Live migration of instances

* To migrate running instances from one Compute server to another Compute server.
* WHY?

-when you need to upgrade or installing patches to hypervisors/BIOS and you need the machines to keep running; for example, when one of HDD volumes RAID or one of bonded NICs is out of order.

-for regular periodic maintenance, you may need to migrate VM instances. When many VM instances are running on a specific physical machine, you can redistribute the high load.

-Sometimes when VM instances are scattered, you can move VM instances to a physical machine to arrange them more logically

The live migration feature is useful when you need to upgrade or installing patches to hypervisors/BIOS and you need the machines to keep running; for example, when one of HDD volumes RAID or one of bonded NICs is out of order. Also for regular periodic maintenance, you may need to migrate VM instances. When many VM instances are running on a specific physical machine, you can redistribute the high load. Sometimes when VM instances are scattered, you can move VM instances to a physical machine to arrange them more logically.

**Prerequisites**

* **OS:**Ubuntu 10.04 or 12.04
* **Shared storage:** NOVA-INST-DIR/instances/ (eg /var/lib/nova/instances) has to be mounted by shared storage. This guide uses NFS but other options.
* **Instances:** Instance can be migrated with ISCSI based volumes
* **Hypervisor:** KVM with libvirt

**Example Nova Installation Environment**

* Prepare 3 servers at least; for example, HostA, HostB and HostC
* HostA is the "Cloud Controller", and should be running: nova-api, nova-scheduler, nova-network, nova-volume, nova-objectstore, nova-scheduler.
* Host B and Host C are the "compute nodes", running nova-compute.
* Ensure that, NOVA-INST-DIR (set with state\_path in nova.conf) is same on all hosts.
* In this example, HostA will be the NFSv4 server which exports NOVA-INST-DIR/instances, and HostB and HostC mount it.

**System configuration**

1. Configure your DNS or /etc/hosts and ensure it is consistent accross all hosts. Make sure that the three hosts can perform name resolution with each other. As a test, use the **ping** command to ping each host from one another.
2. $ ping HostA
3. $ ping HostB

$ ping HostC

1. configure the NFS server at HostA by adding a line to /etc/exports

$ NOVA-INST-DIR/instances HostA/255.255.0.0(rw,sync,fsid=0,no\_root\_squash)

Change the subnet mask (255.255.0.0) to the appropriate value to include the IP addresses of HostB and HostC. Then restart the NFS server.

$ /etc/init.d/nfs-kernel-server restart

$ /etc/init.d/idmapd restart

1. Set the 'execute/search' bit on your shared directory

On both compute nodes, make sure to enable the 'execute/search' bit to allow qemu to be able to use the images within the directories. On all hosts, execute the following command:

$ chmod o+x NOVA-INST-DIR/instances

1. Configure NFS at HostB and HostC by adding below to /etc/fstab

$ HostA:/NOVA-INST-DIR/instances /NOVA-INST-DIR/instances nfs4 defaults 0 0

Then ensure that the exported directory can be mounted.

$ mount -a –v

Finally, use the **nova live-migration** command to migrate the instances.

# nova live-migration bee83dd3-5cc9-47bc-a1bd-6d11186692d0 HostC

Migration of bee83dd3-5cc9-47bc-a1bd-6d11186692d0 initiated.