Power your OpenStack Storage for Guaranteed QoS

Using CloudByte ElastiStor

Introduction

OpenStack

OpenStack is one of the leading open source cloud computing software platform. It is deployed as Infrastructure-as-a-Service (IaaS) solution to create and manage cloud services. It is extensively used for creating private and public clouds.

OpenStack software controls large pools of compute, storage, and networking resources throughout a datacenter, managed through a dashboard or via the OpenStack API.

But wait; have you thought about the assurance that you have on the Quality of Service?

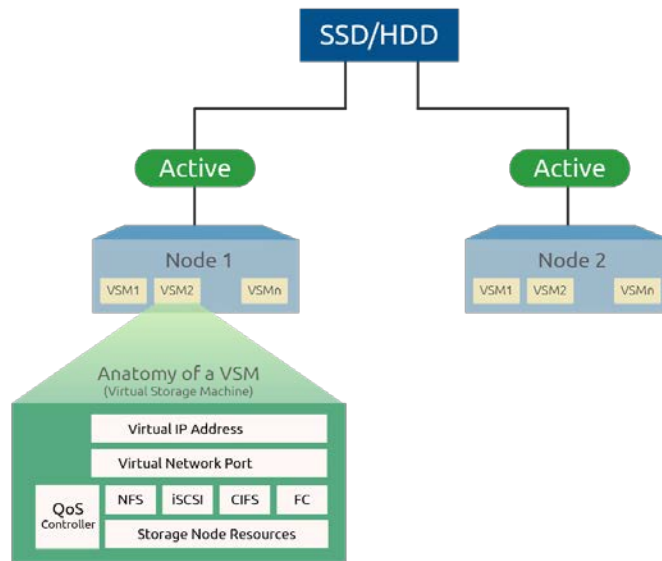## All is great, except for the legacy approach to storage

When it comes to Quality of Service, the basic issue to overcome in OpenStack is that it is built from ground up to expect storage to be preallocated by an administrator and then added as a Storage Volume.

All the VMs' root disks and data disks are meant to share a given storage Pool. Therefore, when you scale the VMs, each VM can't guarantee Quality of Service, making it a major management worry.

CloudByte VSM architecture enables storage admins to deliver tailored storage performance (IOPS, throughput, latency) and capacity to all the applications, sharing a common storage resource pool. An industry first, this capability eliminates the need for any storage fragmentation and the resultant exorbitant costs and management complexity.

All you need to do as an administrator is to know the quantity of IOPS, throughput, and latency that your application needs. Once you configure them on ElastiCenter, a VSM is spawned on an appropriate physical node to deliver those tailored QoS parameters.

In a large-scale cloud infrastructures, it is all too easy for one application to consume a disproportionate amount of storage resources. This creates a scenario where many applications suffer performance degradation at unpredictable intervals. In fact this drawback is what hinders the enterprises to move their mission-critical applications to the cloud these days.
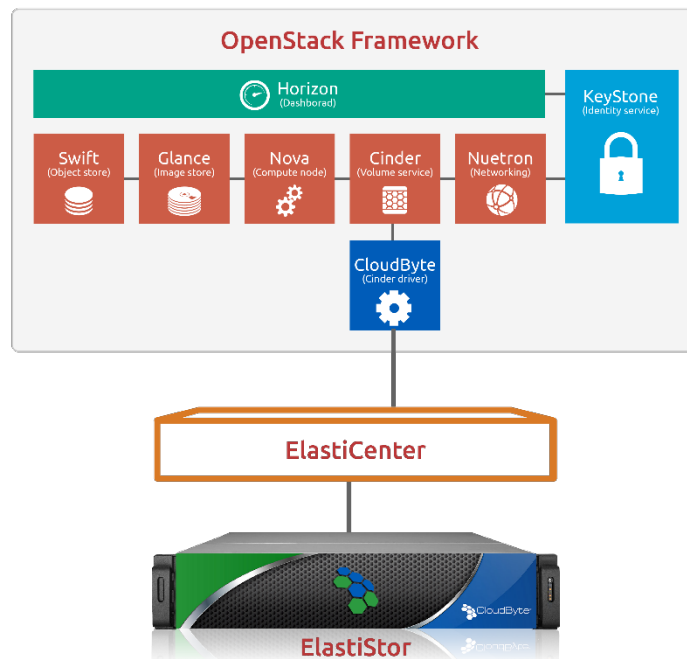
Augmenting OpenStack with CloudByte ElastiStor

