Changing a volume's type

You may occasionally need to change the type of a volume. This may be due to a volume type being phased out on Cleura Cloud's part, necessitating data migration. Or you might want to enable or disable volume-level encryption.

Changing the type of a volume ("retyping") is an offline operation that requires detaching the volume from its server, and setting its new type. The resulting downtime may be quite substantial, particularly for large volumes. As such, when you need to retype volumes, you should plan ahead well in advance.

Prerequisites

In order to retype volumes, you must use the OpenStack CLI, so make sure you have it enabled.

If you are about to retype a large volume, or one that holds data associated with a critical service, you may be interested in an estimate of how long the retype operation will take. In that case, please file a support request with our Service Center.

Checking the volume's state

Assume you have a volume named `testvol` that is currently attached to a server named `testsrv`:

```
$ openstack volume list --long
+---------------+---------+--------+------+---------+----------+---------------+-----------+
| ID            | Name    | Status | Size | Type    | Bootable | Attached to   | Properties |
+---------------+---------+--------+------+---------+----------+---------------+-----------+
| e233e7f3-f33b-| testvol | in-use |   50 | default | false    | Attached to   |           |
| 4d7a-8f5b-785b|         |        |      |         |          | testsrv on    |           |
| 34f670bf      |         |        |      |         |          | /dev/vdb      |           |
+---------------+---------+--------+------+---------+----------+---------------+-----------+
```

In this example, this volume status is `in-use`, meaning it is currently attached to a server, and the volume type is `default`.

Detaching the volume

You cannot retype a volume while it is attached to a server. You must thus detach it first. It is safest to do this while the server is shut down:

```
$ openstack server stop testsrv

$ openstack server list -c Name -c Status
+---------+---------+
| Name    | Status  |
+---------+---------+
| testsrv | SHUTOFF |
+---------+---------+
```

Once your server is in the `SHUTOFF` state, you can safely proceed to detaching the volume. This will change the volume status from `in-use` to `available`.

```
$ openstack server remove volume testsrv testvol

$ openstack volume list
+-----------------------------------+---------+-----------+------+-------------+
| ID                                | Name    | Status    | Size | Attached to |
+-----------------------------------+---------+-----------+------+-------------+
| e233e7f3-f33b-4d7a-8f5b-785b34f670bf | testvol | available |   50 |             |
+-----------------------------------+---------+-----------+------+-------------+
```

Retyping the volume

With the volume safely detached, you can now change its volume type. If you were to change the volume type from `default` to `ceph_hdd`, you would proceed as follows:

```
$ openstack volume set --type ceph_hdd --retype-policy on-demand testvol

$ openstack volume list --long
+---------------+---------+---------+------+---------+---------+-------------+------------+
| ID            | Name    | Status  | Size | Type    | Bootable | Attached to | Properties |
+---------------+---------+---------+------+---------+---------+-------------+------------+
| e233e7f3-f33b | testvol | retyping |   50 | default | false   |             |            |
| -4d7a-8f5b-78 |         |         |      |         |         |             |            |
| 5b34f670bf    |         |         |      |         |         |             |            |
+---------------+---------+---------+------+---------+---------+-------------+------------+
```

Note that the volume status changes from `available` to `retyping`: this status change kicks off the actual data migration, which might take a significant amount of time.

Re-attaching the volume

If you attempt to re-attach the volume while it is still retyping, you will receive an error:

```
$ openstack server add volume testsrv testvol
BadRequestException: 400: Client Error for url: https://sto2.citycloud.com:8774/v2.1/
servers/b6a26b0e-f911-4ea2-8e45-51f16442da03/os-volume_attachments, Invalid input
received: Invalid volume: Volume e233e7f3-f33b-4d7a-8f5b-785b34f670bf status must be
available or downloading to reserve, but the current status is retyping. (HTTP 400)
(Request-ID: req-36c4f2e5-ef2f-4ff4-b912-0baed2594f4d)
```

You must now wait until the volume status changes back from `retyping` to `available`. One way to do this is with a bash `until` loop:

```
until [ `openstack volume show -f value -c status testvol` = "available" ]; do
  sleep 5
done
```

Once the volume has returned to the `available` status, you can re-attach it to the server:

```
$ openstack server add volume testsrv testvol
+---------------------+--------------------------------------+
| Field               | Value                                |
+---------------------+--------------------------------------+
| ID                  | d2a22868-a133-40a1-b1a6-0cbae3feaf8d |
| Server ID           | 23a391f7-57ba-4c7f-bdd1-d1b89d6e39b2 |
| Volume ID           | e233e7f3-f33b-4d7a-8f5b-785b34f670bf |
| Device              | /dev/vdb                             |
| Tag                 | None                                 |
| Delete On Termination | False                              |
+---------------------+--------------------------------------+
```

Finally, restart the server:

```
$ openstack server start testsrv

$ openstack server list -c Name -c Status
+---------+--------+
| Name    | Status |
+---------+--------+
| testsrv | ACTIVE |
+---------+--------+
```

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