

# Grow It

Expand the flashed partition(s) to fill  
the available drive space  
by sudodus alias nio-wiklund at launchpad

## Preparation

You need two drives or mass storage devices (pendrive, flash card, HDD, SSD), or one optical disk (CD, DVD) and one mass storage device. The minimum size is 4 GB for the target, but obviously the final operating system will soon need more space for your personal files as well as for additional system files (program packages),

For the target, the final installed operating system, typically an internal drive, but it could also be connected via USB or eSATA:

A 4 GB USB pendrive will work for a small portable system. A 16 GB USB 3 pendrive will make a good portable system. Any internal drive from 4 GB will work with the small operating system Lubuntu, but 8 GB or more is recommended, and will work with all desktop flavours of Ubuntu and many other linux operating systems, that are portable when installed. See this link

<http://help.ubuntu.com/community/Installation/FromUSBStick#Prerequisites>

This method works also from optical devices (CD/DVD). It is an option for really old hardware to boot from CD.

**Backup all personal data before trying this method because the target drive will be overwritten**

Installing operating systems and editing partitions may fail and destroy data, so back up your data before you start. In this particular case, when you install from a compressed image, partition table of the target drive will be overwritten. One way to avoid mistakes is to disconnect the other drives during the process.

## Installation

Install from compressed image files (img.gz or img.xz files) with **mkusb**. That procedure is described in other documents. Such images have a fixed size. The target drive must be at least that size for the installation to work, and if it is larger, it is possible to grow the partitions.

- Download the quick start manual and mkusb <http://phillw.net/isos/one-button-installer/scripts/>
- View or download the quick start manual <http://ubuntuone.com/13HPbV48PmonVgkac8KK3I>
- Check the md5sums <http://phillw.net/isos/one-button-in...ums-phillw.txt>

## Grow It

Unmount all partitions of the drive and swapoff (and unplug and plug in the drive if a USB drive). Do *not* run gparted directly after flashing the drive, because it may not work properly. If it is an internal drive, maybe rebooting helps recognizing the drive properly.

Check mounting with the command

```
df
```

You can use the file browser (or gparted itself) to unmount the drive, or of course the command line:

```
sudo umount /dev/sdxy    # x = device letter, y = partition number
sudo swapoff /dev/sdxy
```

**Gparted** is a tool to edit partitions. It uses graphics in an intuitive way, so that it is rather easy to use. You can use the pull-down menus, right-click on the graphical boxes and even ***pull or push the boundaries of the partitions to change the size***. Finally, you can enter numbers in the small digital windows, if you want to get 'exact' values.

Let us say that we have installed an 8 GB system onto a 40 GB internal drive. Then you want to use the whole drive.

***If there is swap, you should move it.*** It is possible to delete it and create a new swap partition, but then you have to fit the entry in /etc/fstab to match the UUID, but if you move it, the UUID remains the same.

Maybe you can increase the size, but only if you have very low RAM, or if you intend to hibernate. The swap should be at least the same size as the RAM (in Gibibytes) for hibernation, but it need not be much larger. 1 Gibibyte = 1073741824 bytes, so if you have '1 GB' RAM, you

need at least 1,074 GB swap size. (Drives are usually measured in decimal units.) You may want some margin, so somewhere between 1.2 and 1.5 GB is good.

Move the swap away so that you can increase the size of the root partition! ***Then you can grow the root partition to fill the available unallocated space.***

In both cases you can either click and move the boundaries of the graphical 'boxes' or you can write numbers in the digital windows and press the Enter key for the result to show. When you have finished editing, you must ***click on the tick mark*** at the top of the gparted window in order to start executing the changes. (This is a safety precaution.) If the disk is big or slow, it can take long time (from a few seconds to hours to finish depending of how much data must be moved). Growing a drive is much faster than shrinking a drive (because shrinking means moving a lot of data). And the swap data are discarded, so it is also easy.

If you move the head end of the root partition (or boot partition, if separate), you must reinstall the bootloader, which is straight-forward, but a complication. So ***avoid moving the head end*** (the left edge of the graphical box) of the root partition.

