Snapshot Instance 操作详解 - 每天5分钟玩转 OpenStack（36）

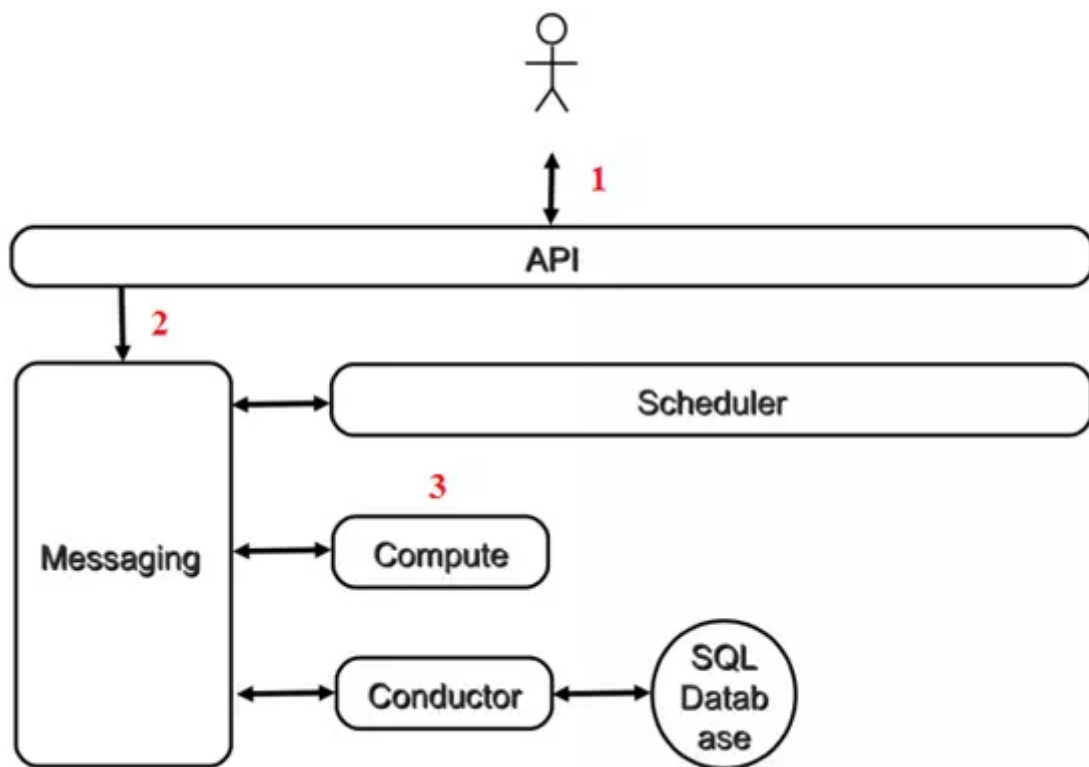原创：CloudMan CloudMan 2017-08-26

第36篇

Snapshot Instance 操作详解

本节我们通过日志详细讨论 instance 的 snapshot 操作。

有时候操作系统损坏得很严重，通过 Rescue 操作无法修复，那么我们就得考虑通过备份恢复了。当然前提是我们之前对instance做过备份。Nova 备份的操作叫 Snapshot，其工作原理是对 instance 的镜像文件（系统盘）进行全量备份，生成一个类型为 snapshot 的 image，然后将其保存到 Glance 上。

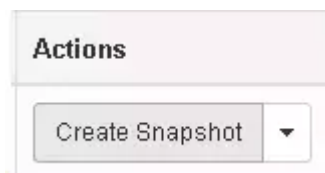从备份恢复的操作叫 Rebuild，<u>将在下一节重点讨论</u>。

下面是 snapshot instance 的流程图

1. 向 nova-api 发送请求

2. nova-api 发送消息

3. nova-compute 执行操作

下面我们详细讨论每一个步骤。

向 nova-api 发送请求

客户（可以是 OpenStack 最终用户，也可以是其他程序）向 API（nova-api）发送请求："对这个 Instance 做个快照"

Create Snapshot

Snapshot Name *

c1-snapshot

Description:

A snapshot is an image which preserves the disk state of a running instance.

Cancel   Create Snapshot

查看日志 /opt/stack/logs/n-api.log

```
2016-01-19 17:48:09.005 DEBUG nova.api.openstack.wsgi [req-facc29bd-0c4d-4b2
6-b13f-fcae07608969 admin admin] Action: 'action', calling method: <bound me
thod ServersController._action_create_image of <nova.api.openstack.compute.s
ervers.ServersController object at 0x7f151ce6ef90>>, body: {"createImage": {
"name": "c1-snapshot", "metadata": {}}} _process_stack /opt/stack/nova/nova/
api/openstack/wsgi.py:789
```

nova-api 发送消息

nova-api 向 Messaging（RabbitMQ）发送了一条消息："对这个Instance 做 快 照"。 源 代 码 在 /opt/stack/nova/nova/compute/api.py，方法是 snapshot。

```
2239    def snapshot(self, context, instance, name, extra_properties=None):
2240        """Snapshot the given instance.
2241
2242        :param instance: nova.objects.instance.Instance object
2243        :param name: name of the snapshot
2244        :param extra_properties: dict of extra image properties to include
2245                              when creating the image.
2246        :returns: A dict containing image metadata
2247        """
2248        image_meta = self._create_image(context, instance, name,
2249                                       'snapshot',
2250                                       extra_properties=extra_properties)
2251
2252        # NOTE(comstud): Any changes to this method should also be made
2253        # to the snapshot_instance() method in nova/cells/messaging.py
2254        instance.task_state = task_states.IMAGE_SNAPSHOT_PENDING
2255        instance.save(expected_task_state=[None])
2256
2257        self.compute_rpcapi.snapshot_instance(context, instance,
2258                                             image_meta['id'])
2259
2260        return image_meta
2261
```

