximum value is 100.

Type: Integer

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

Required: No

nextToken

An optional pagination token provided by a previous GetStream operation. If this parameter is specified, the response includes only records beyond the token, up to the value specified by MaxResults.

Type: String

Length Constraints: Minimum length of 80. Maximum length of 3000.

Required: No

[shardFilter](#)

Optional filter criteria to apply when retrieving shards. You can filter shards based on their parent shardID to get a list of children shards to narrow down the results returned by the GetStream operation.

Type: [ShardFilter](#) object

Required: No

[streamArn](#)

The Amazon Resource Name (ARN) of the stream for which detailed information is requested. This uniquely identifies the specific stream you want to get information about.

Type: String

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

Required: Yes

Response Syntax

```
{
  "creationRequestDateTime": number,
  "keyspaceName": "string",
  "nextToken": "string",
  "shards": [
    {
      "parentShardIds": [ "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.

creationRequestDateTime

The date and time when the request to create this stream was issued. The value is represented in ISO 8601 format.

Type: Timestamp

keyspaceName

The name of the keyspace containing the table associated with this stream. The keyspace name is part of the table's hierarchical identifier in Amazon Keyspaces.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 48.

Pattern: [a-zA-Z0-9][a-zA-Z0-9_]{0,47}

nextToken

A pagination token that can be used in a subsequent `GetStream` request. This token is returned if the response contains more shards than can be returned in a single response.

Type: String

Length Constraints: Minimum length of 80. Maximum length of 3000.

shards

An array of shard objects associated with this stream. Each shard contains a subset of the stream's data records and has its own unique identifier. The collection of shards represents the complete stream data.

Type: Array of [Shard](#) objects

[streamArn](#)

The Amazon Resource Name (ARN) that uniquely identifies the stream within Amazon Keyspaces. This ARN can be used in other API operations to reference this specific stream.

Type: String

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

[streamLabel](#)

A timestamp that serves as a unique identifier for this stream, used for debugging and monitoring purposes. The stream label represents the point in time when the stream was created.

Type: String

[streamStatus](#)

The current status of the stream. Values can be ENABLING, ENABLED, DISABLING, or DISABLED. Operations on the stream depend on its current status.

Type: String

Valid Values: ENABLING | ENABLED | DISABLING | DISABLED

[streamViewType](#)

The format of the data records in this stream. Currently, this can be one of the following options:

- NEW_AND_OLD_IMAGES - both versions of the row, before and after the change. This is the default.
- NEW_IMAGE - the version of the row after the change.
- OLD_IMAGE - the version of the row before the change.
- KEYS_ONLY - the partition and clustering keys of the row that was changed.

Type: String

Valid Values: NEW_IMAGE | OLD_IMAGE | NEW_AND_OLD_IMAGES | KEYS_ONLY

tableName

The name of the table associated with this stream. The stream captures changes to rows in this Amazon Keyspaces table.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 48.

Pattern: `[a-zA-Z0-9][a-zA-Z0-9_]{0,47}`

Errors

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

AccessDeniedException

You don't have sufficient access permissions to perform this operation.

This exception occurs when your IAM user or role lacks the required permissions to access the Amazon Keyspaces resource or perform the requested action. Check your IAM policies and ensure they grant the necessary permissions.

message

You don't have sufficient permissions to perform this action.

HTTP Status Code: 400

InternalServerError

The Amazon Keyspaces service encountered an unexpected error while processing the request.

This internal server error is not related to your request parameters. Retry your request after a brief delay. If the issue persists, contact AWS Support with details of your request to help identify and resolve the problem.

message

The service encountered an internal error. Try your request again.

HTTP Status Code: 500

[ResourceNotFoundException](#)

The requested resource doesn't exist or could not be found.

This exception occurs when you attempt to access a keyspace, table, stream, or other Amazon Keyspaces resource that doesn't exist or that has been deleted. Verify that the resource identifier is correct and that the resource exists in your account.

message

The requested resource wasn't found. Verify that the resource exists and try again.

HTTP Status Code: 400

[ThrottlingException](#)

The request rate is too high and exceeds the service's throughput limits.

This exception occurs when you send too many requests in a short period of time. Implement exponential backoff in your retry strategy to handle this exception. Reducing your request frequency or distributing requests more evenly can help avoid throughput exceptions.

This exception can also occur when more than two processes are reading from the same stream shard at the same time. Ensure that only one process reads from a stream shard at the same time.

message

The request was denied due to request throttling. Reduce the frequency of requests and try again.

HTTP Status Code: 400

[ValidationException](#)

The request validation failed because one or more input parameters failed validation.

This exception occurs when there are syntax errors in the request, field constraints are violated, or required parameters are missing. To help you fix the issue, the exception message provides details about which parameter failed and why.

errorCode

An error occurred validating your request. See the error message for details.

message

The input fails to satisfy the constraints specified by the service. Check the error details and modify your request.

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 V2](#)
- [AWS SDK for .NET V4](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go v2](#)
- [AWS SDK for Java V2](#)
- [AWS SDK for JavaScript V3](#)
- [AWS SDK for Kotlin](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

ListStreams

Returns a list of all data capture streams associated with your Amazon Keyspaces account or for a specific keyspace or table. The response includes information such as stream ARNs, table associations, creation timestamps, and current status. This operation helps you discover and manage all active data streams in your Amazon Keyspaces environment.

Request Syntax

