

[Take the 2-minute tour](#) ×

Raspberry Pi Stack Exchange is a question and answer site for users and developers of hardware and software for Raspberry Pi. It's 100% free, no registration required.

How can I resize my / (root) partition?

up
vote **57** down
vote
34

Even though my SD card is 16GB, the image I flashed onto it was only 2GB and now I can only see 2GB of storage space on the disk.

How can I resize the image so that I have more space on my root partition?

up
vote **50** down
vote **accepted**
ted

Assuming you are using Debian.

The Short Version:

1. Backup your system
2. Remove the main and swap partitionS (leaving the boot partition alone)
3. Recreate the main partition to utilize the remaining disk space (excluding the boot partiton). Make sure to reuse the same start sector as the original root partition.
4. reboot the system
5. resize the new boot root partition to utilize the full partition size.

Step by Step Instructions

First make a backup of your SD Card using the instructions found [here](#) in case something goes wrong.

From the command line or a terminal window enter the following

```
sudo fdisk /dev/mmcblk0
```

then type `p` to list the partition table

you should see three partitions. if you look in the last column labeled **System** you should have

1. W95 FAT32
2. Linux
3. Linux Swap

make a note of the start number for partiton 2, you will need this later. though it

will likely still be on the screen (just in case).

next type **d** to delete a partition.

You will then be prompted for the number of the partition you want to delete. In the case above you want to delete both the Linux and Linux swap partitions.

So type **2**

then type **d** again and then type **3** to delete the swap partition.

Now you can resize the main partition.

type **n** to create a new partition.

This new partition needs to be a primary partition so type **p**.

Next enter **2** when prompted for a partition number.

You will now be prompted for the first sector for the new partition. **Enter the start number** from the earlier step (the Linux partition)

Next you will be prompted for the last sector you can just **hit enter to accept the default** which will utilize the remaining disk space.

Type **w** to save the changes you have made.

Next reboot the system with the following command:

```
sudo reboot
```

once the system has reboot and you are back at the commandline enter the following command:

```
sudo resize2fs /dev/mmcblk0p2
```

Note: this can take a long time (depending on the card size and speed) be patient and let it finish so you do not mess up the file system and have to start from scratch.

Once it is done reboot the system with the following command:

```
sudo reboot
```

You can now verify that the system is using the full capacity of the SD Card by

entering the following command:

```
df -h
```

Why This Works:

The real magic here is that **you delete the root and swap partitions, then recreate only the root partition (using the original start sector) before writing the data to the disk**. As a result you don't erase the existing data from the root partition.

By removing the swap partition you allow the root partition room to grow beyond its current size and fill the unused portion of the disk (because of the placement of the partitions -the root partition is sandwiched between the boot and swap partitions - it can't simply be resized leaving the swap partition alone).

You then resize (which is safe to run on a mounted disk) the file system to use all the space in the new root partition.

ref:

- <http://www.youtube.com/watch?v=R4VovMDnsIE>
- <http://www.raspberrypi.org/phpBB3/viewtopic.php?f=5&t=5584>

e this answer

edited Feb 16 '13 at 15:49

answered Jun 19 '12 at 10:04



rubenvb
1105



Steve Robillard♦
9,00344163

A good answer. But this will still only give a maximum of 2GB I believe, the size of the image. – Jivings♦ Jun 19 '12 at 10:30

But `resize2fs` cannot normally be used on a mounted partition can it? – finnw Jun 19 '12 at 10:31

@Jivings check the linked reference for proof it works - also I did this before putting xbmc on the pi. – Steve Robillard♦ Jun 19 '12 at 10:35

@finnw It looks to me like this method deletes the root partition so that it can be recreated larger, which is not really optimal. – Jivings♦ Jun 19 '12 at 10:42

4 It seems very wrong that you have to delete a partition in order to resize it. – Alex Chamberlain Jun 19 '12 at 14:08

show 11 more comments

up
vote **28** do
wn vote

Using the Debian-Wheezy Beta image, there is a configuration utility built in that makes this easy:

There is a utility called `raspi-config`. This runs on first boot if you're connected

directly to the RPi. If you're over SSH you can run it manually using `$ sudo raspi-config`. (I think you can re-run the tool manually at any time).

The second option on the blue dialog that follows is titled `expand_rootfs`, with the description "Expand root partition to fill SD card".

Selecting this will cause your root partition to be resized to fill the card the next time you boot your RPi.

