Streams API Reference

Amazon Keyspaces

API Version 2024-09-09

Amazon Keyspaces: Streams API Reference

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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*.

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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 Error Types.

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

InternalServerException

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 Error Types.

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

InternalServerException

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 Error Types.

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

InternalServerException

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 Error Types.

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

InternalServerException

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

durationT

A duration value with nanosecond precision, representing a period of time encoded as 32-bit months, 32-bit days, and 64-bit nanoseconds.

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 +/-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
- InternalServerException
- 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

InternalServerException

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*.

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 Error Types

This section lists common error types that this AWS service may return. Not all services return all error types listed here. For errors specific to an API action for this service, see the topic for that API action.

AccessDeniedException

You don't have permission to perform this action. Verify that your IAM policy includes the required permissions.

HTTP Status Code: 403

ExpiredTokenException

The security token included in the request has expired. Request a new security token and try again.

HTTP Status Code: 403

IncompleteSignature

The request signature doesn't conform to AWS standards. Verify that you're using valid AWS credentials and that your request is properly formatted. If you're using an SDK, ensure it's up to date.

HTTP Status Code: 403

InternalFailure

The request can't be processed right now because of an internal server issue. Try again later. If the problem persists, contact AWS Support.

HTTP Status Code: 500

MalformedHttpRequestException

The request body can't be processed. This typically happens when the request body can't be decompressed using the specified content encoding algorithm. Verify that the content encoding header matches the compression format used.

HTTP Status Code: 400

NotAuthorized

You don't have permissions to perform this action. Verify that your IAM policy includes the required permissions.

HTTP Status Code: 401

OptInRequired

Your AWS account needs a subscription for this service. Verify that you've enabled the service in your account.

HTTP Status Code: 403

RequestAbortedException

The request was aborted before a response could be returned. This typically happens when the client closes the connection.

HTTP Status Code: 400

RequestEntityTooLargeException

The request entity is too large. Reduce the size of the request body and try again.

HTTP Status Code: 413

RequestTimeoutException

The request timed out. The server didn't receive the complete request within the expected time frame. Try again.

HTTP Status Code: 408

ServiceUnavailable

The service is temporarily unavailable. Try again later.

HTTP Status Code: 503

ThrottlingException

Your request rate is too high. The AWS SDKs automatically retry requests that receive this exception. Reduce the frequency of requests.

HTTP Status Code: 400

UnknownOperationException

The action or operation isn't recognized. Verify that the action name is spelled correctly and that it's supported by the API version you're using.

HTTP Status Code: 404

UnrecognizedClientException

The X.509 certificate or AWS access key ID you provided doesn't exist in our records. Verify that you're using valid credentials and that they haven't expired.

HTTP Status Code: 403

ValidationError

The input doesn't meet the required format or constraints. Check that all required parameters are included and that values are valid.

HTTP Status Code: 400