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**EBS direct APIs**  
**API Reference**  
**API Version 2019-11-02**



## **EBS direct APIs: API Reference**

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# Welcome

You can use the Amazon Elastic Block Store (Amazon EBS) direct APIs to create Amazon EBS snapshots, write data directly to your snapshots, read data on your snapshots, and identify the differences or changes between two snapshots. If you're an independent software vendor (ISV) who offers backup services for Amazon EBS, the EBS direct APIs make it more efficient and cost-effective to track incremental changes on your Amazon EBS volumes through snapshots. This can be done without having to create new volumes from snapshots, and then use Amazon Elastic Compute Cloud (Amazon EC2) instances to compare the differences.

You can create incremental snapshots directly from data on-premises into volumes and the cloud to use for quick disaster recovery. With the ability to write and read snapshots, you can write your on-premises data to a snapshot during a disaster. Then after recovery, you can restore it back to Amazon or on-premises from the snapshot. You no longer need to build and maintain complex mechanisms to copy data to and from Amazon EBS.

This API reference provides detailed information about the actions, data types, parameters, and errors of the EBS direct APIs. For more information about the elements that make up the EBS direct APIs, and examples of how to use them effectively, see [Accessing the Contents of an Amazon EBS Snapshot](#) in the *Amazon Elastic Compute Cloud User Guide*. For more information about the supported Amazon Regions, endpoints, and service quotas for the EBS direct APIs, see [Amazon Elastic Block Store Endpoints and Quotas](#) in the *Amazon General Reference*.

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# Actions

The following actions are supported:

- [CompleteSnapshot](#) (p. 3)
- [GetSnapshotBlock](#) (p. 6)
- [ListChangedBlocks](#) (p. 9)
- [ListSnapshotBlocks](#) (p. 13)
- [PutSnapshotBlock](#) (p. 16)
- [StartSnapshot](#) (p. 20)

# CompleteSnapshot

Seals and completes the snapshot after all of the required blocks of data have been written to it. Completing the snapshot changes the status to `completed`. You cannot write new blocks to a snapshot after it has been completed.

## Note

You should always retry requests that receive server (5xx) error responses, and `ThrottlingException` and `RequestThrottledException` client error responses. For more information see [Error retries](#) in the *Amazon Elastic Compute Cloud User Guide*.

## Request Syntax

```
POST /snapshots/completion/snapshotId HTTP/1.1
x-amz-ChangedBlocksCount: ChangedBlocksCount
x-amz-Checksum: Checksum
x-amz-Checksum-Algorithm: ChecksumAlgorithm
x-amz-Checksum-Aggregation-Method: ChecksumAggregationMethod
```

## URI Request Parameters

The request uses the following URI parameters.

### ChangedBlocksCount (p. 3)

The number of blocks that were written to the snapshot.

Valid Range: Minimum value of 0.

Required: Yes

### Checksum (p. 3)

An aggregated Base-64 SHA256 checksum based on the checksums of each written block.

To generate the aggregated checksum using the linear aggregation method, arrange the checksums for each written block in ascending order of their block index, concatenate them to form a single string, and then generate the checksum on the entire string using the SHA256 algorithm.

Length Constraints: Maximum length of 64.

Pattern: `^[A-Za-z0-9+/=]+$`

### ChecksumAggregationMethod (p. 3)

The aggregation method used to generate the checksum. Currently, the only supported aggregation method is `LINEAR`.

Length Constraints: Maximum length of 32.

Pattern: `^[A-Za-z0-9]+$`

Valid Values: `LINEAR`

### ChecksumAlgorithm (p. 3)

The algorithm used to generate the checksum. Currently, the only supported algorithm is `SHA256`.

Length Constraints: Maximum length of 32.

Pattern: `^[A-Za-z0-9]+$`

Valid Values: `SHA256`

### [snapshotId \(p. 3\)](#)

The ID of the snapshot.

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

Pattern: `^snap-[0-9a-f]+$`

Required: Yes

## Request Body

The request does not have a request body.