[love this answer](#)

answered Jul 5 '12



[Jon Egerton](#)

1,275827

This process took about 10 minutes with a 16 GB card on my Pi. – [Oliver Salzburg](#) Jan 28 '13 at 12:57

This is so much simpler than the top answer. This is the solution to use. – [James Skimming](#) May 10 '13 at 21:14

@JamesSkimming: This is the solution to use for Debian-Wheezy Beta image. Not for others. – [SF](#) Aug 2 '13 at 22:53

This doesn't work for Raspbian when installed from NOOBS on the SDCard's they're shipping with RPi kits. when you try to run the expand option it says that it's not supported by this config, but since your running noobs it's probably using all the space anyway... problem is I'm trying to reflash the 8GB image onto a 32GB Card – [Eoin Campbell](#) Dec 28 '13 at 19:31

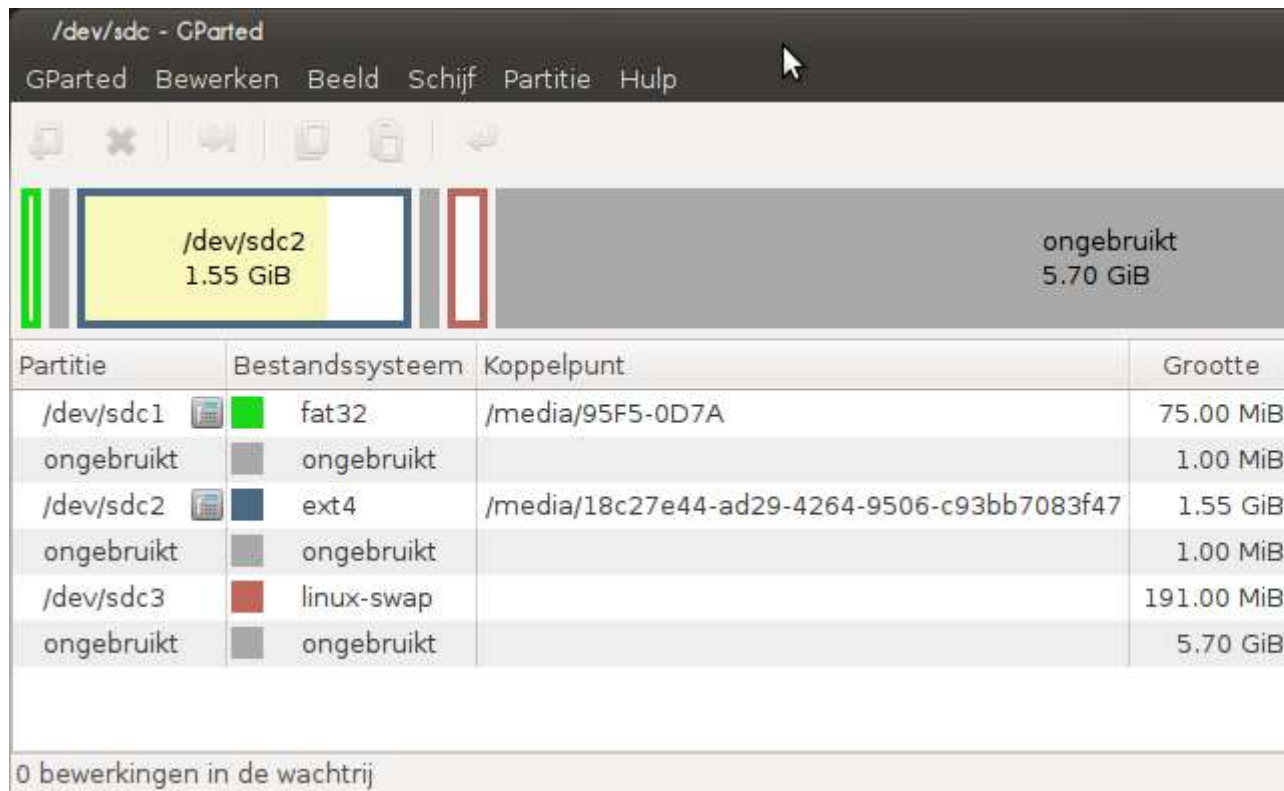
[add comment](#)

up
vote **11**
down
vote

If you are not very comfortable working on the command line, like in Steve Robillard's excellent answer, there are some GUI applications available. In particular `gparted` works very well.

I think it's installed by default on a Ubuntu LiveCD but not on an installed system. There is of course an easy fix for this: `apt-get install gparted`. You can't do this on the actual Pi, because to resize partitions they need to be unmounted.

The picture below is in Dutch, but don't let that spoil the fun. It's very easy to use. This is the layout of the default debian image on a 8gb sdcard.



Right-click the partions to unmount them and then right-click to resize or move the partition. You can also create new partitions and format existing ones. In the picture below I've removed the swap partition and now I'm able to resize the root partition to the entire space on the right of it. Don't fill it entirely, because you still have to add a swap partition.



You can play with the partition layout, changes are only written if you apply the changes (the grayed out 'return' key in the first picture).

It's very easy to move partitions but like in Steve's answer I'd recommend you remove the swap partition entirely, then resize the root and then recreate a swap. Moving a partition can take a very long time and the swap does not contain data you need to keep.