



**StorPool**  
DISTRIBUTED STORAGE

# Storage-based Snapshots for KVM VMs in CloudStack

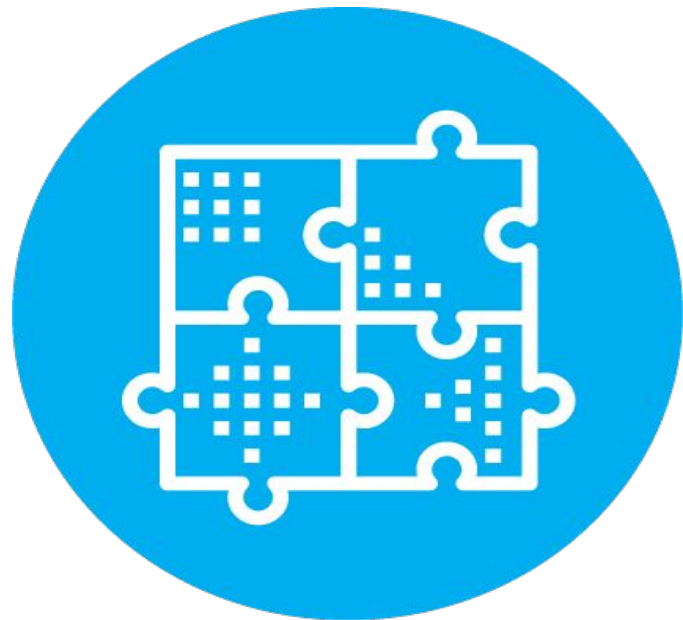
# About me | Slavka Peleva



- Java developer at StorPool Storage
- Experience in software engineering
- Development of software solutions for telcos and companies like Nokia
- Hobbies – winter sports, roller blades

# New feature in CloudStack

- Using Storage providers' implementation
- VM snapshots over the disks snapshots



# Snapshots in CloudStack for KVM

- Two types of snapshots
  - VM snapshots
  - Disk/Volume snapshots

# Virtual machine snapshots

- Includes - all disks, memory and virtual machine state
- Works with libvirt
- Only qcow format

# Disk/volume snapshots

- Snapshot of a single disk of the virtual machine
- Could be taken in any state of the VM
- Third party plugins
- Default implementation

# Only qcow supported

```
if (userVmVo.getHypervisorType() == HypervisorType.KVM && volume.getFormat() != ImageFormat.QCOW2) {  
    throw new CloudRuntimeException("We only support create vm snapshots from vm with QCOW2 image");  
}
```

- Cannot snapshot VM with raw disks
- Internal snapshots - qcow only
- VM has to be paused during the process
- Not recommended for public server