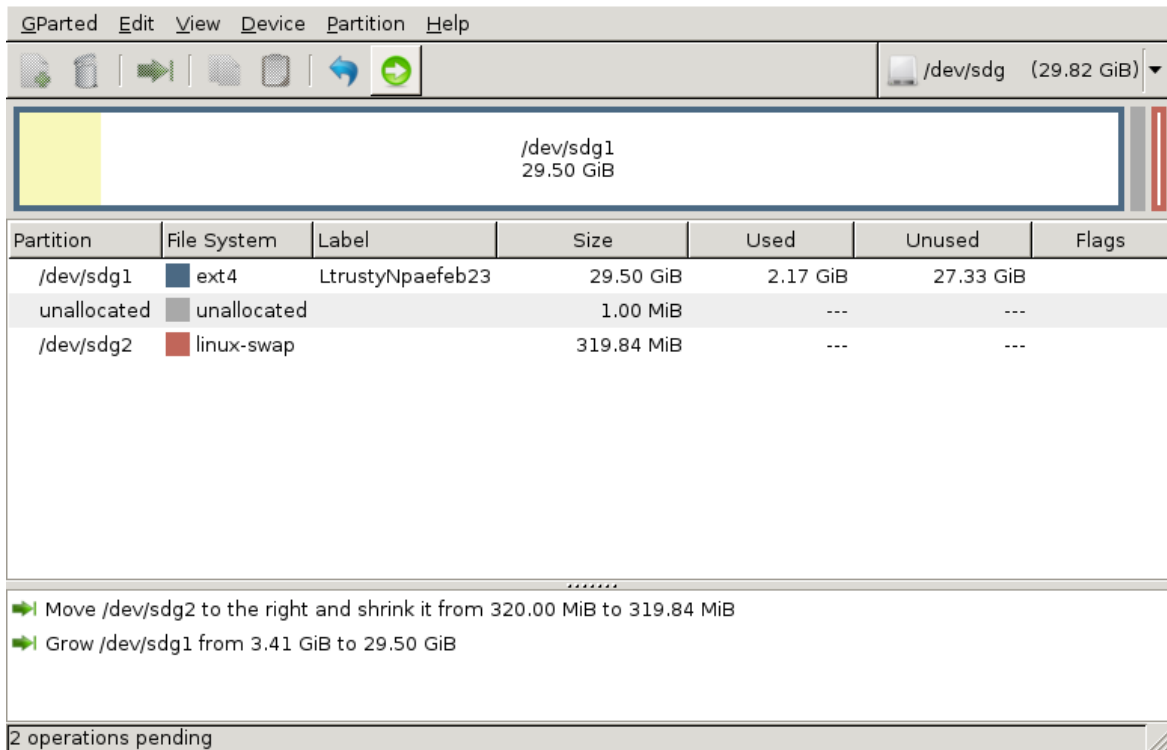
Now let us discuss a case with a larger drive, say 500 GB. It is not necessary with more than 20-40 GB for the linux root partition. Some people have a larger home partition. Some people have a large data partition.

If it is an internal drive (and you have installed from a compressed image file), you do not intend to use Windows on that drive, but maybe you dual boot Windows from another drive. And it might be a good idea to have the NTFS file system on the data partition, so that it is available from linux as well as Windows.

