

JOURNEES MATHRICE OCTOBRE 2020

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KVM LIVE DISK BACKUP
WITH ACTIVE BLOCK COMMIT

BACKUP

BACKUP / PRINCIPLE

1. SNAPSHOT ALL DISKS ATOMICALLY

- ▶ the disks files are freezed; modifications goes to overlay files until pivoting back.

2. COPY ALL DISKS

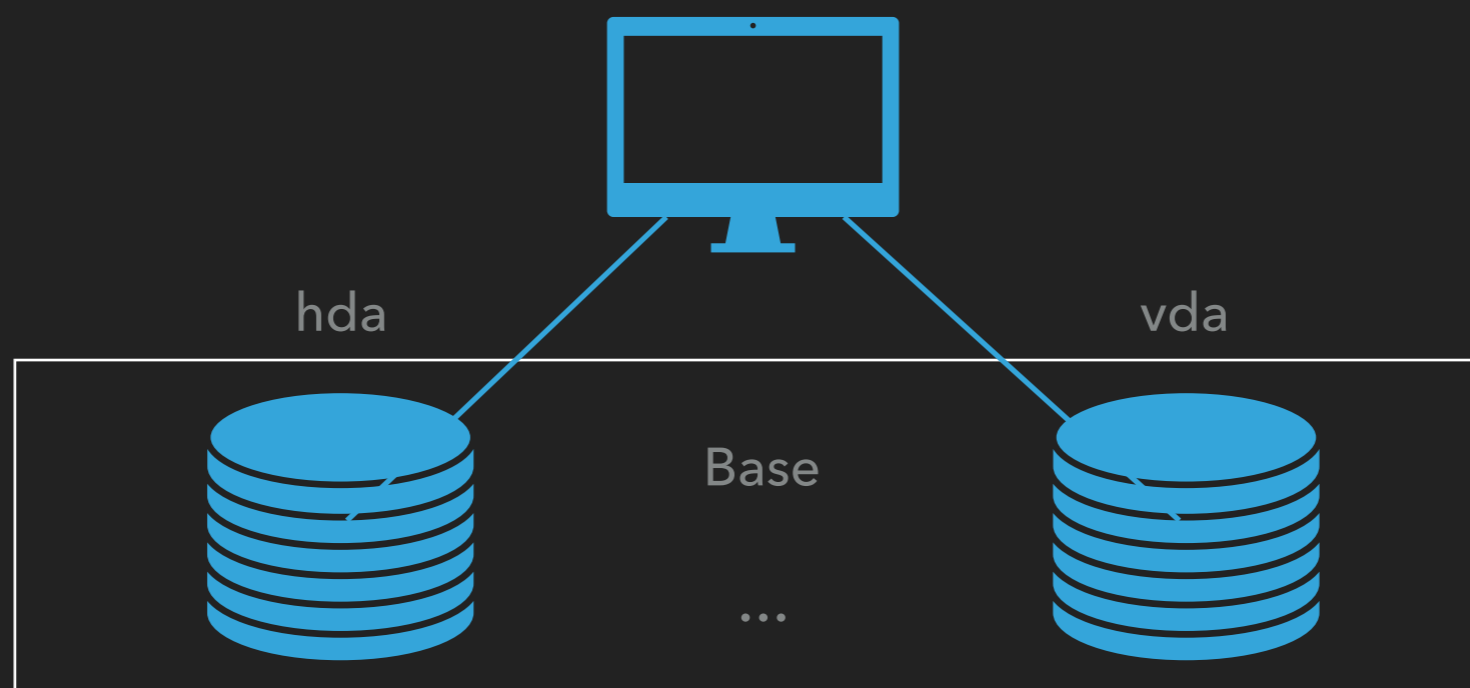
- ▶ copy all freezed disks files (cp, scp, rsync)

