4 Node CEPH Cluster Settings

1) Configuring the Drives as Virtual drives.
2) Installing OS.
3) Post OS installation.
4) Partitioning the HDDs and SSDs.
5) Run Performance test on all drives.

1) Even before starting the OS installation, configure all the drives as virtual drives
   - These servers have HP smart array controller and can accommodate 12 drives.
   - Press F6 even before it prompts the BIOS option.
   - Create 12 different virtual drives.
   - Once the virtual drives are created, it will flash the number of drives connected when you restart the machine.

2) How to install CentOS on server (There are 3 options for this)
   - Using PXE server with Kickstart file.
   - Using Bootable drive with Kickstart file.
   - Using only Bootable drive.

I followed option 3 since setting PXE server just for 4 nodes is not useful.

- Download CentOS Minimal (.iso file)
- Download rufus-2.7 to create bootable drive.
- Create a bootable drive using above software.
- Now connect the bootable drive to the server, restart the machine
- After restart go to the BIOS using F8
- Change boot order to the connected USB drive
- Save the changes, it will restart the machine.

Now it will prompt to installation process

- Then select the drive on which the OS need to be installed, overwrite on the drive if it has existing files.
- Now go to the network settings, set both the 1 gig and 10 gig networks.
- Set the username and password.
- Hit Install.

3) Post OS installation
   - To see the network configuration, install net tools using below commands – "yum install net-tools"
   - "ifconfig" to check network configuration
   - To verify both 1 gig and 10 gig networks are working
     - ping -I (1 gig network IP) www.google.com
     - ping -I (10 gig network IP) www.google.com
   - yum install nano
   - yum install wget

4) Partitioning the HDDs and SSDs.
   - In order to do some performance test we need to have a partition and file system on each drive.
   - I assume the OS is on sda, so we don't need a file system and partition on sda.
   - To create a partition execute "fdisk /dev/sdb" or
     - (echo m; echo n; echo p; echo 1; echo; echo; echo w) | sudo fdisk /dev/sdb
   - Now do "lsblk" to check the partition sdb1 created or not
   - Now to mount the file system "mkfs.xfs /dev/sdb1"
   - To create a directory on that particular partition
     - (This directory is only for one partition, need different directory for different partitions)
     - mkdir ceph1
     - mount /dev/sdb1 ceph1
   - Now do "lsblk" and you will see the directory ceph1 on partition sdb1.
   - Perform all above partitioning steps on all the 12 drives.
   - Now execute commands like lsblk, df, lsscsi, fdisk to verify all the attached drives and partitions on each drive.

5) Run Performance test on all drives
   - wget http://pkgs.repoforge.org/rpmforge-release/rpmforge-release-0.5.3-1.el6.rf.x86_64.rpm
   - rpm -i rpmforge-release-0.5.3-1.el6.rf.x86_64.rpm
   - yum install fio
   - cd ceph1
   - nano fiotest.fio

- Copy below content in fiotest.fio file

```
[global]
ioengine=posixaio
rw=readwrite
size=2g
directory=/root/ceph1
threads=1
[myReadWriteTest-Thread1]
```

- Execute “fio fiotest.fio” and you will get the test output

To set Jumbo Frames for communications

1) Ifconfig
2) Ifconfig “1 gig network name” mtu 9000
3) Ifconfig “10 gig network name” mtu 9000

If you are using HP servers, we need to install HPACUCLI

- HPACUCLI stands for HP Array Configuration Utility CLI
- HPACUCLI is used to create, delete and repair the logical and physical drives in the smart array controller in HP servers.
- To use HPACUCLI, download and install using below commands or install using latest version from HP website on your Linux server.

  wget ftp://ftp.hp.com/pub/softlib2/software1/pubsw-linux/p1257348637/v71527/hpacucli-9.10-22.0.x86_64.rpm
  yum install hpacucli-9.10-22.0.x86_64.rpm –y

- Refer this tutorial after successful installation
  http://www.thegeekstuff.com/2014/07/hpacucli-examples/
- Set Smart Array P410i caching ratio to 0% read and 100% write
  (Default Configuration for standard Ceph)
- Some of the other useful links for HP servers
  https://h20566.www2.hpe.com/portal/site/hpsc/public/psi/mostViewedResults/?sp4ts.oid=5177957&ac.admitted=1459264747067.125225703.1938120508