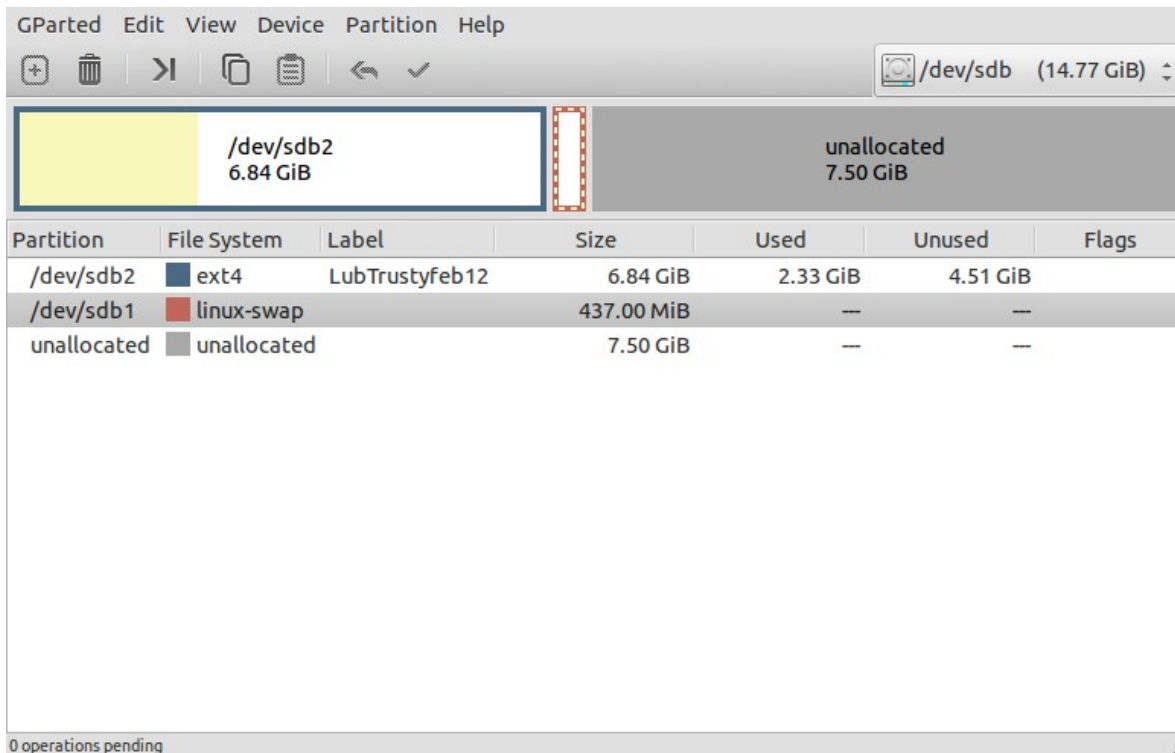
But it is certainly possible to have a huge root partition, except in some computers, where it might not boot, if the boot files are located more than 137 GB from the head end of the drive. You can also have several small partitions, where you test new versions and flavours of linux.

See the following sequence of screen-shots.

This first picture shows gparted in LXDE in Debian Wheezy. There is a **green circle with an arrow** instead of a tick, where to **click** in order to perform the edits in the partition table.



The following pictures show gparted in Xubuntu 12.04 LTS, and it is similar in most Ubuntu.



Minimum size: 1 MiB    Maximum size: 8119 MiB

Free space preceding (MiB):

New size (MiB):

Free space following (MiB):

Align to:

Minimum size: 1 MiB    Maximum size: 8119 MiB

Free space preceding (MiB):

New size (MiB):

Free space following (MiB):

Align to:

GParted Edit View Device Partition Help








/dev/sdb (14.77 GiB) ▾

Partition	File System	Label	Size	Used	Unused	Flags
/dev/sdb2	ext4	LubTrustyfeb12	6.84 GiB	2.33 GiB	4.51 GiB	
unallocated	unallocated		7.50 GiB	--	--	
/dev/sdb1	linux-swap		437.00 MiB	--	--	

...

1 operation pending

GParted Edit View Device Partition Help









/dev/sdb (14.77 GiB) ▾

**/dev/sdb2**  
6.84 GiB

**unallocated**  
7.50 GiB

Partition	File System	Label	Size	Used	Unused	Flags
/dev/sdb2	<span style="color: blue;">■</span> ext4	LubTrustyFeb12	6.84 GiB	2.33 GiB	4.51 GiB	
unallocated	<span style="color: gray;">■</span> unallocated		7.50 GiB	--	--	
/dev/sdb1	<span style="color: red;">■</span> linux-swap		437.00 MiB	--	--	

0 operations pending



Minimum size: 2385 MiB    Maximum size: 14682 MiB


Free space preceding (MiB):

New size (MiB):

Free space following (MiB):

Align to:



Minimum size: 2385 MiB    Maximum size: 14682 MiB


Free space preceding (MiB):

New size (MiB):

Free space following (MiB):

Align to:



Minimum size: 2385 MiB    Maximum size: 14682 MiB

Free space preceding (MiB):

New size (MiB):

Free space following (MiB):

Align to:

GPARTED Edit View Device Partition Help

/dev/sdb (14.77 GiB) ▾

**/dev/sdb2**  
14.34 GiB

Partition	File System	Label	Size	Used	Unused	Flags
/dev/sdb2	<span style="color: blue;">■</span> ext4	LubTrustyfeb12	14.34 GiB	2.33 GiB	12.01 GiB	
/dev/sdb1	<span style="color: red;">■</span> linux-swap		437.00 MiB	—	—	

...