3. PIVOT ALL DISKS

- ▶ commit modifications from the overlay files to the freezed files

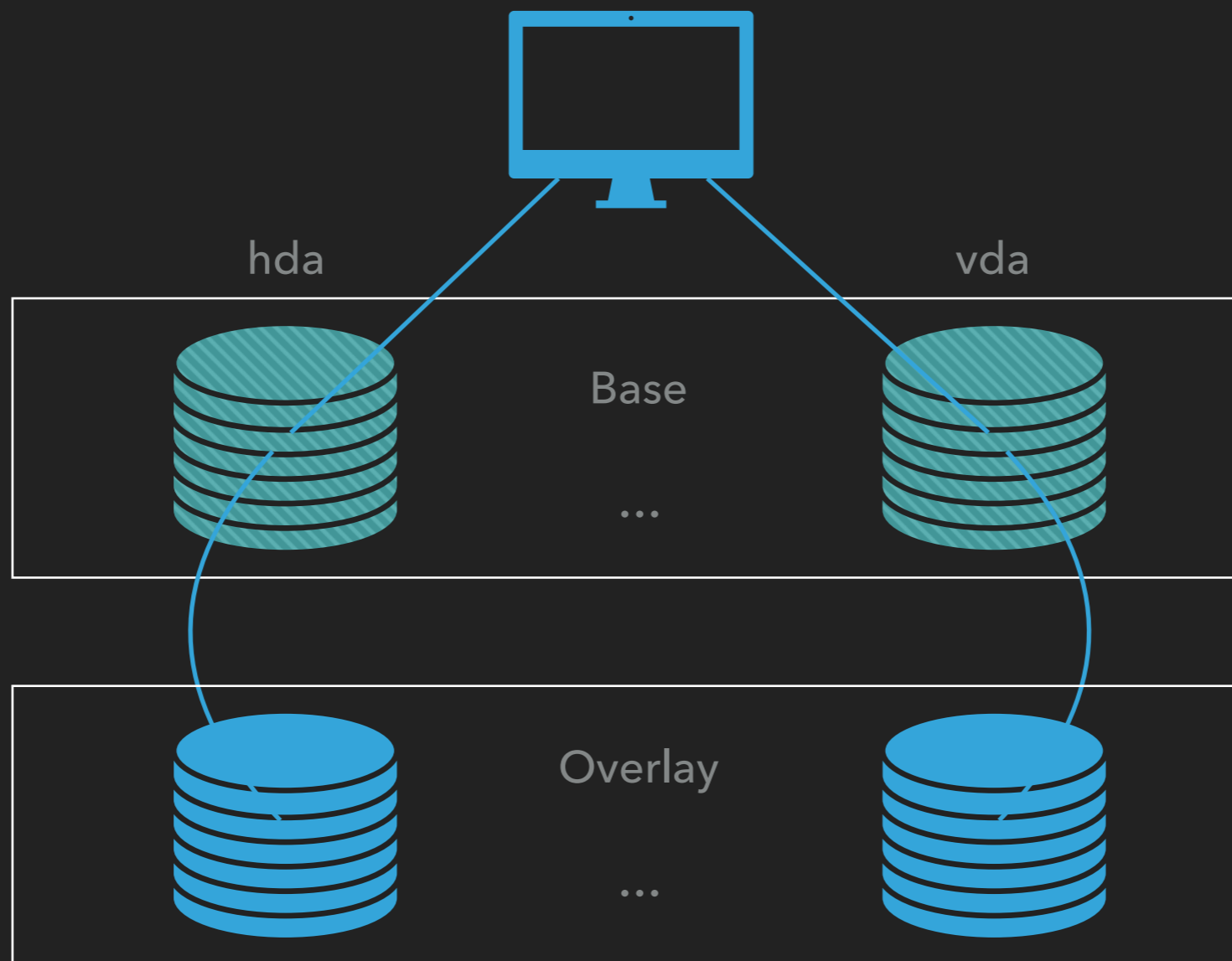
4. REMOVE OVERLAY FILES

