Contents

1 Overview ................................................................. 1
2 Before You Start .................................................. 3
3 Creating EVS Disks ................................................. 4
4 Expanding the Capacity of an EVS Disk ....................... 10
5 Deleting an EVS Disk .............................................. 13
6 Creating an EVS Snapshot .......................................... 16
7 Deleting an EVS Snapshot .......................................... 19
8 Rolling Back a Snapshot to an EVS Disk ..................... 22
A Change History ..................................................... 25
1 Overview

This document describes how to call the Elastic Volume Service (EVS) APIs to use various EVS functions.

This chapter describes the concepts related to EVS to help you quickly understand the service.

Elastic Volume Service

EVS offers scalable block storage for servers. With high reliability, high performance, and rich specifications, EVS disks can be used for distributed file systems, development and test environments, data warehouse applications, and high-performance computing (HPC) scenarios to meet diverse service requirements.

EVS disks are also referred to as disks in this document.

Basic Concepts

- **AZ**
  An availability zone (AZ) is a physical location where resources use independent power supply and networks within a region. An AZ is insulated from failures in other AZs and provides inexpensive, low-latency network connectivity to other AZs in the same regions. A region can have more than one AZ. AZs are physically isolated but interconnected through an internal network.

- **Project**
  A project is used to group and isolate OpenStack resources, such as computing, storage, and network resources. A project can either be a department or a project team. You can access the Identity and Access Management (IAM) service with a security administrator to create projects in a region and perform isolated management of resources.

- **Image**
  An image must contain an OS and can also contain application software (such as database software) and software configuration.

  Images can be public or private. Public images are provided by the system by default, and private images are manually created by users. You can create system disks using a public or private image.

- **EVS snapshot**
An EVS snapshot is a complete copy or image of the disk data at a specific time point. As a major disaster recovery (DR) approach, you can use a snapshot to completely restore the data to the time point when the snapshot was created.

- **EVS disk backup**

  EVS implements the backup function through the Volume Backup Service (VBS). VBS allows you to create backups for EVS disks on the management console without stopping the servers. When data loss or data damage occurred due to virus invasion, misoperations, or software and hardware faults, you can use backups to restore the data, maximizing your data correctness and security.
You need to learn how to call the EVS APIs before you start. For details about how to call RESTful APIs, see API Usage Guidelines.
3 Creating EVS Disks

Scenarios

This API is used to create one or multiple EVS disks.

Constraints

None

Involved APIs

Query the AZs before you create EVS disks.

If you need to create system disks, query the image information and obtain the image ID.

If you need to create the disk from a data source, for example a snapshot or backup, query the snapshot or backup information and obtain the snapshot ID or backup ID.

Obtain the required information and then create the disk.

To meet the preceding requirements, call the following APIs:

- Query AZs.
- Query images.
- Query EVS snapshots.
- Query backups.
- Create EVS disks.

Procedure

1. Query the AZs.
   
   - API information
     
     URI format: GET /v3/{project_id}/os-availability-zone
     
     For details, see OpenStack Cinder API v3 > EVS Disk > Querying Information About All AZs in the Elastic Volume Service API Reference.
   
   - Example request
     
     GET /v3/9c53a566cb3443ab910cf0daebca90c4/os-availability-zone
2. (Optional) Query the images if system disks are going to be created.

- **API information**

  **URI format:** GET /v2/images

  For details, see `API > Image (Native OpenStack APIs) > Querying Images (Native OpenStack API)` in the `Image Management Service API Reference`.

- **Example request**

  GET /v2/images

- **Example response**

  ```json
  {
    "images": [
      {
        "status": "queued",
        "name": "test",
        "tags": [
          "test",
          "image"
        ],
        "container_format": "bare",
        "created_at": "2014-12-16T01:22:05Z",
        "disk_format": "qcow2",
        "updated_at": "2014-12-16T01:22:05Z",
        "visibility": "private",
        "self": "/v2/images/4ca46bf1-5c61-48ff-b4f3-0ad4e5e3ba90",
        "min_disk": 1,
        "protected": false,
        "id": "4ca46bf1-5c61-48ff-b4f3-0ad4e5e3ba90",
        "file": "/v2/images/4ca46bf1-5c61-48ff-b4f3-0ad4e5e3ba90/file",
        "owner": "aed2c61171548a4a9c16fb8fe166af4",
        "min_ram": 1024,
        "schema": "/v2/schemas/image"
      },
      {
        "status": "active",
        "name": "cirros",
        "tags": [
          "new"
        ],
        "container_format": "bare",
        "created_at": "2014-12-11T03:53:43Z",
        "size": 13147648,
        "disk_format": "qcow2",
        "updated_at": "2014-12-15T20:02:12Z",
        "visibility": "private",
        "self": "/v2/images/5155a22a-834e-4ffe-a95d-ed9665a8ed76",
        "min_disk": 0,
        "protected": false
      }
    ]
  }
  ```
3. (Optional) Query the EVS snapshots if the disk is going to be created from a snapshot.