>| Grow /dev/sdb2 from 6.84 GiB to 14.34 GiB

1 operation pending

GPARTED Edit View Device Partition Help

/dev/sdb (14.77 GiB) ▾

**/dev/sdb2**  
14.34 GiB

Partition	File System	Label	Size	Used	Unused	Flags
/dev/sdb2	<span style="color: blue;">■</span> ext4	LubTrustyfeb12	14.34 GiB	2.45 GiB	11.89 GiB	
/dev/sdb1	<span style="color: red;">■</span> linux-swap		437.00 MiB	—	—	

...

0 operations pending



## The installed system

### *The old style:*

The original installed systems are similar to the original version of Lubuntu 13.04, basically the same as in

<http://help.ubuntu.com/community/InstalledSystemFakePAE>

and the way to install without the standard installers have developed gradually as described in

<https://help.ubuntu.com/community/OBI>

so the **username is guru** and the **password is changeme**. You should change the password, but keep guru as the administrator user, and create new users instead of trying to change the name of guru. The original user can be the administrator's account.

### *The new style*

Some of the 13.10 systems (except Lubuntu Core Saucy) are prepared for the end user (via the OEM procedure) and you will **select the user id and password after the installation**.

### *Computer name*

If several computers are to be run in the same LAN, you should create individual computer names (in `/etc/hosts` and `/etc/hostname`).

## Update and upgrade and install programs

like you would with any normal installed Ubuntu based system.

## Install a new language

The end user is given the opportunity to select language, but it will not be installed properly at the installation via the OEM dialogue (at least not Swedish, that I tested). But when the user selects (from the main menu in Lubuntu)

### *Preferences--Language Support*

and installs the relevant language, it will work after the next reboot.

*The **Trusty** pre-beta versions need the **keyboard layout** to be set separately: 'add language' in Xubuntu and 'select input method' (and select your language) in Lubuntu.*

## The mount options noatime and discard

If the drive is a *hard disk drive*, use *no* mount options **noatime** or **discard** in **/etc/fstab**

An *SSD* should have **noatime** and can have **discard** in **/etc/fstab**

A *simple flash drive* (USB pendrive or flash card) should have **noatime** in **/etc/fstab**

## The swap partition

If on flash memory, this swap partition is only for rare peaks in memory usage. You are recommended to add a swap partition on an internal hard disk drive if swap will be used regularly. That HDD swap partition should be addressed in **/etc/fstab** instead of the one on the flash drive.

## Observe that 13.04 Raring end of life is January 2014

Look for a new Ubuntu 13.10 'Saucy' or some of the other Ubuntu based flavours and re-spins!

## If you want to change the name of the computer and add a new user

Changing the name of the computer should be easy. It is enough to edit **/etc/hostname** and **/etc/hosts**. But it is easier to create a new user instead of changing the existing user. **But don't remove the original one unless the new user is member of the sudo group and you have verified that it is able to perform system tasks.** This issue may arise for the systems, where the user guru is preinstalled.

## 'floppy-off' when some commands are very slow

This tweak helps, when `blkid`, `parted -l` and `fdisk -lu` are very slow

<http://unix.stackexchange.com/questions/53513/linux-disable-dev-fd0-floppy>

On Ubuntu, the floppy driver is loaded as a module. You can blacklist this module so it doesn't get loaded:

```
echo "blacklist floppy" | sudo tee /etc/modprobe.d/blacklist-floppy.conf
sudo rmmmod floppy
sudo update-initramfs -u
```

Immediately and upon rebooting, the floppy driver should be banished for good.