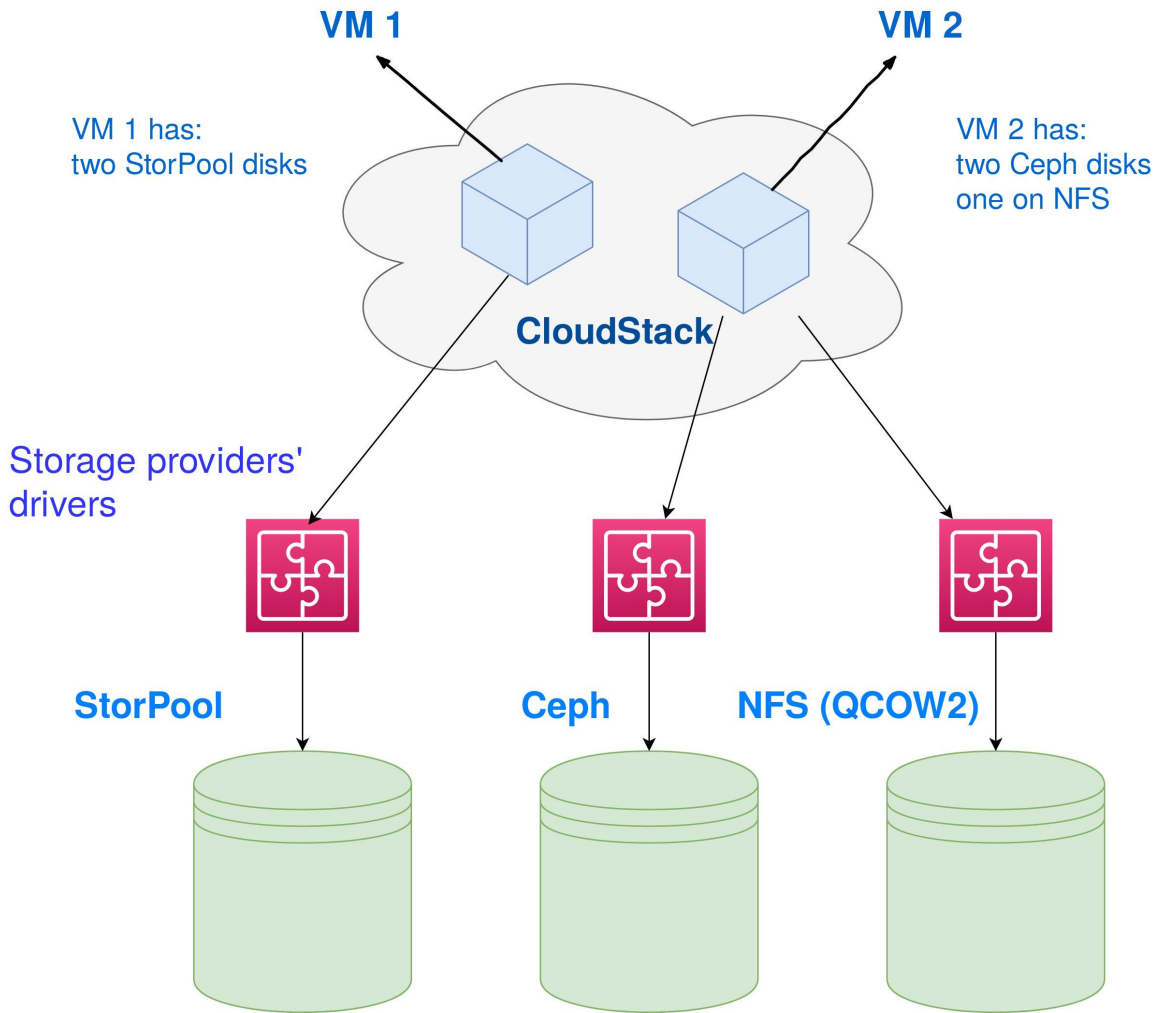
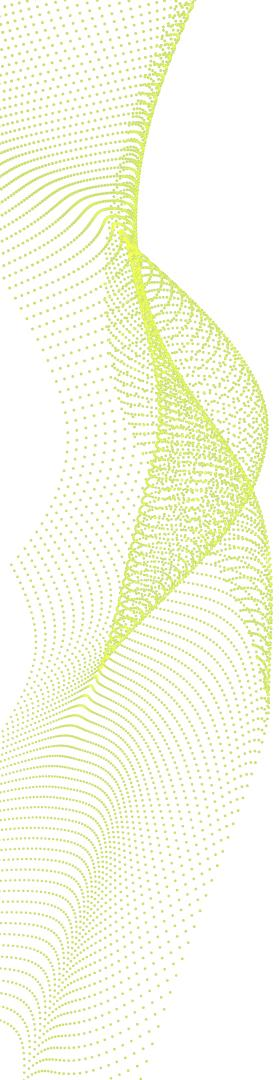
# How to create consistent snapshots for raw images

- Virtual machine has to be stopped
- Time consuming



# Our solution

- Employing the underlying Storage provider's capability to create, revert and delete disk snapshots
- Independent of the image format
- Consistent snapshots while VM is running



# How does it work

- Global setting **“kvm.vmsnapshot.enabled”**
- Saves time and space
- Freeze virtual machine
- Snapshotting is asynchronous
- Unfreeze virtual machine

