***Interview Question On LVM:***

**1.What are LVM1 and LVM2?**  
  
LVM1 and LVM2 are the versions of LVM.   
LVM2 uses device mapper driver contained in 2.6 kernel version.  
LVM 1 was included in the 2.4 series kernels.  
  
**2.What is the maximum size of a single LV?**  
  
For 2.4 based kernels, the maximum LV size    
For 32-bit CPUs on 2.6 kernels, the maximum LV size is 16TB.  
For 64-bit CPUs on 2.6 kernels, the maximum LV size is 8EB.   
  
**3.List of important LVM related files and Directories?**  
  
## Directories  
/etc/lvm                - default lvm directory location  
/etc/lvm/backup         - where the automatic backups go  
/etc/lvm/cache          - persistent filter cache  
/etc/lvm/archive        - where automatic archives go after a volume group change  
/var/lock/lvm             - lock files to prevent metadata corruption  
  
# Files  
/etc/lvm/lvm.conf       - main lvm configuration file  
$HOME/.lvm              - lvm history   
  
  
**4.What is the steps to create LVM in Linux?**  
  
Create a physical volume by using pvcreate command  
  
consider the disk is local.  
  
#fdisk -l   
  
#fdisk /dev/sda  
  
Press "n" to create new partition. And mention the size / allocate whole disk to single partition. and assign the partition number also.  
  
#press "t" to change the partition as LVM partition.   
  
#enter "8e" ( 8e - is Hex decimal code for LVM )   
  
#Enter "w" to write tghe information on Disk.  
  
#fdisk -l ( Now you will get newly created disk numbers)  
  
#pvcreate /dev/sda2  
  
Add physical volume to volume group by “vgcreate” command  
  
#vgcreate VLG0 /dev/sda2  
  
Create logical volume from volume group by “lvcreate” command.  
  
#lvcreate -L 1G -n LVM1 VG0  
  
Now create file system on /dev/sda2 partition by “mke2fs”  or "mkfs.ext3" command.  
  
#mke2fs -j /dev/VG0/LVM1  
  
or   
  
#mkfs.ext3 /dev/vg0/LVM1  
  
How to mount this as file system  
  
#mkdir /test  
  
#mount /dev/VG0/LVM1 /test    
  
**5.How to extend a File system in Linux?**  
  
Check the free space on vg   
  
#vgdisplay -v VG1  
  
Now extend the FS  
  
# lvextend -L+1G /dev/VG1/lvol1  
  
# resize2fs /dev/VG1/lvol1  
  
**6.How to reduce the File system size  in Linux?**  
  
1.First we need to reduce the file system size using "resize2fs"  
2.Then reduce the lvol size using "lvreduce"  
  
#resize2fs -f /dev/VolGroup00/LogVol00 3G  
  
#lvreduce -L 5G /dev/VG1/Lvol1  
  
  
**7.How to add new LUN from storage to Linux server?**  
  
Step 1: Get the list of HBA and exisiting disk details.  
  
#ls /sys/class/fc\_host  
  
#fdisk -l 2>/dev/null | egrep '^Disk' | egrep -v 'dm-' | wc -l  
  
Step 2: Scan the HBA ports (Need to scan all HBA port)  
  
#echo "1" > /sys/class/fc\_host/host??/issue\_lip  
  
# echo "- - -" > /sys/class/scsi\_host/host??/scan  
  
Do this above steps for all HBA cards  
  
Step3 : Check the newly added Lun       
  
# cat /proc/scsi/scsi | egrep -i 'Host:' | wc -l  
  
# fdisk -l 2>/dev/null | egrep '^Disk' | egrep -v 'dm-' | wc -l  
  
  
Once found the disk then do below steps to add to VolumeGroup  
  
#pvcreate /dev/diskpath  
  
#vgextend /dev/vg1 /dev/diskpath  
  
#vgs or #vgdisplay /dev/vg1  
  
  
**8.How to resize root file system on RHEL 6?**  
  
Here is the list of steps to reduce the  root file system (lv\_root) on a RHEL 6 Linux server:  
  
Boot the system into rescue mode. Do not mount the file systems (select the option to 'Skip' in the rescue mode and start a shell)  
  