## Response Syntax

```
HTTP/1.1 202
Content-type: application/json

{
  "Status": "string"
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 202 response.

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

### [Status \(p. 4\)](#)

The status of the snapshot.

Type: String

Length Constraints: Maximum length of 32.

Valid Values: `completed` | `pending` | `error`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 32\)](#).

### **AccessDeniedException**

You do not have sufficient access to perform this action.

HTTP Status Code: 403

### **InternalServerErrorException**

An internal error has occurred. For more information see [Error retries](#).

HTTP Status Code: 500



### **RequestThrottledException**

The number of API requests has exceeded the maximum allowed API request throttling limit for the snapshot. For more information see [Error retries](#).

HTTP Status Code: 400

### **ResourceNotFoundException**

The specified resource does not exist.

HTTP Status Code: 404

### **ServiceQuotaExceededException**

Your current service quotas do not allow you to perform this action.

HTTP Status Code: 402

### **ValidationException**

The input fails to satisfy the constraints of the EBS direct APIs.

HTTP Status Code: 400

## See Also

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

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

# GetSnapshotBlock

Returns the data in a block in an Amazon Elastic Block Store snapshot.

## Note

You should always retry requests that receive server (5xx) error responses, and `ThrottlingException` and `RequestThrottledException` client error responses. For more information see [Error retries](#) in the *Amazon Elastic Compute Cloud User Guide*.

## Request Syntax

```
GET /snapshots/snapshotId/blocks/blockIndex?blockToken=BlockToken HTTP/1.1
```

## URI Request Parameters

The request uses the following URI parameters.

### **blockIndex** (p. 6)

The block index of the block in which to read the data. A block index is a logical index in units of 512 KiB blocks. To identify the block index, divide the logical offset of the data in the logical volume by the block size (logical offset of data/524288). The logical offset of the data must be 512 KiB aligned.

Valid Range: Minimum value of 0.

Required: Yes

### **BlockToken** (p. 6)

The block token of the block from which to get data. You can obtain the `BlockToken` by running the `ListChangedBlocks` or `ListSnapshotBlocks` operations.

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

Required: Yes

### **snapshotId** (p. 6)

The ID of the snapshot containing the block from which to get data.

#### **Important**

If the specified snapshot is encrypted, you must have permission to use the KMS key that was used to encrypt the snapshot. For more information, see [Using encryption](#) in the *Amazon Elastic Compute Cloud User Guide*.

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

Pattern: `^snap-[0-9a-f]+$`

Required: Yes

## Request Body

The request does not have a request body.

## Response Syntax

```
HTTP/1.1 200
x-amz-Data-Length: DataLength
x-amz-Checksum: Checksum
x-amz-Checksum-Algorithm: ChecksumAlgorithm

BlockData
```

## Response Elements

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

The response returns the following HTTP headers.

### Checksum (p. 7)

The checksum generated for the block, which is Base64 encoded.

Length Constraints: Maximum length of 64.

Pattern: `^[A-Za-z0-9+/=]+$`

### ChecksumAlgorithm (p. 7)

The algorithm used to generate the checksum for the block, such as SHA256.

Length Constraints: Maximum length of 32.

Pattern: `^[A-Za-z0-9]+$`

Valid Values: `SHA256`

### DataLength (p. 7)

The size of the data in the block.

The response returns the following as the HTTP body.

### BlockData (p. 7)

The data content of the block.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 32\)](#).

### AccessDeniedException

You do not have sufficient access to perform this action.

HTTP Status Code: 403

### InternalServerError

An internal error has occurred. For more information see [Error retries](#).

HTTP Status Code: 500

### **RequestThrottledException**

The number of API requests has exceeded the maximum allowed API request throttling limit for the snapshot. For more information see [Error retries](#).

HTTP Status Code: 400

### **ResourceNotFoundException**

The specified resource does not exist.

HTTP Status Code: 404

### **ServiceQuotaExceededException**

Your current service quotas do not allow you to perform this action.

HTTP Status Code: 402

### **ValidationException**

The input fails to satisfy the constraints of the EBS direct APIs.

HTTP Status Code: 400

## See Also

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

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

# ListChangedBlocks

Returns information about the blocks that are different between two Amazon Elastic Block Store snapshots of the same volume/snapshot lineage.

## Note

You should always retry requests that receive server (5xx) error responses, and `ThrottlingException` and `RequestThrottledException` client error responses. For more information see [Error retries](#) in the *Amazon Elastic Compute Cloud User Guide*.

## Request Syntax