BACKUP : EXPORT AN XML DOMAIN CONFIG



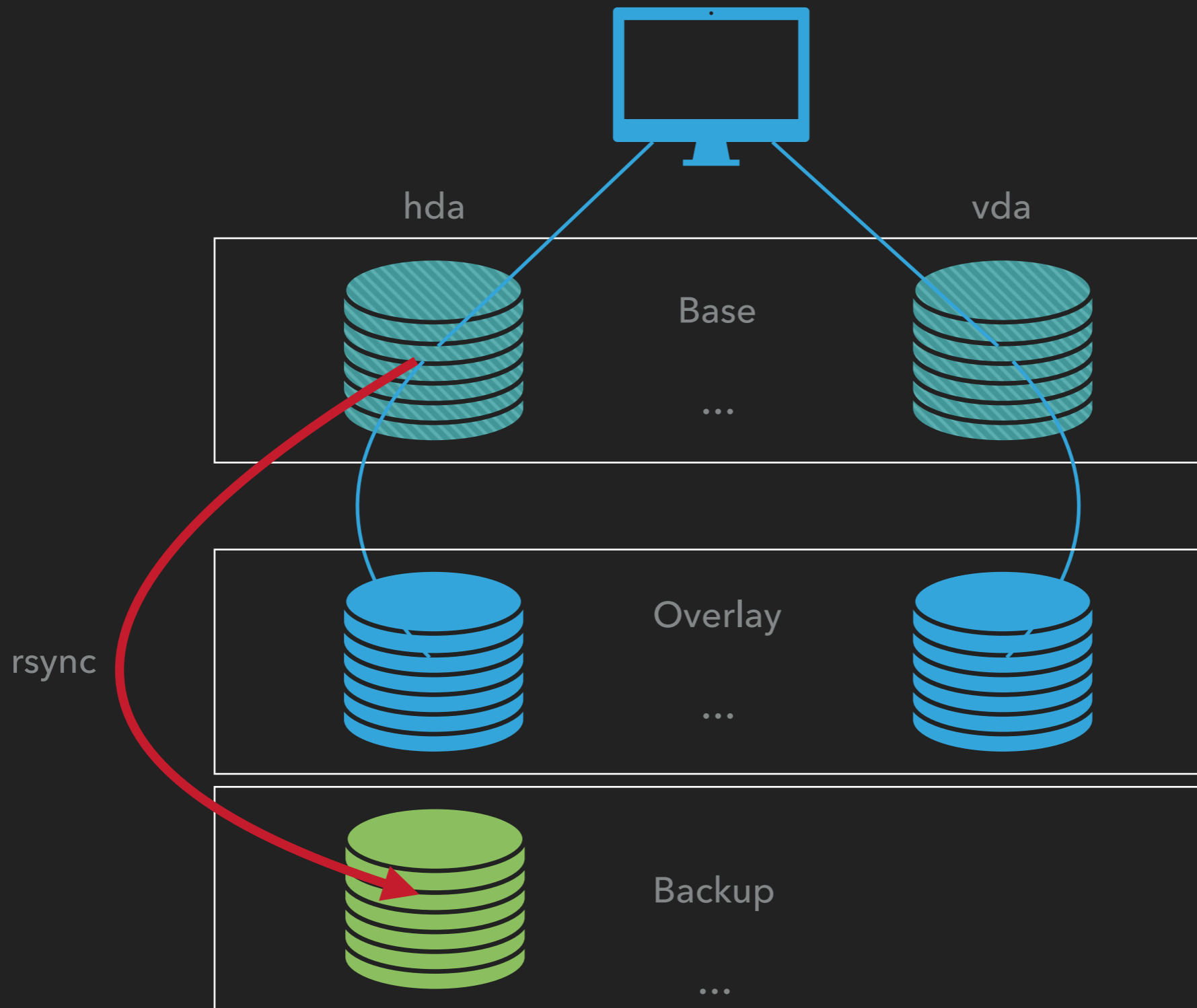
```
virsh dumpxml --domain photon | tee /var/lib/libvirt/backup/backup_2020-02-05_14-02-06.xml
```