Bring the Volume Group online  
  
#lvm vgchange -a -y  
  
Run fsck on the FS  
  
#e2fsck -f /dev/vg\_myhost/lv\_root  
  
Resize the file system with new size  
  
#resize2fs -f /dev/vg00/lv\_root 20G  
  
Reduce the Logical Volume of the FS with the new size  
  
#lvreduce -L20G /dev/vg00/lv\_root  
  
Run fsck to make sure the FS is still ok  
  
#e2fsck -f /dev/vg00/lv\_root  
  
Optionally mount the file system in the rescue mode  
  
#mkdir -p /mnt/sysimage/root  
#mount -t ext4 /dev/mapper/vg00-lv\_root /mnt/sysimage/root  
#cd /mnt/sysimage/root  
  
Unmount the FS  
  
#cd  
#umount /mnt/sysimage/root  
  
Exit rescue mode and boot the system from the hard disk  
#exit  
  
Select the reboot option from the recue mode  
  
**9.How to find server is configured with LVM RAID ?**  
  
1.How to check linux LVM RAID ?  
  
 check the RAID status in /proc/mdstat  
  
 #cat /proc/mdstat   
 or  
 # mdadm --detail /dev/mdx  
  or  
 # lsraid -a /dev/mdx  
  
2.Check the Volume group disks   
  
 #vgdisplay -v vg01  
  
 In disk we will get the device names like /dev/md1 , /dev/md2 . It means LVM RAID disks are configured and its added to Volume Group.  
  
  
**10.How to check Linux server is configured with power path disks?**  
  
1.Check power path is installed on server?  
  
#rpm -qa |grep -i emc  
  
2.Check the power path status on server?  
  
#/etc/init.d/PowerPath status  
  
#chkconfig --list PowerPath  
  
# lsmod |grep -i emc  
  
3.Check the Volume group disks   
  
 #vgdisplay -v vg01  
  
 In disk we will get the device names like /dev/emcpowera , /dev/emcpowerb . It means powerpath disks are configured and its added to Volume Group.  
  
4.Check the power path disk status using below command  
  
 #powermt display dev=all  
  
  
**11.How to check server is configured with Multipath disks??**  
  
# ls -lrt /dev/mapper  //To View the Mapper disk paths and Lvols  
  
#dmsetup table   
  
#dmsetup ls   
  
#dmsetup status  
  
2.Using Multipathd Command ( Daemon )   
  
  
#echo 'show paths' |multipathd -k  
  
#echo 'show maps' |multipathd -k  
  
3.Check multipath Daemon is running or not   
  
#ps -eaf |grep -i multipathd  
  
4.check the VG disk paths  
  
#vgs or vgdisplay -v vg01   
  
If multipath disks are added and configured with VG then we will get disk paths like /dev/mpath0 , /dev/mpath1.  
  
5.If you want to check the disk path status u can use below command also  
  
#multipathd -k  
  
#multipathd> show multipaths status  
  
#multipathd> show topology  
  
#multipathd> show paths

This article will share Redhat Linux’s  LVM Interview questions. LVM is one of the most important sub-system in Linux where you need  to provision multiple dynamic filesystems. If you attend any Linux interview, you can always expect more questions from LVM. I have intentionally posted this article for Interviewers who always search in internet for what to ask to the candidate.To select the right candidate, you should ask the quality interview questions.By asking the theatrical values will not help to find the right candidate.   
  
The below one is an example of bad interview question.  
How many volume groups can be created in Linux ?  
Answer :256.   
I feel this question is unnecessary and In day to day operation,you will never reach this limit.

I feel that the below interview questions can  help you to find the right candidate.  
This articles just covers the LVM part.  
  
1.Is it possible to increase the logical volume on fly ?   
Answer: Yes.We can increase the logical volume without umount it.   
  
2.How to reduce the logical volume ? is it possible to reduce on fly ?  
Answer: No.You can’t reduce the logical volume on fly. Here is the steps to reduce the logical volume on redhat Linux.

* Un-mount the filesystem
* Run e2fsck on the volume device
* Reduce the Filesystem.(resize2fs)
* Reduce the logical Volume(lvreduce)
* Mount the filesystem back for production.

 The detailed step by step guide is available [here](http://www.unixarena.com/2013/08/linux-lvm-re-sizing-logical-volume.html).

3.How to do you scan the new LUN or disk for LVM  physical volume ?  
Answer:Use “pvscan” to scan existing physical volume from newly connected SAN or DISKS.  
  
4.How to scan disks for existing volume group ?   
Answer:Use “vgscan” to scan existing volume group from newly connected SAN or DISKS.  
But you should use “pvscan” prior to executing this command.  
  