```
GET /snapshots/secondSnapshotId/changedblocks?  
firstSnapshotId=FirstSnapshotId&maxResults=MaxResults&pageToken=NextToken&startingBlockIndex=StartingBlockIndex  
HTTP/1.1
```

## URI Request Parameters

The request uses the following URI parameters.

### FirstSnapshotId (p. 9)

The ID of the first snapshot to use for the comparison.

#### Important

The `FirstSnapshotID` parameter must be specified with a `SecondSnapshotId` parameter; otherwise, an error occurs.

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

Pattern: `^snap-[0-9a-f]+$`

### MaxResults (p. 9)

The maximum number of blocks to be returned by the request.

Even if additional blocks can be retrieved from the snapshot, the request can return less blocks than **MaxResults** or an empty array of blocks.

To retrieve the next set of blocks from the snapshot, make another request with the returned **NextToken** value. The value of **NextToken** is `null` when there are no more blocks to return.

Valid Range: Minimum value of 100. Maximum value of 10000.

### NextToken (p. 9)

The token to request the next page of results.

If you specify **NextToken**, then **StartingBlockIndex** is ignored.

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

### secondSnapshotId (p. 9)

The ID of the second snapshot to use for the comparison.

#### Important

The `SecondSnapshotId` parameter must be specified with a `FirstSnapshotID` parameter; otherwise, an error occurs.

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

Pattern: `^snap-[0-9a-f]+$`

Required: Yes

### StartingBlockIndex (p. 9)

The block index from which the comparison should start.

The list in the response will start from this block index or the next valid block index in the snapshots.

If you specify **NextToken**, then **StartingBlockIndex** is ignored.

Valid Range: Minimum value of 0.

## Request Body

The request does not have a request body.

## Response Syntax

```
HTTP/1.1 200
Content-type: application/json

{
  "BlockSize": number,
  "ChangedBlocks": [
    {
      "BlockIndex": number,
      "FirstBlockToken": "string",
      "SecondBlockToken": "string"
    }
  ],
  "ExpiryTime": number,
  "NextToken": "string",
  "VolumeSize": number
}
```

## Response Elements

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

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

### BlockSize (p. 10)

The size of the blocks in the snapshot, in bytes.

Type: Integer

### ChangedBlocks (p. 10)

An array of objects containing information about the changed blocks.

Type: Array of [ChangedBlock \(p. 28\)](#) objects

### ExpiryTime (p. 10)

The time when the `BlockToken` expires.

Type: Timestamp

### NextToken (p. 10)

The token to use to retrieve the next page of results. This value is null when there are no more results to return.

Type: String

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

### VolumeSize (p. 10)

The size of the volume in GB.

Type: Long

Valid Range: Minimum value of 1.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 32\)](#).

### AccessDeniedException

You do not have sufficient access to perform this action.

HTTP Status Code: 403

### InternalServerErrorException

An internal error has occurred. For more information see [Error retries](#).

HTTP Status Code: 500

### RequestThrottledException

The number of API requests has exceeded the maximum allowed API request throttling limit for the snapshot. For more information see [Error retries](#).

HTTP Status Code: 400

### ResourceNotFoundException

The specified resource does not exist.

HTTP Status Code: 404

### ServiceQuotaExceededException

Your current service quotas do not allow you to perform this action.

HTTP Status Code: 402

### ValidationException

The input fails to satisfy the constraints of the EBS direct APIs.

HTTP Status Code: 400

## See Also

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

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



# ListSnapshotBlocks

Returns information about the blocks in an Amazon Elastic Block Store snapshot.

## Note

You should always retry requests that receive server (5xx) error responses, and `ThrottlingException` and `RequestThrottledException` client error responses. For more information see [Error retries](#) in the *Amazon Elastic Compute Cloud User Guide*.

## Request Syntax