- **API information**
  
  **URI format:** GET /v3/{project_id}/snapshots

  For details, see [OpenStack Cinder API v3 > EVS Snapshot > Querying EVS Snapshots](Elastic Volume Service API Reference).

- **Example request**
  
  ```
  GET /v3/9c53a566eb3443ab910cf0daebca90c4/snapshots
  ```

- **Example response**
  
  ```
  
  
  
  
  
  
  ```

Elastic Volume Service
Developer Guide

2018-11-08

6
4. (Optional) Query the backups if the disk is going to be created from a backup.

   - **API information**

     **URI format:** GET /v2/[project_id]/backups

     For details, see API Description > Volume Backup Service > Querying Summary Information About VBS Backups (Native OpenStack API) in the Volume Backup Service API Reference.

     - **Example request**

       GET /v2/9c53a566cb3443ab910cf0daebca90c4/backups

     - **Example response**

       ```json
       {
         "backups": [
           {
             "id": "1d1139d8-8989-49d3-8a11-83eb691e6db2",
             "links": [
               {
                 "href": "http://192.168.82.222:8776/v2/b23b579f08c84228b9b4673c46f0c442/backups/1d1139d8-8989-49d3-8a11-83eb691e6db2",
                 "rel": "self"
               },
               {
                 "href": "http://192.168.82.222:8776/b23b579f08c84228b9b4673c46f0c442/backups/1d1139d8-8989-49d3-8a11-83eb691e6db2",
                 "rel": "bookmark"
               }
             ],
             "name": null
           },
           {
             "id": "b3cf7a16-decc-4beb-8077-682737d94a58",
             "links": [
               {
                 "href": "http://192.168.82.222:8776/v2/b23b579f08c84228b9b4673c46f0c442/backups/b3cf7a16-decc-4beb-8077-682737d94a58",
                 "rel": "self"
               },
               {
                 "href": "http://192.168.82.222:8776/b23b579f08c84228b9b4673c46f0c442/backups/b3cf7a16-decc-4beb-8077-682737d94a58",
                 "rel": "bookmark"
               }
             ],
             "name": null
           }
         ],
         "backups_links": [
           {
             "href": "http://192.168.82.222:8776/b23b579f08c84228b9b4673c46f0c442/backups?limit=1&offset=1&marker=b3cf7a16-decc-4beb-8077-682737d94a58",
             "rel": "next"
           }
         ]
       }
       ```

5. Create EVS disks.
- API information
  URI format: POST /v3/{project_id}/volumes
  For details, see [OpenStack Cinder API v3 > EVS Disk > Creating EVS Disks](https://OpenStackCinderAPIv3.com) in the Elastic Volume Service API Reference.

- Example request
  POST /v3/9c53a566eb3443ab910cf0daebca90c4/volumes
  
  ```json
  {"volume": {
  "name": "openapi_vol01",
  "imageRef": "027cf713-45a6-45f0-ac1b-0ccc57ac12e2",
  "availability_zone": "xxx",
  "description": "create for api test",
  "volume_type": "SATA",
  "metadata": {
  "volume_owner": "openapi"
  },
  "consistencygroup_id": null,
  "OS-SCH-HNT:scheduler_hints": {
  "dedicated_storage_id": "eddc1a3e-4145-45be-98d7-bf6f65af9767"
  },
  "source_volid": null,
  "snapshot_id": null,
  "shareable": "false",
  "multiattach": false,
  "source_replica": null,
  "size": 40
  }
  }
  ```

- Example response
  ```json
  {"volume": {
  "attachments": [ ],
  "availability_zone": "xxx",
  "bootable": "false",
  "consistencygroup_id": null,
  "created_at": "2016-05-25T02:38:40.392463",
  "description": "create for api test",
  "encrypted": "false",
  "id": "8dd7c486-8e9f-49fe-bceb-26aa7e312b66",
  "links": [ 
  {
  "href": "https://volume.localdomain.com:8776/v2/5dd0b0056f3d47b64b121667d35621a/volumes/8dd7c486-8e9f-49fe-bceb-26aa7e312b66",
  "rel": "self"
  },
  {
  "href": "https://volume.localdomain.com:8776/5dd0b0056f3d47b64b121667d35621a/volumes/8dd7c486-8e9f-49fe-bceb-26aa7e312b66",
  "rel": "alternate"
  }
  }
  ```
In the preceding example, error indicates a general error, for example, badRequest or itemNotFound. An example is provided as follows:

```json
{
    "error": {
        "message": "XXXX",
        "code": "XXX"
    }
}
```

or

```json
{
    "error": {
        "message": "XXXX",
        "code": "XXX"
    }
}
```
Expanding the Capacity of an EVS Disk

Scenarios

For an EVS disk that has been created, you can call this API to expand the disk capacity if the disk space is insufficient.

