

# VM disk Expansion LVM with XFS/EXT4

## CREATE SNAPSHOT

Expand the original disk or add a second vdisk from **Infrastructure Client**.

~~If you want to perform a grow w/o reboot you have to add a second disk.~~

If you are on a kernel newer or equal to 2.6.32 then you can issue the command

```
echo "1" > /sys/block/sdX/device/rescan
```

to get the new size w/o reboot.

In case you cant see the "disk" do this:

```
echo "- - -" > /sys/class/scsi_host/host0/scan
```

Do this for all host0,1,2 etc.

or

```
echo "1" > /sys/class/scsi_device/2\:0\:0\:0/device/rescan
```

whereby after scsi\_device you need to find the correct scsi device

## EXPAND ORIGINAL DISK

Create an additional partition on the free space, say you increased the existing disc from 8GB to 15GB. The partition type is 8e.

```
cfdisk /dev/sda
```

# for example if the new partition is /dev/sda3

# create logical disk /dev/sda3 of type 8e (Linux LVM)

# make disk visible to linux

```
partprobe  
pvcreate /dev/sda3
```

now you have to extend the volgroup. use `lvdisplay` to see which is the name of the group, in this example it's **base**

```
lvdisplay  
--- Logical volume ---  
LV Name                /dev/base/root  
VG Name                 base  
LV UUID                 8cL9Qd-ksIn-1Ve2-94ym-gTrW-8jet-91tnah  
LV Write Access         read/write
```

LV Status	available
# open	1
LV Size	5.00 GB
Current LE	1280
Segments	1
Allocation	inherit
Read ahead sectors	0
Block device	254:0

--- Logical volume ---

LV Name	/dev/base/tmp
VG Name	base
LV UUID	mEnEXY-Ut0f-P439-MDpg-BLT3-n8hI-Q6KIfm
LV Write Access	read/write
LV Status	available
# open	1
LV Size	1.00 GB
Current LE	256
Segments	1
Allocation	inherit
Read ahead sectors	0
Block device	254:1

--- Logical volume ---

LV Name	/dev/base/swap
VG Name	base
LV UUID	fm2A23-FPb3-itQa-Fvf2-QQmj-giwI-j8FZAf
LV Write Access	read/write
LV Status	available
# open	2
LV Size	2.00 GB
Current LE	512
Segments	1
Allocation	inherit
Read ahead sectors	0
Block device	254:2

--- Logical volume ---

LV Name	/dev/base/data
VG Name	base
LV UUID	GZKUbb-hZn2-igXN-3dxj-TNz9-1C15-I8u8MR
LV Write Access	read/write
LV Status	available
# open	1
LV Size	1.52 GB
Current LE	389
Segments	1
Allocation	inherit
Read ahead sectors	0

```
Block device      254:3
```

and we assume the new partition is /dev/sda3

```
vgextend base /dev/sda3
```

check with pvscan if the extend was successful

```
pvscan
```

Now we extend the “data” partition to 11.5 GB. See man lvextend for other options  
11.5 G is the NEW total size of the disk we want to extend!

Extend the LV to use all free space

```
lvextend -l +100%FREE /dev/base/data
```

Extend with 20G

```
lvextend -L +20G /dev/base/data
```

now we have to grow the filesystem /data

```
xfs_growfs /data
```

## FOR EXT3/4

Extend filesystem to use all free space

```
vgextend base /dev/sda3
```

```
lvextend -l +100%FREE /dev/base/root
```

Check that the filesystem is ok, **but only if the FS is unmounted**

```
fsck.ext4 -f /dev/base
```

Now resize the filesystem

```
resize2fs -p /dev/base/root # for ext2 on rpm systems and deb systems  
resize4fs -p /dev/base/root # for ext4 on rpm systems only!
```

## For swap

```
swapoff /dev/base/swap  
lvextend -L 3.9G /dev/base/swap
```

```
mkswap /dev/base/swap  
swapon /dev/base/swap  
free
```

Check if filesystems are ok, and only then release the snapshot

## Create LVM

Find all LVM VG

```
vgscan
```

Create Physical Volumes

Der Befehl `pvcreate` legt den VGDA Block auf dem PV an. Er muss für jedes PV ausgeführt werden, bevor es von LVM verwendet werden kann:

```
pvcreate /dev/hda3
```

Volume Groups anlegen

Jetzt legen wir mit '`vgcreate <VolumeGroup> <Partition(en)>`' unsere Volume Group an und nennen sie "vg01":

```
vgcreate vg01 /dev/hda3 /dev/hdb2
```

Logische Volumes anlegen.

Hier legen wir jetzt alle unsere logischen Volumes an. Als Namen verwenden wir, etwas fantasielos, `lv01`, `lv02` und `lv03`. Dabei bedienen wir uns mit dem Plattenplatz auf Volume Group `vg01`, der einzigen Volume Group in diesem Beispiel. Es ist offensichtlich, dass wir hier nicht mehr Plattenplatz "verteilen" können, als wir bei `vgcreate` in die Volume Group "hineingesteckt" haben, und zwar in Form der beiden Partitionen `hda3` und `hdb2`. (`lvcreate -L<Grösse> -n <LogicalVolumeName> <Volume Group>`).

```
lvcreate -l +100%FREE -n lv01 vg01
```

oder wir könne die Größen angeben! (1500M)

```
lvcreate -L 1500M -n lv01 vg01
```

Filesysteme anlegen

Ab jetzt können die logischen Partitionen, genau so wie gewöhnliche Partitionen, über Ihre Device Files angesprochen werden. Gewöhnliche Partitionen werden mit `/dev/sd[a-z]*` oder `/dev/hd[a-z]*` bezeichnet; Logische Volumes werden mit `/dev/VolumeGroupName/LogicalVolumeName` angesprochen. Mit `mke2fs <LogicalVolumeName>` legen wir die ext2 Filesysteme an:

```
mkfs.ext4 /dev/vg01/lvol1
```

fstab anpassen

Damit die neuen Filesysteme nun bei jedem Systemstart automatisch gemountet werden, müssen wir sie in die Datei /etc/fstab eintragen (siehe 'man fstab'). In unserem Szenario sehen die zusätzlichen Einträge wie folgt aus:

```
/dev/vg01/lvol1 /usr ext4 defaults 1 2
```

Links

[How To Create LVM Using vgcreate, lvcreate, and lvextend lvm2 Commands](#)

[Where does LVM store data?](#)

[A Beginner's Guide To LVM](#)

[LVM VERY GOOD SOURCE!](#)

[LVM Fun VERY GOOD SOURCE!](#)

[How to recover logical volume deleted with lvremove](#)

<http://www.linuxhaven.de/dlhp/HOWTO-test/DE-LVM-HOWTO-2.html>

<http://www.howtogeek.com/howto/40702/how-to-manage-and-use-lvm-logical-volume-management-in-ubuntu/>

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