```
GET /snapshots/snapshotId/blocks?  
maxResults=MaxResults&pageToken=NextToken&startingBlockIndex=StartingBlockIndex HTTP/1.1
```

## URI Request Parameters

The request uses the following URI parameters.

### MaxResults (p. 13)

The maximum number of blocks to be returned by the request.

Even if additional blocks can be retrieved from the snapshot, the request can return less blocks than **MaxResults** or an empty array of blocks.

To retrieve the next set of blocks from the snapshot, make another request with the returned **NextToken** value. The value of **NextToken** is `null` when there are no more blocks to return.

Valid Range: Minimum value of 100. Maximum value of 10000.

### NextToken (p. 13)

The token to request the next page of results.

If you specify **NextToken**, then **StartingBlockIndex** is ignored.

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

### snapshotId (p. 13)

The ID of the snapshot from which to get block indexes and block tokens.

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

Pattern: `^snap-[0-9a-f]+$`

Required: Yes

### StartingBlockIndex (p. 13)

The block index from which the list should start. The list in the response will start from this block index or the next valid block index in the snapshot.

If you specify **NextToken**, then **StartingBlockIndex** is ignored.

Valid Range: Minimum value of 0.

## Request Body

The request does not have a request body.

## Response Syntax

```
HTTP/1.1 200
Content-type: application/json

{
  "Blocks": [
    {
      "BlockIndex": number,
      "BlockToken": "string"
    }
  ],
  "BlockSize": number,
  "ExpiryTime": number,
  "NextToken": "string",
  "VolumeSize": number
}
```

## Response Elements

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

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

### Blocks (p. 14)

An array of objects containing information about the blocks.

Type: Array of [Block \(p. 27\)](#) objects

### BlockSize (p. 14)

The size of the blocks in the snapshot, in bytes.

Type: Integer

### ExpiryTime (p. 14)

The time when the `BlockToken` expires.

Type: Timestamp

### NextToken (p. 14)

The token to use to retrieve the next page of results. This value is null when there are no more results to return.

Type: String

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

### VolumeSize (p. 14)

The size of the volume in GB.

Type: Long

Valid Range: Minimum value of 1.

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 32\)](#).

### **AccessDeniedException**

You do not have sufficient access to perform this action.

HTTP Status Code: 403

### **InternalServerErrorException**

An internal error has occurred. For more information see [Error retries](#).

HTTP Status Code: 500

### **RequestThrottledException**

The number of API requests has exceeded the maximum allowed API request throttling limit for the snapshot. For more information see [Error retries](#).

HTTP Status Code: 400

### **ResourceNotFoundException**

The specified resource does not exist.

HTTP Status Code: 404

### **ServiceQuotaExceededException**

Your current service quotas do not allow you to perform this action.

HTTP Status Code: 402

### **ValidationException**

The input fails to satisfy the constraints of the EBS direct APIs.

HTTP Status Code: 400

## See Also

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

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

# PutSnapshotBlock

Writes a block of data to a snapshot. If the specified block contains data, the existing data is overwritten. The target snapshot must be in the pending state.

Data written to a snapshot must be aligned with 512-KiB sectors.

## Note

You should always retry requests that receive server (5xx) error responses, and `ThrottlingException` and `RequestThrottledException` client error responses. For more information see [Error retries](#) in the *Amazon Elastic Compute Cloud User Guide*.

## Request Syntax

```
PUT /snapshots/snapshotId/blocks/blockIndex HTTP/1.1
x-amz-Data-Length: DataLength
x-amz-Progress: Progress
x-amz-Checksum: Checksum
x-amz-Checksum-Algorithm: ChecksumAlgorithm

