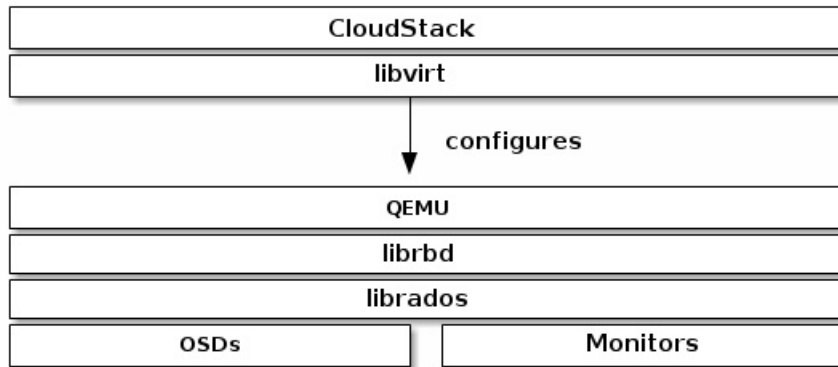


BLOCK DEVICES AND CLOUDSTACK

You may use Ceph block device images with CloudStack 4.0 and higher through libvirt, which configures the QEMU interface to librbd. Ceph stripes block device images as objects across the cluster, which means that large Ceph block device images have better performance than a standalone server!

To use Ceph block devices with CloudStack 4.0 and higher, you must install QEMU, libvirt, and CloudStack first. We recommend using a separate physical host for your CloudStack installation. CloudStack recommends a minimum of 4GB of RAM and a dual-core processor, but more CPU and RAM will perform better. The following diagram depicts the CloudStack/Ceph technology stack.



Important: To use Ceph block devices with CloudStack, you must have a running Ceph cluster.

CloudStack integrates with Ceph's block devices to provide CloudStack with a back end for CloudStack's Primary Storage. The instructions below detail the setup for CloudStack Primary Storage.

Note: We recommend installing with Ubuntu 12.04 or later so that you can use package installation instead of having to compile QEMU from source.

Installing and configuring QEMU for use with CloudStack doesn't require any special handling. Ensure that you have a running Ceph cluster. Install QEMU and configure it for use with Ceph; then, install libvirt version 0.9.13 or higher (you may need to compile from source) and ensure it is running with Ceph.

1. [Install and Configure QEMU](#).
2. [Install and Configure libvirt](#) version 0.9.13 or higher.
3. Also see [KVM Hypervisor Host Installation](#).

Note: Raring Ringtail (13.04) will have libvirt version 0.9.13 or higher by default.

CREATE A POOL

By default, Ceph block devices use the rbd pool. Create a pool for CloudStack NFS Primary Storage. Ensure your Ceph cluster is running, then create the pool.

```
ceph osd pool create cloudstack
```

See [Create a Pool](#) for details on specifying the number of placement groups for your pools, and [Placement Groups](#) for details on the number of placement groups you should set for your pools.

ADD PRIMARY STORAGE

To add primary storage, refer to [Add Primary Storage \(4.0.0\)](#) or [Add Primary Storage \(4.0.1\)](#). To add a Ceph block device, the steps include:

1. Log in to the CloudStack UI.

2. Click **Infrastructure** on the left side navigation bar.
3. Select the Zone you want to use for Primary Storage.
4. Click the **Compute** tab.
5. Select **View All** on the *Primary Storage* node in the diagram.
6. Click **Add Primary Storage**.
7. Follow the CloudStack instructions.
 - For **Protocol**, select RBD.
 - Add cluster information (cephx is supported).
 - Add rbd as a tag.

CREATE A DISK OFFERING

To create a new disk offering, refer to [Create a New Disk Offering \(4.0.0\)](#) or [Create a New Disk Offering \(4.0.1\)](#). Create a disk offering so that it

matches the rbd tag. The StoragePoolAllocator will choose the rbd pool when searching for a suitable storage pool. If the disk offering doesn't match the rbd tag, the StoragePoolAllocator may select the pool you created (e.g., cloudstack).

LIMITATIONS

- CloudStack will only bind to one monitor.
- CloudStack does not support cloning snapshots.
- You may need to compile libvirt to use version 0.9.13 with Ubuntu.