

Ubuntu - Extend Your Default LVM Space

So, like me, you installed Ubuntu and accepted the default use of lvm and now your operating volume is very small and the Ubuntu installer did not utilize the entire physical drive. There is a ton of free space that is not being utilized. And, possibly, your freshly installed cloud application (NextCloud) will soon exceed the allotted space within the first week or so as a result of data uploading or synchronization.

All credit goes to this article: <https://packetpushers.net/ubuntu-extend-your-default-lvm-space/>

```
$ df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
tmpfs	791M	1.2M	790M	1%	/run
/dev/mapper/ubuntu--vg-ubuntu--lv	98G	7.0G	86G	8%	/
tmpfs	3.9G	0	3.9G	0%	/dev/shm
tmpfs	5.0M	0	5.0M	0%	/run/lock
/dev/sda2	2.0G	130M	1.7G	8%	/boot
tmpfs	791M	4.0K	791M	1%	/run/user/1000

```
user@svr1:~$ sudo vgdisplay
```

```
[sudo] password for user:
```

```
--- Volume group ---
VG Name                ubuntu-vg
System ID
Format                 lvm2
Metadata Areas         1
Metadata Sequence No  2
VG Access               read/write
VG Status               resizable
MAX LV                 0
Cur LV                 1
Open LV                 1
Max PV                 0
Cur PV                 1
Act PV                 1
VG Size                 <929.00 GiB
PE Size                 4.00 MiB
Total PE                237823
Alloc PE / Size        25600 / 100.00 GiB
Free PE / Size          212223 / <829.00 GiB
VG UUID                 rF3fw2-13h2-kAiL-aeWA-KyDZ-5HQU-GwvKDe
```

```
user@svr1:~$ sudo lvdisplay
```

```
--- Logical volume ---
LV Path                 /dev/ubuntu-vg/ubuntu-lv
```

```
LV Name          ubuntu-lv
VG Name          ubuntu-vg
LV UUID          xUUIxr-wnDl-7Znk-EQpK-gAwb-Wug0-a7JSTb
LV Write Access  read/write
LV Creation host, time ubuntu-server, 2023-06-28 23:21:26 +0000
LV Status        available
# open          1
LV Size          100.00 GiB
Current LE       25600
Segments        1
Allocation       inherit
Read ahead sectors auto
- currently set to 256
Block device     253:0
```

```
user@svr1:~$ sudo su
root@svr1:/home/user# cd
root@svr1:~#
```

```
root@svr1:~# lvextend -l +100%FREE /dev/ubuntu-vg/ubuntu-lv
```

```
Size of logical volume ubuntu-vg/ubuntu-lv changed from 100.00 GiB (25600
extents) to <929.00 GiB (237823 extents).
Logical volume ubuntu-vg/ubuntu-lv successfully resized.
root@svr1:~#
```

Run `lvdisplay` once more to verify that that the logical volume was successfully resized.

```
root@svr1:~# lvdisplay
--- Logical volume ---
LV Path          /dev/ubuntu-vg/ubuntu-lv
LV Name          ubuntu-lv
VG Name          ubuntu-vg
LV UUID          xUUIxr-wnDl-7Znk-EQpK-gAwb-Wug0-a7JSTb
LV Write Access  read/write
LV Creation host, time ubuntu-server, 2023-06-28 23:21:26 +0000
LV Status        available
# open          1
LV Size          <929.00 GiB
Current LE       237823
Segments        1
Allocation       inherit
Read ahead sectors auto
- currently set to 256
Block device     253:0

root@svr1:~#
```

At this point you have increased the size of the block volume where your root filesystem resides, but

you still need to extend the filesystem on top of it.

First, run `df -h` to verify your (almost full) root file system, then run `resize2fs /dev/mapper/ubuntu-vg-ubuntu-lv` to extend your filesystem, and run `df -h` one more time to make sure you're successful.

This is a continuation of the above: now extending the file system to utilize the entire resized volume on a 1TB physical drive.

```
~$ sudo su
[sudo] password for user:
root@svr1:/home/user# cd
```

```
root@svr11:~# df -h
Filesystem                Size      Used Avail Use% Mounted on
tmpfs                     791M      1.2M   790M   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv  98G      7.0G    86G    8% /
tmpfs                     3.9G       0    3.9G   0% /dev/shm
tmpfs                     5.0M       0    5.0M   0% /run/lock
/dev/sda2                 2.0G     130M    1.7G    8% /boot
tmpfs                     791M      4.0K    791M   1% /run/user/1000
```

```
root@svr1:~# vgdisplay
```

```
--- Volume group ---
VG Name                   ubuntu-vg
System ID
Format                    lvm2
Metadata Areas            1
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                   1
Act PV                    1
VG Size                   <929.00 GiB
PE Size                   4.00 MiB
Total PE                  237823
Alloc PE / Size           237823 / <929.00 GiB
Free PE / Size            0 / 0
VG UUID                   rF3fw2-13h2-kAiL-aeWA-KyDZ-5HQU-GwvKDe
```

```
root@svr1:~# lvdisplay
```

```
--- Logical volume ---
LV Path                   /dev/ubuntu-vg/ubuntu-lv
LV Name                   ubuntu-lv
VG Name                   ubuntu-vg
LV UUID                   xUUIxr-wnDl-7Znk-EQpK-gAwB-Wug0-a7JSTb
```