BlockData
```

## URI Request Parameters

The request uses the following URI parameters.

### **blockIndex** (p. 16)

The block index of the block in which to write the data. A block index is a logical index in units of 512 KiB blocks. To identify the block index, divide the logical offset of the data in the logical volume by the block size (logical offset of data/524288). The logical offset of the data must be 512 KiB aligned.

Valid Range: Minimum value of 0.

Required: Yes

### **Checksum** (p. 16)

A Base64-encoded SHA256 checksum of the data. Only SHA256 checksums are supported.

Length Constraints: Maximum length of 64.

Pattern: `^[A-Za-z0-9+/=]+$`

Required: Yes

### **ChecksumAlgorithm** (p. 16)

The algorithm used to generate the checksum. Currently, the only supported algorithm is SHA256.

Length Constraints: Maximum length of 32.

Pattern: `^[A-Za-z0-9]+$`

Valid Values: `SHA256`

Required: Yes

### DataLength (p. 16)

The size of the data to write to the block, in bytes. Currently, the only supported size is 524288 bytes.

Valid values: 524288

Required: Yes

### Progress (p. 16)

The progress of the write process, as a percentage.

Valid Range: Minimum value of 0. Maximum value of 100.

### snapshotId (p. 16)

The ID of the snapshot.

#### Important

If the specified snapshot is encrypted, you must have permission to use the KMS key that was used to encrypt the snapshot. For more information, see [Using encryption](#) in the *Amazon Elastic Compute Cloud User Guide*.

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

Pattern: ^snap-[0-9a-f]+\$

Required: Yes

## Request Body

The request accepts the following binary data.

### BlockData (p. 16)

The data to write to the block.

The block data is not signed as part of the Signature Version 4 signing process. As a result, you must generate and provide a Base64-encoded SHA256 checksum for the block data using the **x-amz-Checksum** header. Also, you must specify the checksum algorithm using the **x-amz-Checksum-Algorithm** header. The checksum that you provide is part of the Signature Version 4 signing process. It is validated against a checksum generated by Amazon EBS to ensure the validity and authenticity of the data. If the checksums do not correspond, the request fails. For more information, see [Using checksums with the EBS direct APIs](#) in the *Amazon Elastic Compute Cloud User Guide*.

Required: Yes

## Response Syntax

```
HTTP/1.1 201
x-amz-Checksum: Checksum
x-amz-Checksum-Algorithm: ChecksumAlgorithm
```

## Response Elements

If the action is successful, the service sends back an HTTP 201 response.

The response returns the following HTTP headers.

### Checksum (p. 17)

The SHA256 checksum generated for the block data by Amazon EBS.

Length Constraints: Maximum length of 64.

Pattern: `^[A-Za-z0-9+/=]+$`

### ChecksumAlgorithm (p. 17)

The algorithm used by Amazon EBS to generate the checksum.

Length Constraints: Maximum length of 32.

Pattern: `^[A-Za-z0-9]+$`

Valid Values: `SHA256`

## Errors

For information about the errors that are common to all actions, see [Common Errors \(p. 32\)](#).

### AccessDeniedException

You do not have sufficient access to perform this action.

HTTP Status Code: 403

### InternalServerError

An internal error has occurred. For more information see [Error retries](#).

HTTP Status Code: 500

### RequestThrottledException

The number of API requests has exceeded the maximum allowed API request throttling limit for the snapshot. For more information see [Error retries](#).

HTTP Status Code: 400

### ResourceNotFoundException

The specified resource does not exist.

HTTP Status Code: 404

### ServiceQuotaExceededException

Your current service quotas do not allow you to perform this action.

HTTP Status Code: 402

### ValidationException

The input fails to satisfy the constraints of the EBS direct APIs.

HTTP Status Code: 400

## See Also

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

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

# StartSnapshot

Creates a new Amazon EBS snapshot. The new snapshot enters the pending state after the request completes.

After creating the snapshot, use [PutSnapshotBlock](#) to write blocks of data to the snapshot.

## Note

You should always retry requests that receive server (5xx) error responses, and `ThrottlingException` and `RequestThrottledException` client error responses. For more information see [Error retries](#) in the *Amazon Elastic Compute Cloud User Guide*.

## Request Syntax