```
{
  "keyspaceName": "string",
  "maxResults": number,
  "nextToken": "string",
  "tableName": "string"
}
```

Request Parameters

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

The request accepts the following data in JSON format.

keyspaceName

The name of the keyspace for which to list streams. If specified, only streams associated with tables in this keyspace are returned. If omitted, streams from all keyspaces are included in the results.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 48.

Pattern: `[a-zA-Z0-9][a-zA-Z0-9_]{0,47}`

Required: No

maxResults

The maximum number of streams to return in a single ListStreams request. The default value is 100. The minimum value is 1 and the maximum value is 100.

Type: Integer

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

Required: No

nextToken

An optional pagination token provided by a previous `ListStreams` operation. If this parameter is specified, the response includes only records beyond the token, up to the value specified by `maxResults`.

Type: String

Length Constraints: Minimum length of 80. Maximum length of 3000.

Required: No

tableName

The name of the table for which to list streams. Must be used together with `keyspaceName`. If specified, only streams associated with this specific table are returned.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 48.

Pattern: `[a-zA-Z0-9][a-zA-Z0-9_]{0,47}`

Required: No

Response Syntax

```
{
  "nextToken": "string",
  "streams": [
    {
      "keyspaceName": "string",
      "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.

[nextToken](#)

A pagination token that can be used in a subsequent `ListStreams` request. This token is returned if the response contains more streams than can be returned in a single response based on the `maxResults` parameter.

Type: String

Length Constraints: Minimum length of 80. Maximum length of 3000.

[streams](#)

An array of stream objects, each containing summary information about a stream including its ARN, status, and associated table information. This list includes all streams that match the request criteria.

Type: Array of [Stream](#) objects

Errors

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

[AccessDeniedException](#)

You don't have sufficient access permissions to perform this operation.

This exception occurs when your IAM user or role lacks the required permissions to access the Amazon Keyspaces resource or perform the requested action. Check your IAM policies and ensure they grant the necessary permissions.

message

You don't have sufficient permissions to perform this action.

HTTP Status Code: 400

[InternalServerErrorException](#)

The Amazon Keyspaces service encountered an unexpected error while processing the request.

This internal server error is not related to your request parameters. Retry your request after a brief delay. If the issue persists, contact AWS Support with details of your request to help identify and resolve the problem.

message

The service encountered an internal error. Try your request again.

HTTP Status Code: 500

[ResourceNotFoundException](#)

The requested resource doesn't exist or could not be found.

This exception occurs when you attempt to access a keyspace, table, stream, or other Amazon Keyspaces resource that doesn't exist or that has been deleted. Verify that the resource identifier is correct and that the resource exists in your account.

message

The requested resource wasn't found. Verify that the resource exists and try again.

HTTP Status Code: 400

[ThrottlingException](#)

The request rate is too high and exceeds the service's throughput limits.

This exception occurs when you send too many requests in a short period of time. Implement exponential backoff in your retry strategy to handle this exception. Reducing your request frequency or distributing requests more evenly can help avoid throughput exceptions.

This exception can also occur when more than two processes are reading from the same stream shard at the same time. Ensure that only one process reads from a stream shard at the same time.

message

The request was denied due to request throttling. Reduce the frequency of requests and try again.

HTTP Status Code: 400

[ValidationException](#)

The request validation failed because one or more input parameters failed validation.

This exception occurs when there are syntax errors in the request, field constraints are violated, or required parameters are missing. To help you fix the issue, the exception message provides details about which parameter failed and why.

errorCode

An error occurred validating your request. See the error message for details.

message

The input fails to satisfy the constraints specified by the service. Check the error details and modify your request.