nova-compute 执行操作

查看日志 /opt/stack/logs/n-cpu.log

暂停 instance

```
2016-01-19 17:48:09.485 INFO nova.compute.manager [req-facc29bd-0c4d-4b26-b1
3f-fcae07608969 admin admin] [instance: 0229842d-5872-4c77-a790-e3573e7abeca
] instance snapshotting
2016-01-19 17:48:09.605 DEBUG oslo_concurrency.processutils [req-facc29bd-0c
4d-4b26-b13f-fcae07608969 admin admin] Running cmd (subprocess): env LC_ALL=
C LANG=C qemu-img info /opt/stack/data/nova/instances/0229842d-5872-4c77-a79
0-e3573e7abeca/disk execute /usr/local/lib/python2.7/dist-packages/oslo_conc
urrency/processutils.py:250
2016-01-19 17:48:09.632 DEBUG oslo_concurrency.processutils [req-facc29bd-0c
4d-4b26-b13f-fcae07608969 admin admin] CMD "env LC_ALL=C LANG=C qemu-img inf
o /opt/stack/data/nova/instances/0229842d-5872-4c77-a790-e3573e7abeca/disk"
returned: 0 in 0.027s execute /usr/local/lib/python2.7/dist-packages/oslo_co
ncurrency/processutils.py:280
2016-01-19 17:48:09.651 DEBUG nova.virt.driver [req-e3f82c49-be12-4a4d-8a6a-
6dd39dcdc7bc None None] Emitting event <LifecycleEvent: 1453196889.65, 02298
42d-5872-4c77-a790-e3573e7abeca => Paused> emit_event /opt/stack/nova/nova/v
irt/driver.py:1303
2016-01-19 17:48:09.652 INFO nova.compute.manager [req-e3f82c49-be12-4a4d-8a
6a-6dd39dcdc7bc None None] [instance: 0229842d-5872-4c77-a790-e3573e7abeca]
VM Paused (Lifecycle Event)
```

对 instance 的镜像文件做快照

```
2016-01-19 17:48:10.674 INFO nova.virt.libvirt.driver [req-facc29bd-0c4d-4b2
6-b13f-fcae07608969 admin admin] [instance: 0229842d-5872-4c77-a790-e3573e7a
beca] Beginning cold snapshot process
2016-01-19 17:48:10.757 DEBUG oslo_concurrency.processutils [req-facc29bd-0c
4d-4b26-b13f-fcae07608969 admin admin] Running cmd (subprocess): qemu-img co
nvert -f qcow2 -O qcow2 /opt/stack/data/nova/instances/0229842d-5872-4c77-a7
90-e3573e7abeca/disk /opt/stack/data/nova/instances/snapshots/tmpGI9NX0/5ba2
f8cea1b04c618c1e54d6f5eae6d5 execute /usr/local/lib/python2.7/dist-packages/
oslo_concurrency/processutils.py:250
2016-01-19 17:48:10.943 DEBUG oslo_concurrency.processutils [req-facc29bd-0c
4d-4b26-b13f-fcae07608969 admin admin] CMD "qemu-img convert -f qcow2 -O qco
w2 /opt/stack/data/nova/instances/0229842d-5872-4c77-a790-e3573e7abeca/disk
/opt/stack/data/nova/instances/snapshots/tmpGI9NX0/5ba2f8cea1b04c618c1e54d6f
5eae6d5" returned: 0 in 0.185s execute /usr/local/lib/python2.7/dist-package
s/oslo_concurrency/processutils.py:280
```

恢复 instance

```
2016-01-19 17:48:11.860 INFO nova.compute.manager [req-e3f82c49-be12-4a4d-8a
6a-6dd39dcdc7bc None None] [instance: 0229842d-5872-4c77-a790-e3573e7abeca]
VM Started (Lifecycle Event)
2016-01-19 17:48:12.217 INFO nova.compute.manager [req-e3f82c49-be12-4a4d-8a
6a-6dd39dcdc7bc None None] [instance: 0229842d-5872-4c77-a790-e3573e7abeca]
VM Resumed (Lifecycle Event)
```

将快照上传到 Glance

```
2016-01-19 17:48:12.157 INFO nova.virt.libvirt.driver [req-facc29bd-0c4d-4b2
6-b13f-fcae07608969 admin admin] [instance: 0229842d-5872-4c77-a790-e3573e7a
beca] Snapshot extracted, beginning image upload
2016-01-19 17:48:12.715 INFO nova.virt.libvirt.driver [req-facc29bd-0c4d-4b2
6-b13f-fcae07608969 admin admin] [instance: 0229842d-5872-4c77-a790-e3573e7a
beca] Snapshot image upload complete
```

Snapshot 成功保存在 Glance 中

	Image Name	Type
	c1-snapshot	Snapshot

instance 备份成功，下节我们讨论如何通过 snapshot 恢复。