```
POST /snapshots HTTP/1.1
Content-type: application/json
```

```
{
  "ClientToken": "string",
  "Description": "string",
  "Encrypted": boolean,
  "KmsKeyArn": "string",
  "ParentSnapshotId": "string",
  "Tags": [
    {
      "Key": "string",
      "Value": "string"
    }
  ],
  "Timeout": number,
  "VolumeSize": number
}
```

## URI Request Parameters

The request does not use any URI parameters.

## Request Body

The request accepts the following data in JSON format.

### ClientToken (p. 20)

A unique, case-sensitive identifier that you provide to ensure the idempotency of the request. Idempotency ensures that an API request completes only once. With an idempotent request, if the original request completes successfully. The subsequent retries with the same client token return the result from the original successful request and they have no additional effect.

If you do not specify a client token, one is automatically generated by the Amazon SDK.

For more information, see [Idempotency for StartSnapshot API](#) in the *Amazon Elastic Compute Cloud User Guide*.

Type: String

Length Constraints: Maximum length of 255.

Pattern: `^[ \S]+$`



Required: No

#### Description (p. 20)

A description for the snapshot.

Type: String

Length Constraints: Maximum length of 255.

Pattern: `^[ \S\s ]+$`

Required: No

#### Encrypted (p. 20)

Indicates whether to encrypt the snapshot.

You can't specify **Encrypted** and **ParentSnapshotId** in the same request. If you specify both parameters, the request fails with `ValidationException`.

The encryption status of the snapshot depends on the values that you specify for **Encrypted**, **KmsKeyArn**, and **ParentSnapshotId**, and whether your Amazon account is enabled for [encryption by default](#). For more information, see [Using encryption](#) in the *Amazon Elastic Compute Cloud User Guide*.

#### Important

To create an encrypted snapshot, you must have permission to use the KMS key. For more information, see [Permissions to use Amazon Key Management Service keys](#) in the *Amazon Elastic Compute Cloud User Guide*.

Type: Boolean

Required: No

#### KmsKeyArn (p. 20)

The Amazon Resource Name (ARN) of the Amazon Key Management Service (Amazon KMS) key to be used to encrypt the snapshot.

The encryption status of the snapshot depends on the values that you specify for **Encrypted**, **KmsKeyArn**, and **ParentSnapshotId**, and whether your Amazon account is enabled for [encryption by default](#). For more information, see [Using encryption](#) in the *Amazon Elastic Compute Cloud User Guide*.

#### Important

To create an encrypted snapshot, you must have permission to use the KMS key. For more information, see [Permissions to use Amazon Key Management Service keys](#) in the *Amazon Elastic Compute Cloud User Guide*.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 2048.

Pattern: `arn:aws[a-z\-\ ]*:kms:.*:[0-9]{12}:key/.*`

Required: No

#### ParentSnapshotId (p. 20)

The ID of the parent snapshot. If there is no parent snapshot, or if you are creating the first snapshot for an on-premises volume, omit this parameter.

You can't specify **ParentSnapshotId** and **Encrypted** in the same request. If you specify both parameters, the request fails with `ValidationException`.

The encryption status of the snapshot depends on the values that you specify for **Encrypted**, **KmsKeyArn**, and **ParentSnapshotId**, and whether your Amazon account is enabled for [encryption by default](#). For more information, see [Using encryption](#) in the *Amazon Elastic Compute Cloud User Guide*.

**Important**

If you specify an encrypted parent snapshot, you must have permission to use the KMS key that was used to encrypt the parent snapshot. For more information, see [Permissions to use Amazon Key Management Service keys](#) in the *Amazon Elastic Compute Cloud User Guide*.

Type: String

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

Pattern: ^snap-[0-9a-f]+\$

Required: No

**Tags (p. 20)**

The tags to apply to the snapshot.

Type: Array of [Tag \(p. 29\)](#) objects

Required: No

**Timeout (p. 20)**

The amount of time (in minutes) after which the snapshot is automatically cancelled if:

- No blocks are written to the snapshot.
- The snapshot is not completed after writing the last block of data.

If no value is specified, the timeout defaults to 60 minutes.

Type: Integer

Valid Range: Minimum value of 10. Maximum value of 4320.

Required: No

**VolumeSize (p. 20)**

The size of the volume, in GiB. The maximum size is 65536 GiB (64 TiB).

Type: Long

Valid Range: Minimum value of 1.

Required: Yes

## Response Syntax