CloudByte offers a storage plug-in for OpenStack that addresses the QoS concerns in the cloud environment.
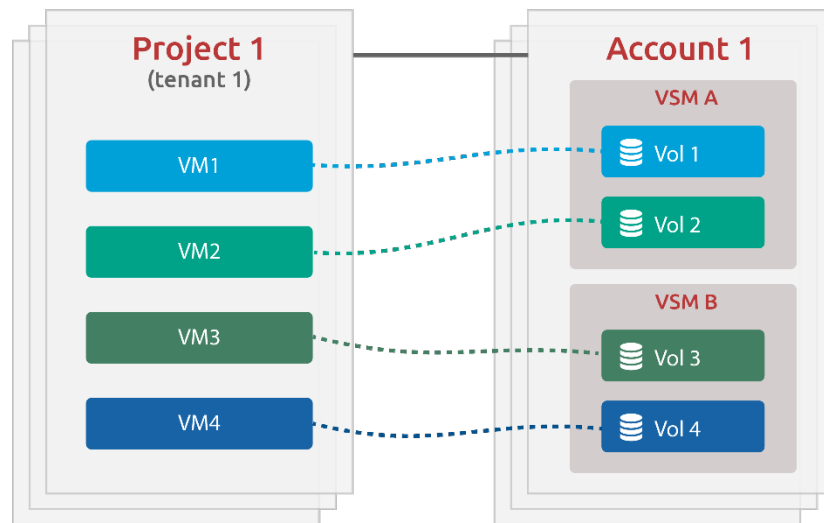
The plug-in rewires the storage framework to guarantee QoS to every VM. It sets up a one to one mapping between a CloudByte's VSM powered Storage Volume to a VM's disk, eliminating the noisy neighbor issue.

Integration architecture

As illustrated in the following diagram, CloudByte resolves the noisy neighbor issue by creating a one-to-one mapping with its Storage Volumes to the VMs on OpenStack.

You have a dedicated Volume for each VM that guarantees QoS. The VSM powered CloudByte Storage Volume is directly mapped to OpenStack Volume. Therefore, each VM can be tiered in to different IOPS and sizes.

CloudByte ElastiStor Plug-in features

- Guarantees QoS for each VM disk thereby eliminating the noisy neighbor issue.
- Supports resizing of the Volume.
- Can change the Volume IOPS on the fly as per the requirement.
- QoS-guaranteed storage support for all major hypervisors such KVM.
- Support for storage level snapshots and hypervisor level snapshots.
- Easy management. For details see the following section.

Easy Management using OpenStack dashboard

CloudByte ElastiStor REST APIs provide a bundle of functions that encompasses all the features in the CloudByte ElastiStor Administrator Console (CloudByte ElastiCenter).

An OpenStack Administrator can provision all the virtual storage infrastructure of CloudByte ElastiStor from the OpenStack dashboard itself. The following screen illustrates this.

How to integrate CloudByte ElastiStor with OpenStack

The procedures to integrate CloudByte ElastiStor with OpenStack are elaborately documented at the following URL:

http://www.docs.cloudbyte.com/plug-ins/cloudbyte-elastistor-plugin-for-openstack/

Further reading

- **Guaranteed QoS for shared storage**
  Learn how CloudByte ElastiStor guarantees QoS right from shared storage.
- **CloudByte ElastiStor REST APIs**
  CloudByte ElastiStor provides REST APIs to configure and manage ElastiStor Node. You can build your own GUI to manage the Nodes.

- **Virtual Storage Machines**
  Know more about the patent-pending VSM architecture.