

Expanding an existing filesystem using LVM

Description

This example below shows you how to expand an existing filesystem that is managed by Logical Volume Manager (LVM)

Examine the existing filesystem

This command will tell the host to rescan the host adapters after a new disk has been added.

```
## echo "- - -" | tee /sys/class/scsi_host/host*/scan
```

/dev/mapper/ubuntu--vg-ubuntu--lv is the filesystem I want to expand.

```
## root@dock-host-2:/mnt# df -lh
```

Filesystem	Size	Used	Avail	Use%	Mounted on
tmpfs	1.6G	1.7M	1.6G	1%	/run
/dev/mapper/ubuntu--vg-ubuntu--lv	63G	17G	43G	28%	/
tmpfs	7.9G	0	7.9G	0%	/dev/shm
tmpfs	5.0M	0	5.0M	0%	/run/lock
/dev/sda2	974M	163M	745M	18%	/boot
tmpfs	1.6G	4.0K	1.6G	1%	/run/user/1000

Use lsblk to take a look at all devices available. In my example I am going to use /dev/sdb as the disk to expand the existing filesystem in the LVM. lsblk shows that /dev/sdb is 128GB in size.

```
## root@dock-host-2:~# lsblk
```

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPOINT
loop0	7:0	0	55.5M	1	loop	/snap/core18/2344
loop1	7:1	0	55.5M	1	loop	/snap/core18/2409
loop2	7:2	0	118.4M	1	loop	/snap/docker/1779
loop3	7:3	0	61.9M	1	loop	/snap/core20/1494
loop4	7:4	0	102.4M	1	loop	/snap/lxd/23243

```

loop5          7:5  0  61.9M  1 loop /snap/core20/1518
loop6          7:6  0 117.2M  1 loop /snap/docker/1767
loop7          7:7  0   47M  1 loop /snap/snapd/16292
loop8          7:8  0   47M  1 loop /snap/snapd/16010
loop10         7:10 0 102.4M  1 loop /snap/lxd/23270
sda            8:0  0  128G  0 disk
├─sda1         8:1  0    1M  0 part
├─sda2         8:2  0    1G  0 part /boot
└─sda3         8:3  0  127G  0 part
   └─ubuntu--vg-ubuntu--lv 253:0  0 63.5G  0 lvm /
sdb            8:16 0  128G  0 disk
sr0           11:0  1 1024M  0 rom

```

The next step is to run a command to prep the new disk for the LVM format.

```

root@dock-host-2:~# pvcreate /dev/sdb
WARNING: dos signature detected on /dev/sdb at offset 510. Wipe it? [y/n]: y
Wiping dos signature on /dev/sdb.
Physical volume "/dev/sdb" successfully created.

```

Once the disk is ready we need to identify the the LVM name and use it to extend the volume with the new disk we set up.

```

root@dock-host-2:~# vgs
VG      #PV #LV #SN Attr   VSize   VFree
ubuntu-vg  1  1  0 wz--n- <127.00g 63.50g

```

Once we know the name of the Volume Group we can expand the Volume Group with the new disk.

```

root@dock-host-2:~# vgextend ubuntu-vg /dev/sdb
Volume group "ubuntu-vg" successfully extended

```

After the Volume Group has been extended we can run some commands to verify the new size. You can see in the example below that we have more space in our Volume Group.

```

root@dock-host-2:~# vgs
VG      #PV #LV #SN Attr   VSize  VFree
ubuntu-vg  2  1  0 wz--n- 254.99g <191.50g

root@dock-host-2:~# vgdisplay
--- Volume group ---
VG Name          ubuntu-vg
System ID
Format           lvm2
Metadata Areas   2
Metadata Sequence No 3
VG Access        read/write
VG Status        resizable
MAX LV          0
Cur LV         1
Open LV         1
Max PV          0
Cur PV         2
Act PV         2
VG Size         254.99 GiB
PE Size         4.00 MiB
Total PE        65278
Alloc PE / Size 16255 / <63.50 GiB
Free PE / Size  49023 / <191.50 GiB
VG UUID         CVE1jf-w4fj-FreW-Xn1p-i3gv-gzbh-GcpJdY

```

Now that the Volume Group is expanded we need to expand the Logical Volume and expand the Filesystem to use the new disk space. The commands below are used to check on the Logical Volume and then extend the Logical Volume.

```

root@dock-host-2:~# lvs
--- Logical volume ---
LV Path          /dev/ubuntu-vg/ubuntu-lv
LV Name          ubuntu-lv
VG Name          ubuntu-vg
LV UUID          K5CEft-q6tF-cjxB-wCFh-f970-CTy9-07KYYk
LV Write Access  read/write
LV Creation host, time ubuntu-server, 2021-12-19 20:48:29 +0000
LV Status        available
# open          1
LV Size         <63.50 GiB
Current LE      16255

```

```
Segments          1
Allocation         inherit
Read ahead sectors auto
- currently set to 256
Block device       253:0
```

```
root@dock-host-2:~# lvextend -l +100%FREE /dev/ubuntu-vg/ubuntu-lv
Size of logical volume ubuntu-vg/ubuntu-lv changed from <63.50 GiB (16255
extents) to 254.99 GiB (65278 extents).
Logical volume ubuntu-vg/ubuntu-lv successfully resized.
```

The last step is to expand the filesystem and verify that there is more free space.

```
root@dock-host-2:~# resize2fs /dev/mapper/ubuntu--vg-ubuntu--lv
resize2fs 1.46.3 (27-Jul-2021)
Filesystem at /dev/mapper/ubuntu--vg-ubuntu--lv is mounted on /; on-line
resizing required
old_desc_blocks = 8, new_desc_blocks = 32
The filesystem on /dev/mapper/ubuntu--vg-ubuntu--lv is now 66844672 (4k)
blocks long.
```

```
root@dock-host-2:~# df -lh
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           1.6G  1.7M  1.6G   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv 251G  17G  224G   7% /
tmpfs           7.9G   0  7.9G   0% /dev/shm
tmpfs           5.0M   0  5.0M   0% /run/lock
/dev/sda2       974M  163M  745M  18% /boot
tmpfs           1.6G  4.0K  1.6G   1% /run/user/1000
```