BACKUP : SNAPSHOT ALL DISKS ATOMICALLY

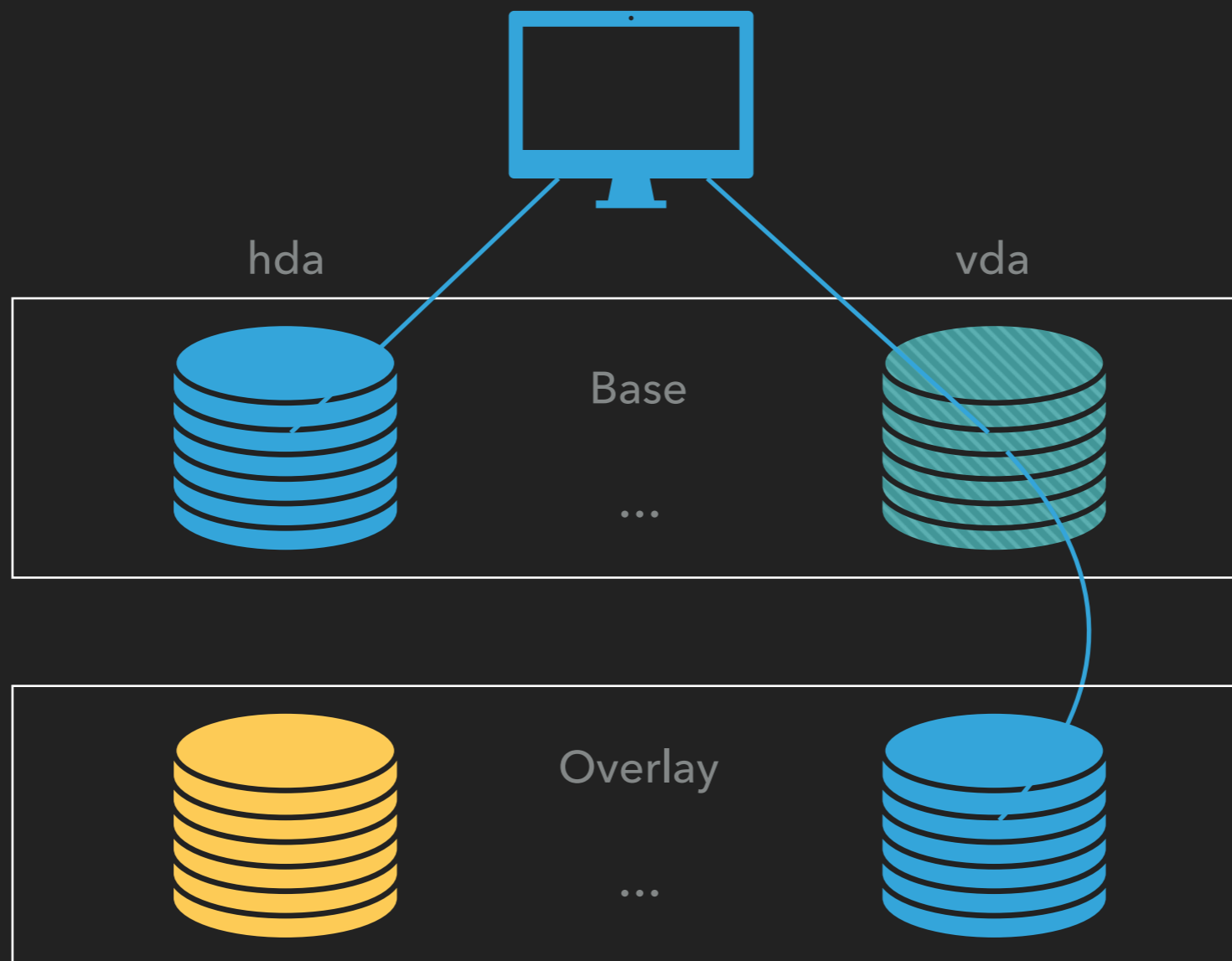


```
virsh snapshot-create-as --domain photon2 'live-backup-snapshot_2020-02-05_14-02-06'  
--diskspec vda,file=/var/lib/libvirt/images/photon2-1.qcow2_2020-02-05_14-02-06.overlay  
--diskspec hda,file=/var/lib/libvirt/images/photon2.qcow2_2020-02-05_14-02-06.overlay  
--diskonly  
--atomic
```