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 V2](#)
- [AWS SDK for .NET V4](#)
- [AWS SDK for C++](#)
- [AWS SDK for Go v2](#)
- [AWS SDK for Java V2](#)
- [AWS SDK for JavaScript V3](#)
- [AWS SDK for Kotlin](#)
- [AWS SDK for PHP V3](#)
- [AWS SDK for Python](#)
- [AWS SDK for Ruby V3](#)

Data Types

The Amazon Keyspaces 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:

- [KeyspacesCell](#)
- [KeyspacesCellMapDefinition](#)
- [KeyspacesCellValue](#)
- [KeyspacesMetadata](#)
- [KeyspacesRow](#)
- [Record](#)
- [SequenceNumberRange](#)
- [Shard](#)
- [ShardFilter](#)
- [Stream](#)

KeyspacesCell

Represents a cell in an Amazon Keyspaces table, containing both the value and metadata about the cell.

Contents

metadata

Metadata associated with this cell, such as time-to-live (TTL) expiration time and write timestamp.

Type: [KeyspacesMetadata](#) object

Required: No

value

The value stored in this cell, which can be of various data types supported by Amazon Keyspaces.

Type: [KeyspacesCellValue](#) object

Note: This object is a Union. Only one member of this object can be specified or returned.

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

KeyspacesCellMapDefinition

Represents a key-value pair within a map data type in Amazon Keyspaces, including the associated metadata.

Contents

key

The key of this map entry in the Amazon Keyspaces cell.

Type: [KeyspacesCellValue](#) object

Note: This object is a Union. Only one member of this object can be specified or returned.

Required: No

metadata

Metadata for this specific key-value pair within the map, such as timestamps and TTL information.

Type: [KeyspacesMetadata](#) object

Required: No

value

The value associated with the key in this map entry.

Type: [KeyspacesCellValue](#) object

Note: This object is a Union. Only one member of this object can be specified or returned.

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

KeyspacesCellValue

Represents the value of a cell in an Amazon Keyspaces table, supporting various data types with type-specific fields.

Contents

Important

This data type is a UNION, so only one of the following members can be specified when used or returned.

asciiT

A value of ASCII text type, containing US-ASCII characters.

Type: String

Required: No

bigintT

A 64-bit signed integer value.

Type: String

Required: No

blobT

A binary large object (BLOB) value stored as a Base64-encoded string.

Type: Base64-encoded binary data object

Required: No

boolT

A Boolean value, either true or false.

Type: Boolean

Required: No

counterT

A distributed counter value that can be incremented and decremented.

Type: String

Required: No

dateT

A date value without a time component, represented as days since epoch (January 1, 1970).

Type: String

Required: No

decimalT

A variable-precision decimal number value.

Type: String

Required: No

doubleT

A 64-bit double-precision floating point value.

Type: String

Required: No

floatT

A 32-bit single-precision floating point value.

Type: String

Required: No

inetT

An IP address value, either IPv4 or IPv6 format.

Type: String

Required: No

intT

A 32-bit signed integer value.

Type: String

Required: No

listT

An ordered collection of elements that can contain duplicate values.

Type: Array of [KeyspacesCell](#) objects

Required: No

mapT

A collection of key-value pairs where each key is unique.

Type: Array of [KeyspacesCellMapDefinition](#) objects

Required: No

setT

An unordered collection of unique elements.

Type: Array of [KeyspacesCell](#) objects

Required: No

smallintT

A 16-bit signed integer value.

Type: String

Required: No

textT

A UTF-8 encoded string value.

Type: String

Required: No

timestampT

A timestamp value representing date and time with millisecond precision.

Type: String

Required: No

timeT

A time value without a date component, with nanosecond precision.

Type: String

Required: No

timeuuidT

A universally unique identifier (UUID) that includes a timestamp component, ensuring both uniqueness and time ordering.

Type: String

Required: No

tinyintT

An 8-bit signed integer value.

Type: String

Required: No

tupleT

A fixed-length ordered list of elements, where each element can be of a different data type.

Type: Array of [KeyspacesCell](#) objects

Required: No

udtT

A user-defined type (UDT) value consisting of named fields, each with its own data type.

Type: String to [KeyspacesCell](#) object map

Required: No

uuidT

A universally unique identifier (UUID) value.

Type: String

Required: No

varcharT

A UTF-8 encoded string value, functionally equivalent to text type.

Type: String

Required: No

varintT

An integer value within the $\pm 10^{38}$ range.

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

KeyspacesMetadata

Contains metadata information associated with Amazon Keyspaces cells and rows.

Contents

expirationTime

The time at which the associated data will expire, based on the time-to-live (TTL) setting.

Type: String

Required: No

writeTime

The timestamp at which the associated data was written to the database.

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

KeyspacesRow

Represents a row in an Amazon Keyspaces table, containing regular column values, static column values, and row-level metadata.