Constraints

- If the status of the to-be-expanded disk is **available**, there are no restrictions.
- If the status of the to-be-expanded disk is **in-use**, the restrictions are as follows:
  - The shared disk cannot be expanded, that is, the value of parameter **multiattach** must be **false**.
  - The status of the ECS to which the disk attached must be **ACTIVE**, **PAUSED**, **SUSPENDED**, or **SHUTOFF**.

Involved APIs

Query the disk list, obtain the ID of the target disk, and then expand the disk capacity.

To meet the preceding requirements, call the following APIs:

- Query EVS disks.
- Expand the capacity of a disk.

Procedure

1. Query EVS disks.
   - API information
     URI format: GET /v3/{project_id}/volumes
     For details, see OpenStack Cinder API v3 > EVS Disk > Querying EVS Disks in the Elastic Volume Service API Reference.
   - Example request
     GET /v3/000efdc5f9064584b718b181df137bd7/volumes
   - Example response
     ```json
     {
       "volumes": [
       ]
     }
     ```
2. Expand the capacity of an EVS disk.

- **API information**

  **URI format:** POST /v3/{project_id}/volumes/{volume_id}/action
For details, see OpenStack Cinder API v3 > EVS Disk Actions > Expanding the Capacity of an EVS Disk in the Elastic Volume Service API Reference.

- Example request

```plaintext
POST /v3/000efdc5f9064584b718b181df137bd7/volumes/9ab74d89-61e7-4259-8546-465fdebe4944/action
{
  "os-extend": {
    "new_size": 100
  }
}
```

- Example response

None

or

```plaintext
{
  "error": {
    "message": "XXX",
    "code": "XXX"
  }
}
```

In the preceding example, **error** indicates a general error, for example, **badRequest** or **itemNotFound**. An example is provided as follows:

```plaintext
{
  "badRequest": {
    "message": "XXX",
    "code": "XXX"
  }
}
```
5 Deleting an EVS Disk

Scenarios

If an EVS disk is no longer used, you can delete it to release virtual resources.

Constraints

- An EVS disk can be deleted only when its status is available, error, error_extending, error_restoring, or error_rollbacking.
- Before deleting a shared EVS disk, ensure that the disk has been detached from all its servers.

NOTICE

- When you delete an EVS disk, all the disk data including the snapshots created for this disk will be deleted. Exercise caution when performing this operation.
- Deleted EVS disks cannot be recovered. Exercise caution when performing this operation.

Involved APIs

Query the disk list, obtain the ID of the target disk, and then delete the disk.

To meet the preceding requirements, call the following APIs:

- Query EVS disks.
- Delete an EVS disk.

Procedure

1. Query EVS disks.
   - API information
     URI format: GET /v3/{project_id}/volumes
     For details, see OpenStack Cinder API v3 > EVS Disk > Querying EVS Disks in the Elastic Volume Service API Reference.
   - Example request
GET /v3/000efdc5f9064584b718b181df137bd7/volumes