BACKUP : COPY THE FIRST BASE DISK

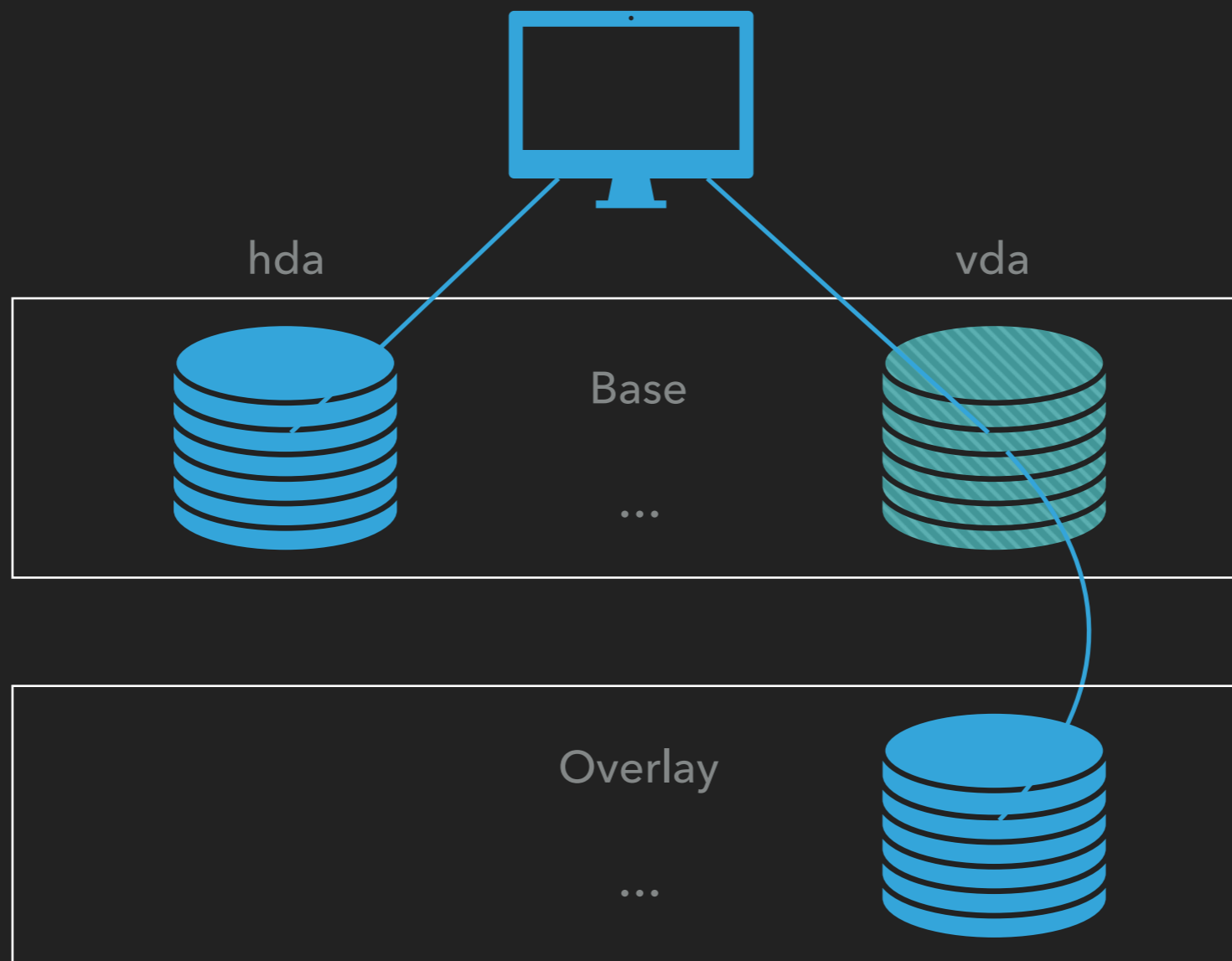


BACKUP : PIVOT THE FIRST DISK FROM OVERLAY TO BASE