```
HTTP/1.1 201
Content-type: application/json

{
  "BlockSize": number,
  "Description": "string",
  "KmsKeyArn": "string",
  "OwnerId": "string",
  "ParentSnapshotId": "string",
```

```
"SnapshotId": "string",
"StartTime": number,
>Status": "string",
Tags": [
  {
    "Key": "string",
    "Value": "string"
  }
],
"VolumeSize": number
}
```

## Response Elements

If the action is successful, the service sends back an HTTP 201 response.

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

### BlockSize (p. 22)

The size of the blocks in the snapshot, in bytes.

Type: Integer

### Description (p. 22)

The description of the snapshot.

Type: String

Length Constraints: Maximum length of 255.

Pattern: ^[\S\s]+\$

### KmsKeyArn (p. 22)

The Amazon Resource Name (ARN) of the Amazon Key Management Service (Amazon KMS) key used to encrypt the snapshot.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 2048.

Pattern: arn:aws[a-z-]\*:kms:.\*:[0-9]{12}:key/.\*

### OwnerId (p. 22)

The Amazon Web Services account ID of the snapshot owner.

Type: String

Length Constraints: Minimum length of 1. Maximum length of 24.

Pattern: \S+

### ParentSnapshotId (p. 22)

The ID of the parent snapshot.

Type: String

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

Pattern: ^snap-[0-9a-f]+\$

### **SnapshotId (p. 22)**

The ID of the snapshot.

Type: String

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

Pattern: `^snap-[0-9a-f]+$`

### **StartTime (p. 22)**

The timestamp when the snapshot was created.

Type: Timestamp

### **Status (p. 22)**

The status of the snapshot.

Type: String

Length Constraints: Maximum length of 32.

Valid Values: `completed` | `pending` | `error`

### **Tags (p. 22)**

The tags applied to the snapshot. You can specify up to 50 tags per snapshot. For more information, see [Tagging your Amazon EC2 resources](#) in the *Amazon Elastic Compute Cloud User Guide*.

Type: Array of [Tag \(p. 29\)](#) objects

### **VolumeSize (p. 22)**

The size of the volume, in GiB.

Type: Long

Valid Range: Minimum value of 1.

## **Errors**

For information about the errors that are common to all actions, see [Common Errors \(p. 32\)](#).

### **AccessDeniedException**

You do not have sufficient access to perform this action.

HTTP Status Code: 403

### **ConcurrentLimitExceededException**

You have reached the limit for concurrent API requests. For more information, see [Optimizing performance of the EBS direct APIs](#) in the *Amazon Elastic Compute Cloud User Guide*.

HTTP Status Code: 400

### **ConflictException**

The request uses the same client token as a previous, but non-identical request.

HTTP Status Code: 409

### **InternalServerErrorException**

An internal error has occurred. For more information see [Error retries](#).

HTTP Status Code: 500

### **RequestThrottledException**

The number of API requests has exceeded the maximum allowed API request throttling limit for the snapshot. For more information see [Error retries](#).

HTTP Status Code: 400

### **ResourceNotFoundException**

The specified resource does not exist.

HTTP Status Code: 404

### **ServiceQuotaExceededException**

Your current service quotas do not allow you to perform this action.

HTTP Status Code: 402

### **ValidationException**

The input fails to satisfy the constraints of the EBS direct APIs.

HTTP Status Code: 400

## See Also

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

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

# Data Types

The EBS direct APIs 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:

- [Block \(p. 27\)](#)
- [ChangedBlock \(p. 28\)](#)
- [Tag \(p. 29\)](#)

## Block

A block of data in an Amazon Elastic Block Store snapshot.

### Contents

#### **BlockIndex**

The block index.

Type: Integer

Valid Range: Minimum value of 0.

Required: No

#### **BlockToken**

The block token for the block index.

Type: String

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

Required: No

### See Also

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

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

# ChangedBlock

A block of data in an Amazon Elastic Block Store snapshot that is different from another snapshot of the same volume/snapshot lineage.

## Contents

### BlockIndex

The block index.

Type: Integer

Valid Range: Minimum value of 0.

Required: No

### FirstBlockToken

The block token for the block index of the `FirstSnapshotId` specified in the `ListChangedBlocks` operation. This value is absent if the first snapshot does not have the changed block that is on the second snapshot.

Type: String

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

Required: No

### SecondBlockToken

The block token for the block index of the `SecondSnapshotId` specified in the `ListChangedBlocks` operation.