- Example response

```
{
  "volumes": [
    {
      "id": "6b604cef-9bd8-4f5a-ae56-45839e6elf0a",
      "links": [
        {
          "href": "https://volume.localdomain.com:8776/v2/dd14c6ac581f40059e27f5320b6bf2f/volumes/6b604cef-9bd8-4f5a-ae56-45839e6elf0a",
          "rel": "self"
        },
        {
          "href": "https://volume.localdomain.com:8776/dd14c6ac581f40059e27f5320b6bf2f/volumes/6b604cef-9bd8-4f5a-ae56-45839e6elf0a",
          "rel": "bookmark"
        }
      ],
      "name": "zjb_u25_test"
    },
    {
      "id": "2bce4552-9a7d-48fa-8484-abbbf64b206e",
      "links": [
        {
          "href": "https://volume.localdomain.com:8776/v2/dd14c6ac581f40059e27f5320b6bf2f/volumes/2bce4552-9a7d-48fa-8484-abbbf64b206e",
          "rel": "self"
        },
        {
          "href": "https://volume.localdomain.com:8776/dd14c6ac581f40059e27f5320b6bf2f/volumes/2bce4552-9a7d-48fa-8484-abbbf64b206e",
          "rel": "bookmark"
        }
      ],
      "name": "zjb_u25_test"
    },
    {
      "id": "3f1b98ec-a8b5-4e92-a727-88def625ad3",
      "links": [
        {
          "href": "https://volume.localdomain.com:8776/v2/dd14c6ac581f40059e27f5320b6bf2f/volumes/3f1b98ec-a8b5-4e92-a727-88def625ad3",
          "rel": "self"
        },
        {
          "href": "https://volume.localdomain.com:8776/dd14c6ac581f40059e27f5320b6bf2f/volumes/3f1b98ec-a8b5-4e92-a727-88def625ad3",
          "rel": "bookmark"
        }
      ],
      "name": "zjb_u25_test"
    }
  ],
  "volumes_links": [
    {
      "href": "https://volume.localdomain.com:8776/v2/dd14c6ac581f40059e27f5320b6bf2f/volumes?limit=3&marker=3f1b98ec-a8b5-4e92-a727-88def625ad3",
      "rel": "next"
    }
  ]
}
```
2. Delete the disk.

- API information

  URI format: DELETE /v3/{project_id}/volumes/{volume_id}

  For details, see OpenStack Cinder API v3 > EVS Disk > Deleting an EVS Disk in the Elastic Volume Service API Reference.

- Example request

  DELETE /v3/000efdc5f9064584b718b181df137bd7/baremetalservers/5850a7e7-88dd-4d99-8439-347de8cc0dd7/volume/50ef9435-ca68-4b9b-a837-73377b9fdaa3?cascade=true

  **NOTE**

  cascade=true indicates that the snapshots created for the disk will also be deleted.

- Example response

  None

  or

  ```
  "error": {
    "message": "XXXX",
    "code": "XXX"
  }
  ```

  In the preceding example, error indicates a general error, for example, **badRequest** or **itemNotFound**. An example is provided as follows:

  ```
  "badRequest": {
    "message": "XXXX",
    "code": "XXX"
  }
  ```
6 Creating an EVS Snapshot

Scenarios

You can create an EVS snapshot on the management console to save the disk data at a specific time point.

Constraints

A maximum of 7 snapshots can be created for an EVS disk.

Involved APIs

Query the disk list, obtain the ID of the target disk, and then create the snapshot.

To meet the preceding requirements, call the following APIs:

- Query EVS disks.
- Create an EVS snapshot.

Procedure

1. Query EVS disks.
   - API information
     URI format: GET /v3/{project_id}/volumes
     For details, see OpenStack Cinder API v3 > EVS Disk > Querying EVS Disks in the Elastic Volume Service API Reference.
   - Example request
     GET /v3/000efdc5f9064584b718b181df137bd7/volumes
   - Example response
     ```json
     {
       "volumes": [
         {
           "id": "6b604cef-9bd8-4f5a-ae56-45839e6e1f0a",
           "links": [
             {
               "href": "https://volume.localdomain.com:8776/v2/dd14c6ac581f40059e27f5320b60bf2f/volumes/6b604cef-9bd8-4f5a-ae56-45839e6e1f0a",
               "rel": "self"
             }
           ]
         }
     ]
     ```
2. Create the snapshot.
   - API information
     URI format: POST /v3/{project_id}/snapshots
     For details, see OpenStack Cinder API v3 > EVS Snapshot > Creating an EVS Snapshot in the Elastic Volume Service API Reference.
   - Example request
     GET /v3/000efdc5f9064584b718b181df137bd7/snapshots
     
     "snapshot": {

"name": "snap-001",
"description": "Daily backup",
"volume_id": "5aa119a8-d25b-45a7-8d1b-88e127885635",
"force": false,
"metadata": { }
}

- Example response

```
{
  "snapshot": {
    "status": "creating",
    "description": "Daily backup",
    "created_at": "2013-02-25T03:56:53.081642",
    "metadata": { },
    "volume_id": "5aa119a8-d25b-45a7-8d1b-88e127885635",
    "size": 1,
    "id": "ffa9bc5e-1172-4021-acaf-cdcd78a9584d",
    "name": "snap-001",
    "updated_at": "2013-02-25T03:56:53.081642"
  }
}
```

or

```
{
  "error": {
    "message": "XXXX",
    "code": "XXX"
  }
}
```

In the preceding example, error indicates a general error, for example, badRequest or itemNotFound. An example is provided as follows:

```
{
  "badRequest": {
    "message": "XXXX",
    "code": "XXX"
  }
}
```
Deleting an EVS Snapshot

Scenarios

If an EVS snapshot is no longer used, you can delete it to release virtual resources.