```
LV Write Access      read/write
LV Creation host, time ubuntu-server, 2023-06-28 23:21:26 +0000
LV Status            available
# open               1
LV Size              <929.00 GiB
Current LE           237823
Segments             1
Allocation           inherit
Read ahead sectors   auto
- currently set to   256
Block device         253:0
```

```
root@svr1:~# resize2fs /dev/mapper/ubuntu--vg-ubuntu--lv
resize2fs 1.46.5 (30-Dec-2021)
Filesystem at /dev/mapper/ubuntu--vg-ubuntu--lv is mounted on /; on-line
resizing required
old_desc_blocks = 13, new_desc_blocks = 117
The filesystem on /dev/mapper/ubuntu--vg-ubuntu--lv is now 243530752 (4k)
blocks long.

root@svr1:~#
```

End of resizing on the 1TB physical drive. IF EVERYTHING WENT WELL, THEN STOP HERE.

FOLLOWING IS ANOTHER UNRELATED EXAMPLE OF THE SECOND PART OF THE PROCESS:

Note: The following operations and output involves a 2TB physical drive instead of 1TB (like above). This is a different server where only the second part of this resizing job is depicted below, likewise properly finished by extending the file system on top of the block volume that you just extended.

Again, at this point we have increased the size of the block volume where your root filesystem resides, but you still need to extend the filesystem on top of it.

First, run `df -h` to verify your (almost full) root file system, then run `resize2fs /dev/mapper/ubuntu-vg-ubuntu-lv` to extend your filesystem, and run `df -h` one more time to make sure you're successful.

Here are the new readings for 'svr3' (using a pair of 2TB Drives on a hardware RAID-1 Array - which matters not.)

```
Logical volume ubuntu-vg/ubuntu-lv successfully resized.
root@svr3:~# lvsdisplay
--- Logical volume ---
LV Path                /dev/ubuntu-vg/ubuntu-lv
LV Name                 ubuntu-lv
VG Name                 ubuntu-vg
LV UUID                0FjNEm-jrLm-tYWv-AzHT-TZmm-l9bx-aVWpyR
LV Write Access        read/write
LV Creation host, time ubuntu-server, 2023-06-18 18:42:52 +0000
LV Status               available
```

```
# open          1
LV Size         <1.82 TiB
Current LE      476287
Segments        1
Allocation      inherit
Read ahead sectors auto
- currently set to 256
Block device    253:0
```

```
root@svr3:~# df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
tmpfs	1.6G	1.2M	1.6G	1%	/run
/dev/mapper/ubuntu--vg-ubuntu--lv	98G	12G	82G	13%	/
tmpfs	7.8G	0	7.8G	0%	/dev/shm
tmpfs	5.0M	0	5.0M	0%	/run/lock
/dev/sda2	2.0G	253M	1.6G	14%	/boot
tmpfs	1.6G	4.0K	1.6G	1%	/run/user/1000

Now, run the following command to extend your filesystem.

```
root@svr3:~# resize2fs /dev/mapper/ubuntu--vg-ubuntu--lv
```

Results

```
resize2fs 1.46.5 (30-Dec-2021)
Filesystem at /dev/mapper/ubuntu--vg-ubuntu--lv is mounted on /; on-line
resizing required
old_desc_blocks = 13, new_desc_blocks = 233
The filesystem on /dev/mapper/ubuntu--vg-ubuntu--lv is now 487717888 (4k)
blocks long.
```

Run df -h again.

```
root@svr3:~# df -h
Filesystem          Size  Used Avail Use% Mounted on
tmpfs               1.6G  1.2M  1.6G   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv 1.8T   12G  1.8T   1% /
tmpfs               7.8G    0  7.8G   0% /dev/shm
tmpfs               5.0M    0  5.0M   0% /run/lock
/dev/sda2           2.0G  253M  1.6G  14% /boot
tmpfs               1.6G  4.0K  1.6G   1% /run/user/1000
root@nc3:~#
```

Run vgdisplay again

```
root@svr3:~# vgdisplay
--- Volume group ---
VG Name              ubuntu-vg
System ID
Format                lvm2
```

```
Metadata Areas          1
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                 1
Act PV                  1
VG Size                 <1.82 TiB
PE Size                 4.00 MiB
Total PE                476287
Alloc PE / Size        476287 / <1.82 TiB
Free PE / Size         0 / 0
VG UUID                 bK42QC-L9pu-bEiA-ndU0-j3v7-3XWU-tA06R5
```

Run `lvdisplay` again

```
root@svr3:~# lvdisplay
--- Logical volume ---
LV Path                /dev/ubuntu-vg/ubuntu-lv
LV Name                 ubuntu-lv
VG Name                 ubuntu-vg
LV UUID                 0FjNEm-jrLm-tYWv-AzHT-TZmm-l9bx-aVWpyR
LV Write Access        read/write
LV Creation host, time ubuntu-server, 2023-06-18 18:42:52 +0000
LV Status               available
# open                  1
LV Size                 <1.82 TiB
Current LE              476287
Segments                1
Allocation              inherit
Read ahead sectors     auto
- currently set to     256
Block device            253:0

root@svr3:~#
```

VG Size and LV Size are both <1.82 TiB

I believe we're done here.

From:

<https://www.installconfig.com/> - **Install Config Wiki**

Permanent link:

https://www.installconfig.com/doku.php?id=ubuntu_extend_default_lvm_space&rev=1688067438

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