Contents

rowMetadata

Metadata that applies to the entire row, such as timestamps and TTL information.

Type: [KeyspacesMetadata](#) object

Required: No

staticCells

A map of static column cells shared by all rows with the same partition key, where keys are column names and values are the corresponding cells.

Type: String to [KeyspacesCell](#) object map

Required: No

valueCells

A map of regular (non-static) column cells in the row, where keys are column names and values are the corresponding cells.

Type: String to [KeyspacesCell](#) object map

Required: No

See Also

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

- [AWS SDK for C++](#)
- [AWS SDK for Java V2](#)
- [AWS SDK for Ruby V3](#)

Record

Represents a change data capture record for a row in an Amazon Keyspaces table, containing both the new and old states of the row.

Contents

clusteringKeys

The clustering key columns and their values for the affected row, which determine the order of rows within a partition.

Type: String to [KeyspacesCellValue](#) object map

Required: No

createdAt

The timestamp indicating when this change data capture record was created.

Type: Timestamp

Required: No

eventVersion

The version of the record format, used to track the evolution of the record structure over time.

Type: String

Required: No

newImage

The state of the row after the change operation that generated this record.

Type: [KeyspacesRow](#) object

Required: No

oldImage

The state of the row before the change operation that generated this record.

Type: [KeyspacesRow](#) object

Required: No

origin

The origin or source of this change data capture record.

Type: String

Valid Values: USER | REPLICATION | TTL

Required: No

partitionKeys

The partition key columns and their values for the affected row.

Type: String to [KeyspacesCellValue](#) object map

Required: No

sequenceNumber

A unique identifier assigned to this record within the shard, used for ordering and tracking purposes.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 48.

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

SequenceNumberRange

Defines a range of sequence numbers within a change data capture stream's shard for Amazon Keyspaces.

Contents

endingSequenceNumber

The ending sequence number of the range, which may be null for open-ended ranges.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 48.

Required: No

startingSequenceNumber

The starting sequence number of the range.

Type: String

Length Constraints: Minimum length of 21. Maximum length of 48.

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

Shard

Represents a uniquely identified group of change records within a change data capture stream for Amazon Keyspaces.

Contents

parentShardIds

The identifiers of parent shards that this shard evolved from, if this shard was created through resharding.

Type: Array of strings

Length Constraints: Minimum length of 28. Maximum length of 65.

Required: No

sequenceNumberRange

The range of sequence numbers contained within this shard.

Type: [SequenceNumberRange](#) object

Required: No

shardId

A unique identifier for this shard within the stream.

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

ShardFilter

A filter used to limit the shards returned by a `GetStream` operation.

Contents

shardId

The identifier of a specific shard used to filter results based on the specified filter type.

Type: String

Length Constraints: Minimum length of 28. Maximum length of 65.

Required: No

type

The type of shard filter to use, which determines how the `shardId` parameter is interpreted.

Type: String

Valid Values: CHILD_SHARDS

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

Stream

Represents a change data capture stream for an Amazon Keyspaces table, which enables tracking and processing of data changes.

Contents

keyspaceName

The name of the keyspace containing the table associated with this stream.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 48.

Pattern: `[a-zA-Z0-9][a-zA-Z0-9_]{0,47}`

Required: Yes

streamArn

The Amazon Resource Name (ARN) that uniquely identifies this stream.

Type: String

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

Required: Yes

streamLabel

A unique identifier for this stream that can be used in stream operations.

Type: String

Required: Yes

tableName

The name of the table associated with this stream.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 48.

Pattern: `[a-zA-Z0-9][a-zA-Z0-9_]{0,47}`

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 Java V2](#)
- [AWS SDK for Ruby V3](#)

Service-specific Errors

The Amazon Keyspaces Streams API contains service-specific exceptions that various actions return. This section describes each exception in detail.

The following service-specific exceptions are returned:

- [AccessDeniedException](#)
- [InternalServerError](#)
- [ResourceNotFoundException](#)
- [ThrottlingException](#)
- [ValidationException](#)

AccessDeniedException

You don't have sufficient access permissions to perform this operation.

This exception occurs when your IAM user or role lacks the required permissions to access the Amazon Keyspaces resource or perform the requested action. Check your IAM policies and ensure they grant the necessary permissions.

HTTP Status Code returned: 400

Contents

message

You don't have sufficient permissions to perform this action.

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 Ruby V3](#)

InternalServerErrorException

The Amazon Keyspaces service encountered an unexpected error while processing the request.

This internal server error is not related to your request parameters. Retry your request after a brief delay. If the issue persists, contact AWS Support with details of your request to help identify and resolve the problem.

