Integration of Virtual SAN w/ Apache CloudStack

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About me

- Sateesh Chodapuneedi
- Apache committer
- Software Engineer @Accelerite™
- 5+ years of Apache CloudStack development
- Earlier involved in OpenStack development. Introduced VMware support in OpenStack
- Worked on storage virtualization, data protection and disaster recovery technologies
Primary Storage in CloudStack

- Stores volumes, VM snapshots
- Scope
  - Local storage
  - Cluster wide storage
  - Zone wide storage
- Protocols for VMware hypervisor
  - NFS
  - VMFS
  - VSAN (not yet supported)
What is Virtual SAN (VSAN)

The Basics

- Hyper-converged storage
- Runs on any standard x86 server
- Policy-based management framework
- Embedded in vSphere kernel
- High performance flash architecture
- Built-in resiliency
- Deep integration with VMware stack
- Linear and Granular scaling
- Low TCO
Policy based storage management

Per VM Storage Policies

Policies Set Based on Application Needs
- Capacity
- Performance
- Availability

Software Automates Control of Service Levels
- VM
- VM
- VM

Storage Policy-Based Management
- vSphere + Virtual SAN
- SLAs
- Virtual SAN Shared Datastore

No more LUNs/Volumes!
Integration with Apache CloudStack

- Support VSAN datastore as cluster wide primary storage in CloudStack
  - Seamless orchestration of volumes on VSAN primary storage
  - Volume life cycle operations over VSAN primary storage
- Enable policy based storage management
  - Volume level
  - Instance (VM) level
Storage Policy Association

✓ Admin **specifies** the storage policy in **disk/service offering**
✓ CloudStack **queries** vCenter for storage policy
✓ CloudStack **assigns** the storage policy to volume or instance (VM) based on the operation
Storage Policy Update

✓ Admin creates another disk offering with different storage policy
✓ A volume’s disk offering can be switched to another disk offering which contains new storage policy
✓ CloudStack assigns storage policy specified in new disk offering
Demo - VSAN integration

✓ Define storage policy
✓ Deploy instance on VSAN primary storage
✓ Create volume on VSAN primary storage
✓ Attach volume to instance
✓ Verify policy settings
✓ Verify storage policy compliance
Limitations

✓ No zone wide primary storage
✓ Storage option
  ✓ Only unmanaged storage option right now
  ✓ Managed storage integration yet to be done