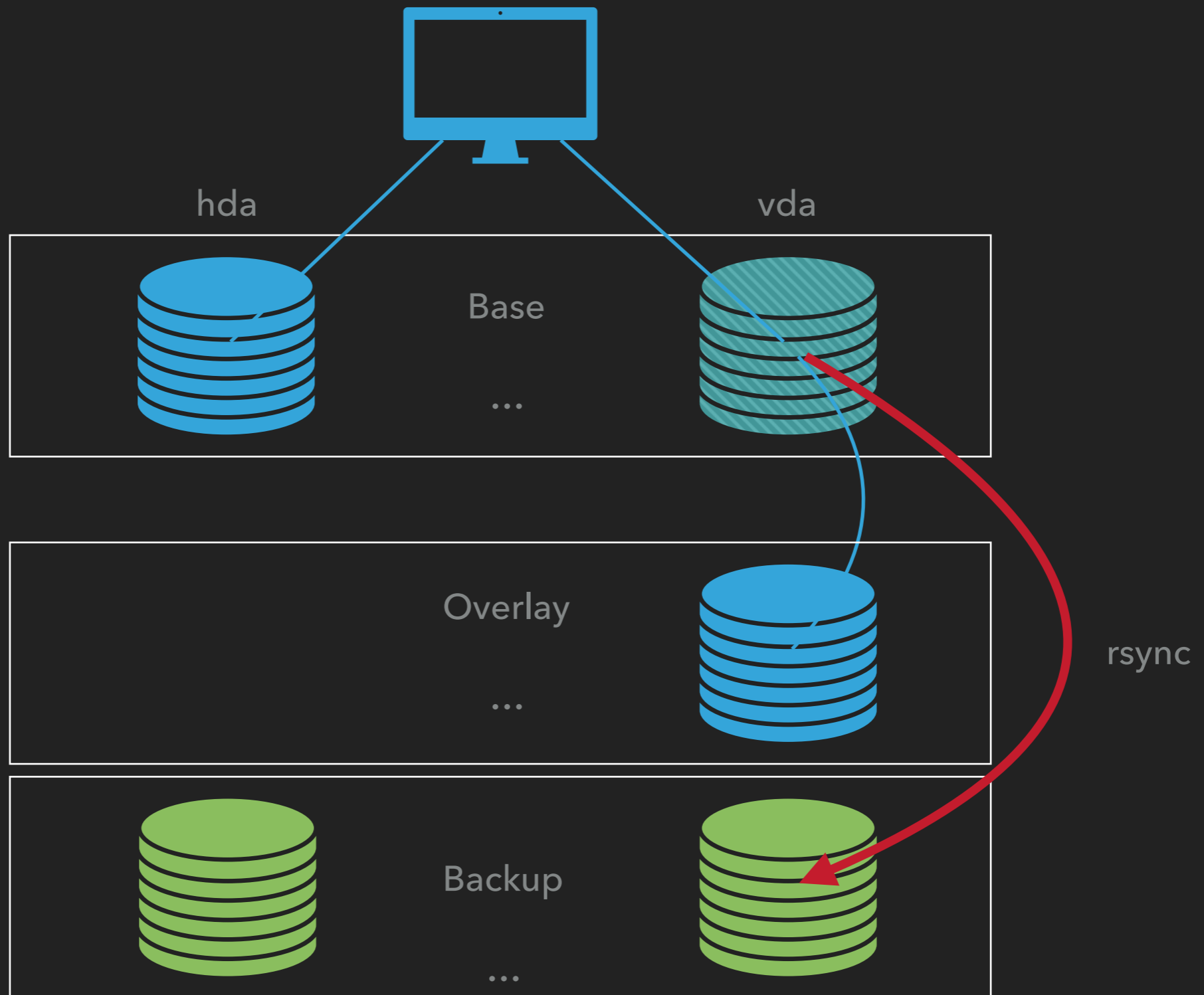
```
virsh blockcommit photon hda --active --verbose --pivot
```