Type: String

Length Constraints: Maximum length of 256.

Pattern: `^[A-Za-z0-9+/=]+$`

Required: No

## See Also

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

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



# Tag

Describes a tag.

## Contents

### Key

The key of the tag.

Type: String

Length Constraints: Maximum length of 127.

Pattern: `^\S\S]+$`

Required: No

### Value

The value of the tag.

Type: String

Length Constraints: Maximum length of 255.

Pattern: `^\S\S]*$`

Required: No

## See Also

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

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

# Common Parameters

The following list contains the parameters that all actions use for signing Signature Version 4 requests with a query string. Any action-specific parameters are listed in the topic for that action. For more information about Signature Version 4, see [Signature Version 4 Signing Process](#) in the *Amazon Web Services General Reference*.

## Action

The action to be performed.

Type: string

Required: Yes

## Version

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

Type: string

Required: Yes

## X-Amz-Algorithm

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

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

Type: string

Valid Values: `AWS4-HMAC-SHA256`

Required: Conditional

## X-Amz-Credential

The credential scope value, which is a string that includes your access key, the date, the region you are targeting, the service you are requesting, and a termination string ("aws4\_request"). The value is expressed in the following format: `access_key/YYYYMMDD/region/service/aws4_request`.

For more information, see [Task 2: Create a String to Sign for Signature Version 4](#) in the *Amazon Web Services General Reference*.

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

Type: string

Required: Conditional

## X-Amz-Date

The date that is used to create the signature. The format must be ISO 8601 basic format (YYYYMMDD'THHMMSS'Z'). For example, the following date time is a valid X-Amz-Date value: `20120325T120000Z`.

Condition: X-Amz-Date is optional for all requests; it can be used to override the date used for signing requests. If the Date header is specified in the ISO 8601 basic format, X-Amz-Date is

not required. When X-Amz-Date is used, it always overrides the value of the Date header. For more information, see [Handling Dates in Signature Version 4](#) in the *Amazon Web Services General Reference*.

Type: string

Required: Conditional

#### **X-Amz-Security-Token**

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

Condition: If you're using temporary security credentials from the Amazon Security Token Service, you must include the security token.

Type: string

Required: Conditional

#### **X-Amz-Signature**

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

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

Type: string

Required: Conditional

#### **X-Amz-SignedHeaders**

Specifies all the HTTP headers that were included as part of the canonical request. For more information about specifying signed headers, see [Task 1: Create a Canonical Request For Signature Version 4](#) in the *Amazon Web Services General Reference*.

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

Type: string

Required: Conditional

# Common Errors

This section lists the errors common to the API actions of all Amazon 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 Amazon 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 Amazon access key ID provided does not exist in our records.

HTTP Status Code: 403

## **InvalidParameterCombination**

Parameters that must not be used together were used together.

HTTP Status Code: 400

## **InvalidParameterValue**

An invalid or out-of-range value was supplied for the input parameter.

HTTP Status Code: 400

## **InvalidQueryParameter**

The Amazon query string is malformed or does not adhere to Amazon standards.

HTTP Status Code: 400

## **MalformedQueryString**

The query string contains a syntax error.

HTTP Status Code: 404

## **MissingAction**

The request is missing an action or a required parameter.

HTTP Status Code: 400

**MissingAuthenticationToken**

The request must contain either a valid (registered) Amazon access key ID or X.509 certificate.

HTTP Status Code: 403

**MissingParameter**

A required parameter for the specified action is not supplied.

HTTP Status Code: 400

**NotAuthorized**

You do not have permission to perform this action.

HTTP Status Code: 400

**OptInRequired**

The Amazon 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 Amazon service.

HTTP Status Code: 400