Constraints

- The name of the to-be-deleted EVS snapshot cannot be prefixed with `autobk_snapshot_`.
- A snapshot can be deleted only when it is in the `available` or `error` state.

Involved APIs

Query the snapshot list, obtain the ID of the target snapshot, and then delete the snapshot.

- Query EVS snapshots.
- Delete an EVS snapshot.

Procedure

1. Query the EVS snapshots.
   - API information
     - URI format: GET /v3/{project_id}/snapshots
     - For details, see [OpenStack Cinder API v3 > EVS Snapshot > Querying EVS Snapshots](Elastic Volume Service API Reference).
     - Example request
       ```
       GET /v3/000efdc5f9064584b718b181df137bd7/snapshots
       ```
     - Example response
       ```
       {
         "snapshots": [
           {
             "created_at": "2016-02-16T16:54:14.981520",
             "description": null,
             "id": "b836dc3d-4e10-4ea4-a34c-8f6b0460a583",
             "metadata": {},
             "name": "test01",
             "size": 1,
           }
         ]
       }
       ```
2. Delete the snapshot.
   - API information
     URI format: DELETE /v3/{project_id}/snapshots/{snapshot_id}
     For details, see [OpenStack Cinder API v3 > EVS Snapshot > Deleting an EVS Snapshot](https://docs.openstack.org/apiRef/v3/cinder.html#snapshots)
   - Example request
     DELETE /v3/000efdc5f9064584b718b181df137bd7/snapshots/b836dc3d-4e10-4ea4-a34c-8f6b0460a583
   - Example response
     None or
     ```json
     {   "error": {     "message": "XXXX",     "code": "XXX"   }}
     ```
     In the preceding example, `error` indicates a general error, for example, `badRequest` or `itemNotFound`. An example is provided as follows:
     ```json
     {   "badRequest": {     "message": "XXXX",   }}
     ```
"code": "XXX"
Rolling Back a Snapshot to an EVS Disk

Scenarios
If the data in an EVS disk is incorrect or damaged, you can roll back the data from a snapshot to the source EVS disk to restore the data.

Constraints
- When you roll back a snapshot to an EVS disk, you can only roll back the snapshot to the source EVS disk. Rollback to a specified disk is not supported.
- You can roll back an EVS disk from a snapshot only when the disk is in the available or error_rollbacking state.

Involved APIs
Query the snapshot list, obtain the ID of the snapshot and the ID of the snapshot's source disk, and then roll back the snapshot to the source disk.

To meet the preceding requirements, call the following APIs:
- Query EVS snapshots.
- Roll back a snapshot to an EVS disk.

Procedure
1. Query the EVS snapshots.
   - API information
     URI format: GET /v3/{project_id}/snapshots
     For details, see OpenStack Cinder API v3 > EVS Snapshot > Querying EVS Snapshots in the Elastic Volume Service API Reference.
   - Example request
     GET /v3/000efdc5f9064584b718b181df137bd7/snapshots
   - Example response
     ```json
     {  
       "snapshots": [  
         {  
           "created_at": "2016-02-16T16:54:14.981520",  
           "description": null,  
           "id": "b836dc3d-4e10-4ea4-a34c-8f6b0460a583",  
         }
     ```
2. Roll back the snapshot to the source disk.
   
   - **API information**
     
     URI format: POST /v3/{project_id}/os-vendor-snapshots/{snapshot_id}/rollback
     
     For details, see [API v3 > EVS Snapshot > Rolling Back a Snapshot to an EVS Disk in the Elastic Volume Service API Reference](#).

   - **Example request**
     
     POST /v3/000efdc5f9064584b718b181df137bd7/os-vendor-snapshots/b836dc3d-4e10-4ea4-a34c-8f6b0460a583/rollback
     
     {
       "rollback": {
         "name": "test-001",
         "volume_id": "5aa119a8-d25b-45a7-8d1b-88e127885635"
       }
     }

   - **Example response**
     
     {
       "rollback": {
         "name": "test-001",
         "volume_id": "5aa119a8-d25b-45a7-8d1b-88e127885635"
       }
     }
In the preceding example, `error` indicates a general error, for example, `badRequest` or `itemNotFound`. An example is provided as follows:

```
{
    "badRequest": {
        "message": "XXXX",
        "code": "XXX"
    }
}
```
## Change History

<table>
<thead>
<tr>
<th>Release On</th>
<th>What's New</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018-11-08</td>
<td>This issue is the first official release.</td>
</tr>
</tbody>
</table>