

Install logical volumes (LVM)

Prepare and install volumes

Prepare a single disk or a disk raid:

```
mkfs.ext3 <physvol>
lvm
lvm> pvcreate <physvol>
lvm> vgcreate <physvol> // or several physical volumes: <physvol1>
<physvol2> <physvol3>
lvm> lvcreate <volgroup> <physical>
lvm> quit
mkfs.ext3 /dev/mapper/<volgroup-logvol>
mount /dev/mapper/<volgroup-logvol> <dir>
```

Auto-mount during boot:

```
vim /etc/fstab
/dev/mapper/<volgroup-logvol> <dir> ext3 noatime,user_xattr 0 0
```

Replace LVM disk to upgrade capacity

This example will copy /dev/sde1 mounted on /backup to /dev/sdf1 mounted on /replace and afterwards change mount point, logical volume and volume group names to the source names.

Prepare new disk

- fdisk /dev/sdf
- **n** to create a new partition, select **1** and accept all defaults
- **w** to write the new partition table and quit
- mkfs.ext3 /dev/sdf1
- lvm
- lvm > pvcreate /dev/sdf1
- lvm > vgcreate vg_replace /dev/sdf1
- lvm > vgdisplay vg_replace to check ### of free extents
- lvm > lvcreate -l### vg_replace (do not use -LxxGB, use size with -l### which is number of extents)
- lvm > lvrename vg_replace lv0 lv_replace
- lvm > vgcfgbackup to backup volume group configurations
- lvm > exit
- mkfs -t ext3 /dev/vg_replace/lv_replace
- mkdir /replace
- mount /dev/vg_replace/lv_replace /replace

Copy content and assign new disk

- `rsync -avH /backup/* /replace/`
- `umount /backup`
- `umount /replace`
- `lvm`
- `lvm > lvrename vg_backup/lv_backup lv_backup1`
- `lvm > lvchange vg_backup/lv_backup1 -an`
- `lvm > vgrename vg_backup vg_backup1`
- `lvm > lvchange vg_backup1/lv_backup1 -ay`
- `lvm > lvrename vg_replace/lv_replace lv_backup`
- `lvm > lvchange vg_replace/lv_backup -an`
- `lvm > vgrename vg_replace vg_backup`
- `lvm > lvchange vg_backup/lv_backup -ay`
- `lvm > exit`
- `mount /dev/vg_backup/lv_backup /backup -o noatime,user_xattr`

Setting up LVM on top of a Linux Software Raid

- prepare the new disks with a partition (see above), do not create the filesystem yet
- `mdadm -create -verbose /dev/md5 -level=1 -raid-devices=2 /dev/sde /dev/sdf`
- watch the progress with `cat /proc/mdstat`
- when finished, restart the computer (`shutdown -r now`)

Merge 2 volume groups

1. Unmount and remove LV0 and LV1 from VG1 with `umount/lvremove`
2. Remove VG1 with `vgremove`
3. Unmount LV0 and LV1 from VG0 with `umount`
4. Extend VG0 with any available PVs if necessary
5. Mount LV0 and LV1 on VG0 with `mount`

```
lvcreate -l<extents> -n testlv testvg
mkfs.ext4 /dev/mapper/vg-lv
```

Increase / decrease size of logical volume

First, check the status with:

```
# pvs
# vgs
# lvs
```

- [LVM Resize - How to Decrease an LVM Partition](#)
- [LVM Resize - How to Increase an LVM Partition](#)
- [Size in superblock is different from the physical size of the partition](#)
- [Shrinking an Ext4 File System on LVM in Linux](#)

- [Creating an ext4 File System](#)
- [How to Extend/Reduce LVM's](#)

Decrease

1. `sudo umount /srv/media`
2. `sudo lvresize -resizefs -size -1024GB /dev/vg_data/lv_media`

Increase

1. `sudo lvresize -resizefs -size +1024GB /dev/vg_data/lv_home`
- [Resize Or Remove Logical Volumes With LVM](#)

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