Details

✕ 🔄 📷

**ID** 0c0fbe45-8379-4514-872d-b94951159cf8

**Name** i-2-41-VM\_VS\_20191021115232

**Display Name** firstSnapshot

**Type** Disk

**Description**

**State** Ready

**IsCurrent** Yes

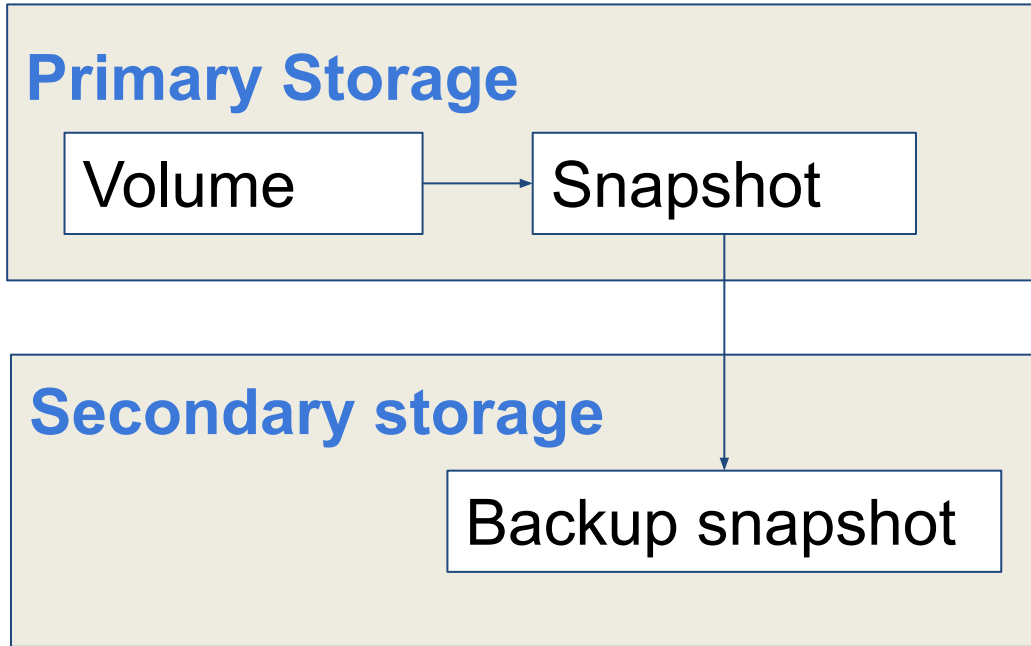
**Parent**

**Domain** ROOT

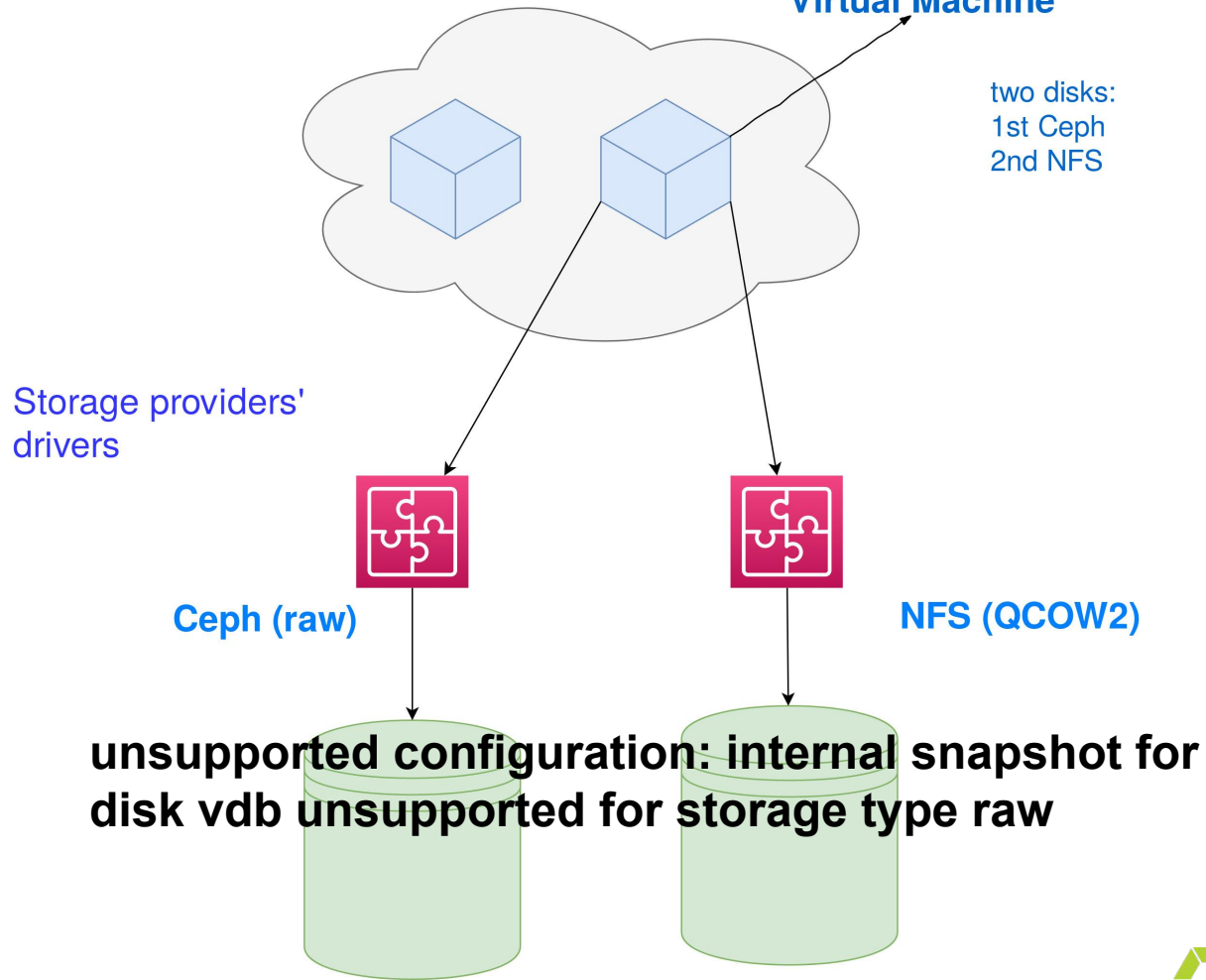
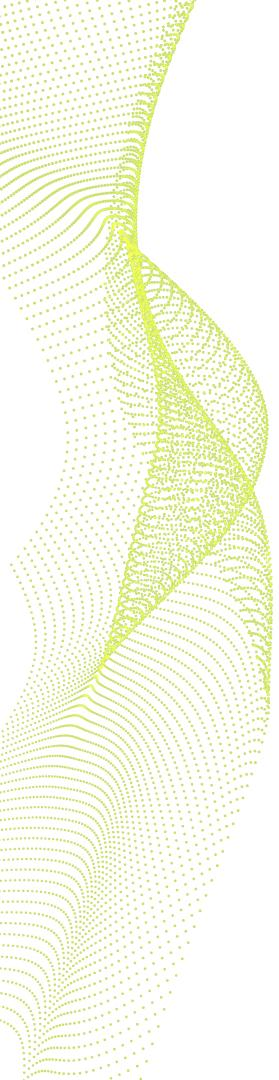
Volume	Name	Interval Type	Created	State	Quickview
ROOT-41	0c0fbe45-8379-4514-872d-b94951159cf8_e31bfff-eaf5-45dd-8948-d4821b4ac988	MANUAL	21 Oct 2019 11:52:32	🟡 BackedUpFor VM	+

Volume	Name	Interval Type	Created	State	Quickview
storpool1	0c0fbe45-8379-4514-872d-b94951159cf8_cace0416-b076-4cc2-8815-f2741500dd35	MANUAL	21 Oct 2019 11:52:33	🟡 BackedUpFor VM	+

# Backup snapshots







# Slow for disks in qcow format

- qemu command:
  - **drive-backup**
- Makes a full copy of disk
- Backup is slow for qcow images on default implementation



# Cannot take VM state and memory

- Without VM state
- Without VM memory

# Works with different Storage providers

- Works with NFS/Ceph/StorPool
- Revert of Ceph's disks was tested with the fix #3605 'Revert Ceph/RBD Snapshot' raised and fixed by Gabriel Beims Bräscher

# What you will need?

- `qemu-guest-agent` on guest machine
- Drive-backup appears in qemu **1.6** version
  - default `qemu-kvm` package on CentOS 7 - qemu **1.5**
  - `qemu-kvm-ev` package on CentOS 7 - qemu **2.12**
  - `qemu-kvm` in Ubuntu 18.04 LTS - qemu **2.11**

# For everybody who uses StorPool with CloudStack

- Group snapshot for VM with Storpool's disks
- Do not need additional software



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**Thank you!**



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