5.How to scan a logical volume from exising volume group?   
Answer: lvscan  
  
6.How to stop the logical volume ? or deactivate the logical volume ?  
Answer: “lvchange -an /dev/vg\_name/lv\_name”   
  
7.How to activated the logical volume which in deactivated state ?  
Answer: “lvchange -ay /dev/vg\_name/lv\_name” .  
  
8.How to disable the volume group ? or Deactivate the volume group ?  
Answer:”vgchange -an volume\_group\_name” .  
  
9.How to enable the volume group ? or Activate the volume group ?  
Answer:”vgchange -ay volume\_group\_name” .  
  
10.How do you find that what are the disks are used for  logical volume mirroring ?   
Answer: use “lvs -a -o +devices”   
  
11. What are steps to perform in order to increase the logical volume on fly ?   
Answer:

* Extend the logical volume
* Increase the Filesystem size
* Verify the status using df command or lvs command.

12.How to list the imported volume groups ?  
Answer: Use “vgs” command to display the imported volume group.  
  
13.How to list the available logical volumes on the system?  
Answer: Use “lvs” command to list the available logical volumes on the system.  
  
14.How to list the available physical volumes in LVM?  
Answer: Use “pvs” command to list the available physical volumes.  
  
15.How to see the detailed volume group information ?  
Answer: Use “vgdisplay  vg\_name”  
  
16.How to see the detailed logical volume information ?  
Answer: Use “lvdisplay  /dev/vg\_name/lv\_name”  
  
17.How to see the detailed physical volume information ?  
Answer: Use “pvdisplay /dev/disk\_name”    Ex: pvdisplay /dev/sde  
  
18.How to rename volume Group ? can we rename the VG on fly ?   
Answer:Yes.Its possible to rename the volume group on fly.But the mounted volumes will not reflect the same unless you re-mount the volume with new VG name.  
Need to update the /etc/fstab with new VG name to mount the volumes across the system reboot.  
  
19.How to take a LVM configuration backup ?  
Answer:Use “vgcfgbackup vg\_name” to take the latest configuration backup of volume group.The default volume group backup location is “/etc/lvm/backup” .  
Refer:<http://www.unixarena.com/2013/08/linux-lvm-volume-group-operations.html>

20.How to re-create the device files for LVM volumes ?  
Answer:Run “vgmknodes” to recreate the LVM devices files.  
  
21.What is lvmdump ?   
Answer: “lvmdump” is tool for LVM2 to collect the various information for diagnostic purposes.By default, it creates a tarball suitable for submission along with a problem report  
  
22.How to replace the failed hard disk in LVM ?   
  
23.How to create a mirrored logical volume ?   
  
24.How to create a striped Logical volume ?   
  
25.How to convert the linear volume to mirror volume ?  
  
26.How are snapshots in LVM2 different from LVM1 in Redhat Linux?  
Answer:LVM1 snapshots are  readonly by default where LVM2 snapshots were read/write.  
  
27.What are the steps involved to create the logical volume from scratch ?  
Answer:   
     i.Create a physical volume using pvcreate command.  
       #pvcreate /dev/sdc  
    ii.Create a volume group using “vgcreate” command   
       #vgcreate vg02 /dev/sdc  
   iii.Create a logical volume using “lvcreate” command  
       #lvcreate -L 100M -n vol1 vg02   
    iv.Create a filesystem on logical volume using mkfs command.  
        #mkfs -t ext4 /dev/vg02/vol1  
     v.Mount the filesystem using mount command for use.  
        #mount -t ext4 /dev/vg02/vol1 /vol1  
  
28.How to extent the volume group ?   
Answer:Using “vgextend” we can increase the volume group.  
  
29.Assume Volume group “vg02” is already exists.How do you extend the volume group with 50GB ? Provide all the steps with commands.  
Answer:  
      1.Get the 50GB lun from SAN team.(/dev/sdd)  
      2.Create physcical volume ( # pvcreate /dev/sdd )  
      2.Extend the volume group (# vgextend vg02 /dev/sdd)  
  
30.If the vg02 has two physical volumes called /dev/sdc/ & /dev/sdd. How do you remove /dev/sdd from vg02.   
Answer: “vgreduce vg02 /dev/sdd/”  
  
31.How to decommission/remove  LVM completely from the host ?  
Answer:  
          1.Un-mount all the logical filesystems  
          2.Remove the logical volumes using “lvremove” command.  
          3.Destroy the volume group using “vgremove”  command.  
          4.Use “pvremove” command remove the physical volumes from the system.