HTTP Status Code returned: 500

Contents

message

The service encountered an internal error. Try your request again.

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 Ruby V3](#)

ResourceNotFoundException

The requested resource doesn't exist or could not be found.

This exception occurs when you attempt to access a keyspace, table, stream, or other Amazon Keyspaces resource that doesn't exist or that has been deleted. Verify that the resource identifier is correct and that the resource exists in your account.

HTTP Status Code returned: 400

Contents

message

The requested resource wasn't found. Verify that the resource exists and try again.

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 Ruby V3](#)

ThrottlingException

The request rate is too high and exceeds the service's throughput limits.

This exception occurs when you send too many requests in a short period of time. Implement exponential backoff in your retry strategy to handle this exception. Reducing your request frequency or distributing requests more evenly can help avoid throughput exceptions.

This exception can also occur when more than two processes are reading from the same stream shard at the same time. Ensure that only one process reads from a stream shard at the same time.

HTTP Status Code returned: 400

Contents

message

The request was denied due to request throttling. Reduce the frequency of requests and try again.

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 Ruby V3](#)

ValidationException

The request validation failed because one or more input parameters failed validation.

This exception occurs when there are syntax errors in the request, field constraints are violated, or required parameters are missing. To help you fix the issue, the exception message provides details about which parameter failed and why.

HTTP Status Code returned: 400

Contents

errorCode

An error occurred validating your request. See the error message for details.

Type: String

Valid Values: InvalidFormat | TrimmedDataAccess | ExpiredIterator | ExpiredNextToken

Required: No

message

The input fails to satisfy the constraints specified by the service. Check the error details and modify your request.

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 Ruby V3](#)

Common Parameters

The following list contains the parameters that all actions use for signing Signature Version 4 requests with a query string. Any action-specific parameters are listed in the topic for that action. For more information about Signature Version 4, see [Signing AWS API requests](#) in the *IAM User Guide*.

Action

The action to be performed.

Type: string

Required: Yes

Version

The API version that the request is written for, expressed in the format YYYY-MM-DD.

Type: string

Required: Yes

X-Amz-Algorithm

The hash algorithm that you used to create the request signature.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Valid Values: AWS4-HMAC-SHA256

Required: Conditional

X-Amz-Credential

The credential scope value, which is a string that includes your access key, the date, the region you are targeting, the service you are requesting, and a termination string ("aws4_request"). The value is expressed in the following format: *access_key/YYYYMMDD/region/service/aws4_request*.

For more information, see [Create a signed AWS API request](#) in the *IAM User Guide*.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Required: Conditional

X-Amz-Date

The date that is used to create the signature. The format must be ISO 8601 basic format (YYYYMMDD'T'HHMMSS'Z'). For example, the following date time is a valid X-Amz-Date value: 20120325T120000Z.

Condition: X-Amz-Date is optional for all requests; it can be used to override the date used for signing requests. If the Date header is specified in the ISO 8601 basic format, X-Amz-Date is not required. When X-Amz-Date is used, it always overrides the value of the Date header. For more information, see [Elements of an AWS API request signature](#) in the *IAM User Guide*.

Type: string

Required: Conditional

X-Amz-Security-Token

The temporary security token that was obtained through a call to AWS Security Token Service (AWS STS). For a list of services that support temporary security credentials from AWS STS, see [AWS services that work with IAM](#) in the *IAM User Guide*.

Condition: If you're using temporary security credentials from AWS STS, you must include the security token.

Type: string

Required: Conditional

X-Amz-Signature

Specifies the hex-encoded signature that was calculated from the string to sign and the derived signing key.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Required: Conditional

X-Amz-SignedHeaders

Specifies all the HTTP headers that were included as part of the canonical request. For more information about specifying signed headers, see [Create a signed AWS API request](#) in the *IAM User Guide*.

Condition: Specify this parameter when you include authentication information in a query string instead of in the HTTP authorization header.

Type: string

Required: Conditional

Common Errors

This section lists the errors common to the API actions of all AWS services. For errors specific to an API action for this service, see the topic for that API action.

AccessDeniedException

You do not have sufficient access to perform this action.

HTTP Status Code: 400

IncompleteSignature

The request signature does not conform to AWS standards.

HTTP Status Code: 400

InternalFailure

The request processing has failed because of an unknown error, exception or failure.

HTTP Status Code: 500

InvalidAction

The action or operation requested is invalid. Verify that the action is typed correctly.

HTTP Status Code: 400

InvalidClientTokenId

The X.509 certificate or AWS access key ID provided does not exist in our records.

HTTP Status Code: 403

NotAuthorized

You do not have permission to perform this action.

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