BACKUP : REMOVE THE UNUSED OVERLAY

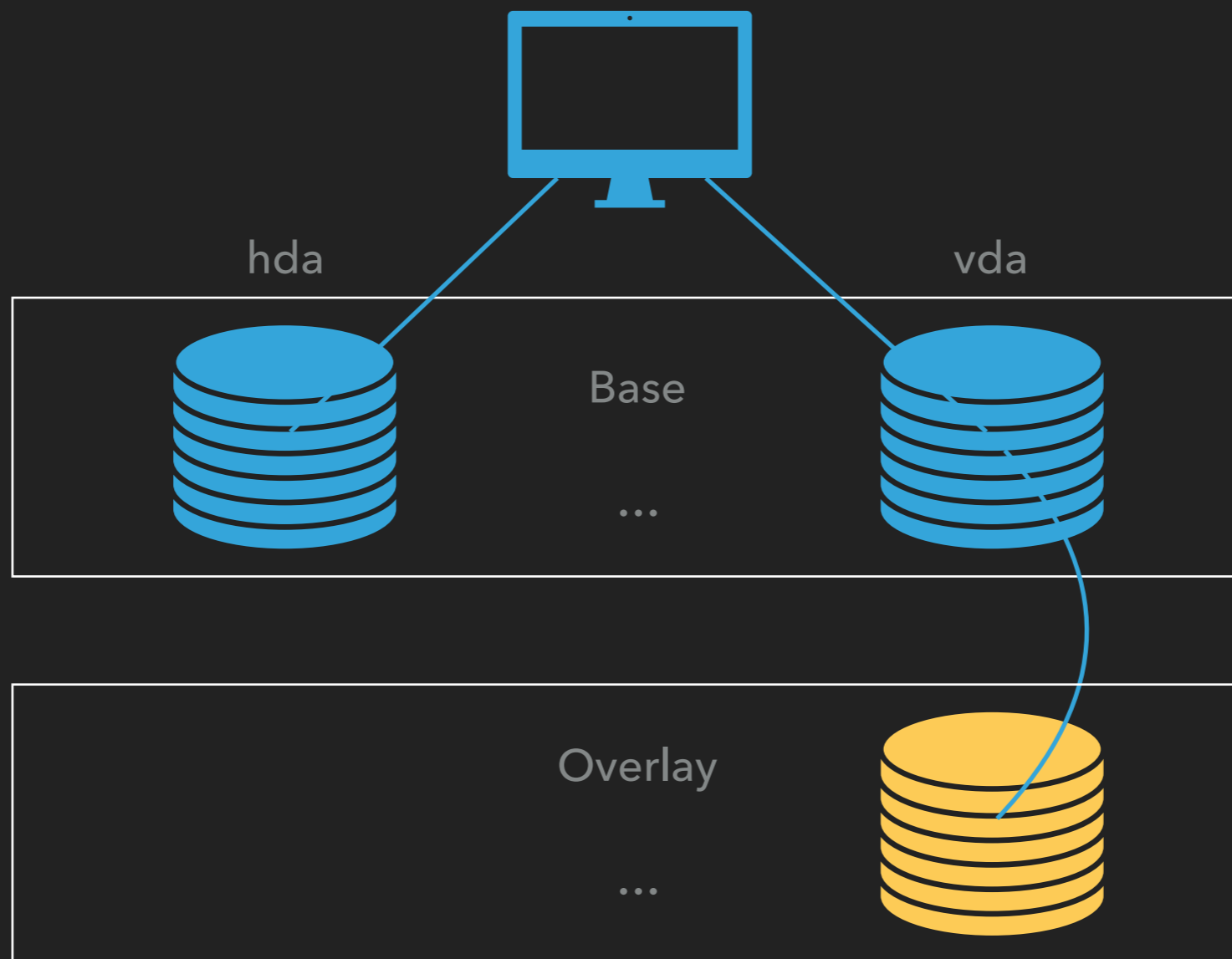


```
rm /var/lib/libvirt/images/photon2.qcow2_2020-02-05_14-02-06.overlay
```


BACKUP : REPEAT FOR ALL DISKS

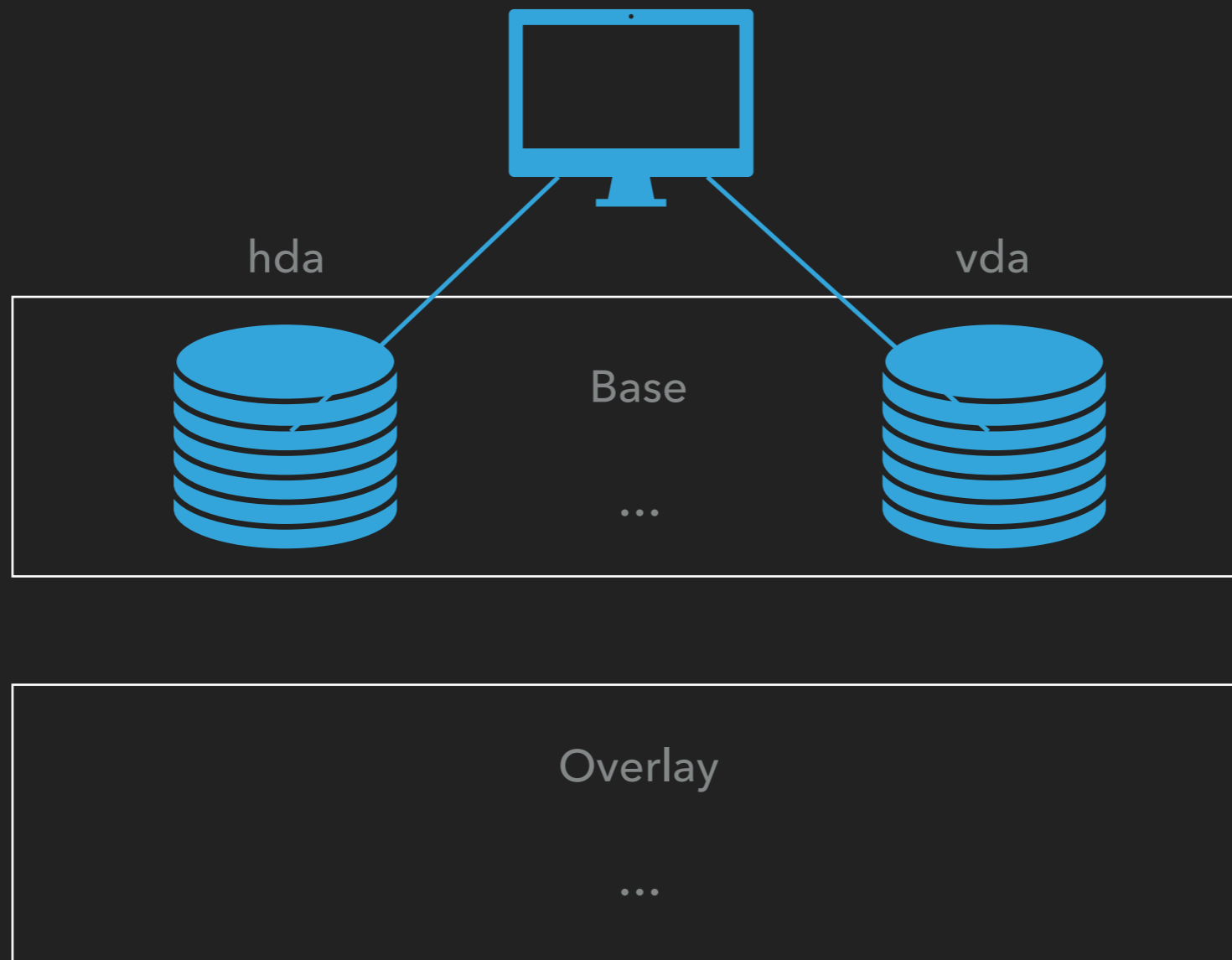


BACKUP : PIVOT THE LAST DISK FROM OVERLAY TO BASE



```
virsh blockcommit photon vda --active --verbose --pivot
```

BACKUP : REMOVE THE UNUSED OVERLAY



```
rm /var/lib/libvirt/images/photon2-1.qcow2_2020-02-05_14-02-06.overlay
```

RESTORE

RESTORE

- ▶ `virsh define /var/lib/libvirt/backup/2020/02/21/photon2/config.xml`
- ▶ `cp /var/lib/libvirt/backup/2020/02/21/photon2/photon2.qcow2 /var/lib/libvirt/images/`
- ▶ `cp /var/lib/libvirt/backup/2020/02/21/photon2/photon2-1.qcow2 /var/lib/libvirt/images/`

CONFIG-FILE

KVM LIVE DISK BACKUP WITH ACTIVE BLOCK COMMIT

CONFIG-FILE

```
{  
  "DEBUG": "true",  
  "PRINT_DISK_VARIABLES": "true",  
  "SKIP_BACKUP": "true",  
  "HYPERVISOR_USER": "root",  
  "HYPERVISOR_HOSTS": [ "hyper1", "hyper2", "hyper3" ],  
  "DOMAIN_EXCLUSION": [ "test" ],  
  "BACKUP_USER": "root",  
  "BACKUP_HOST": "backup1.storages",  
  "BACKUP_BASE_PATH": "/mnt/das-01/kvm-live-backup",  
  "IDENTITY_FILE_KLB_TO_HYPERVISOR_BASE64": "XXXX",  
  "IDENTITY_FILE_KLB_TO_BACKUP_BASE64": "YYYY",  
}
```

USAGE

KVM LIVE DISK BACKUP WITH ACTIVE BLOCK COMMIT

USAGE

```
#!/usr/bin/env bash
function main {
    local -r log_dir='./log'
    local -r known_hosts='.ssh/known_hosts'
    local -r config_file='klb-config.json'
    local -r klb_container_image='registry.plmlab.math.cnrs.fr/david.delavennat/kvm-live-backup-
with-active-block-commit:dev'
    local -r timestamp="$( date '+%Y-%m-%d_%H-%M-%S' )"

    mkdir -p "${log_dir}"
    podman container run --interactive --tty --rm \
        --volume "./run/${known_hosts}:/home/klb/${known_hosts}:ro" \
        --volume "./${config_file}:/home/klb/${config_file}:ro" \
        --volume '/etc/localtime:/etc/localtime:ro' \
        --volume '/etc/timezone:/etc/timezone:ro' \
        "${klb_container_image}" \
    | tee "${log_dir}/kvm-live-backup_${timestamp}.log'
}
main
```

TOOLS

TOOLS

- ▶ `virsh dumpxml`
 - ▶ retrieve a kvm domain configuration in XML format
- ▶ `oq`
 - ▶ convert XML to JSON before filtering with `jq`
- ▶ `jq`
 - ▶ manipulate JSON data using filters

LINKS

- ▶ <https://wiki.libvirt.org/page/Live-disk-backup-with-active-blockcommit>
- ▶ <https://libvirt.org/virshcmdref.html>
- ▶ <https://github.com/Blacksmoke16/oq>
- ▶ <https://github.com/stedolan/jq>
- ▶ <https://www.gnu.org/software/bash/manual/bash.pdf>
- ▶ <https://plmlab.math.cnrs.fr/david.delavennat/kvm-live-disk-backup-with-active-block-commit>
- ▶ <https://plmlab.math.cnrs.fr/david.delavennat/klb-keyscan>
- ▶ <https://plmlab.math.cnrs.fr/docker-images/bash-bundler>