2022

Backup Pi-hole (Raspberry Pi OS Lite)

https://github.com/jpgpi250

3-1-2022

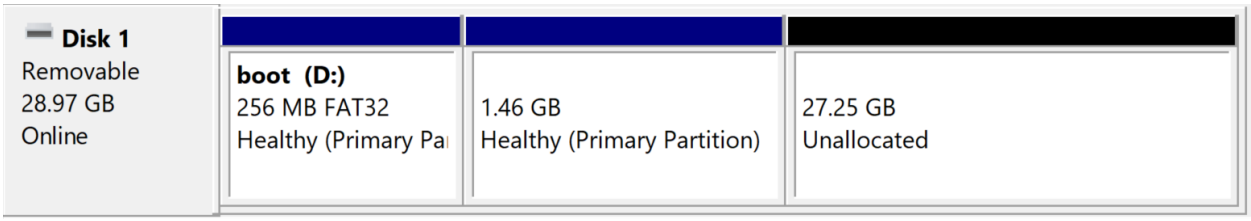
1. **About this manual.**
   If you are reading this document, using Adobe Reader, you may click on a hyperlink to content in this document. Use the combination <Alt> <left arrow> to return to the previous location.

   "Back" and "Forward" buttons can also be added to the toolbar. If you right-click on the tool bar, under "Page Navigation", they are referred to as "Previous View" and "Next View".

   This document is hosted on GitHub, you can open the document (pdf), using this link.

2. **Prevent automatic.**
   This document was written, using the October 30th 2021 release of Raspberry Pi OS Lite.

   After you have written the Raspbian image to the SD card, using Win32Diskimager, the SD card partition layout will resemble something like this (Windows 10, right click the "Start" button and select "Disk Management"):



   In order to access the pi, using Putty and WinSCP (discussed in the pi-hole installation manual), you have already added a file called "**ssh**" (no extension) to the boot partition, this to enable SSH.

   To prevent automatic expansion of the Linux file system, which makes it very hard to clone the SD card (size errors), you need to disable automatic expansion by making a change to the file "**cmdline.txt**" (already exists on the boot partition).

   Remove the following section:

```
init=/usr/lib/raspi-config/init_resize.sh
```

   The file will thus look like this, after editing (image version Raspberry Pi OS Lite, Release date: October 30th 2021), everything on a single line.

   The PARTUUID will always be different.

```
console=serial0,115200 console=tty1 root=PARTUUID=8acef004-02 rootfstype=ext4 fsck.repair=yes rootwait quiet
```

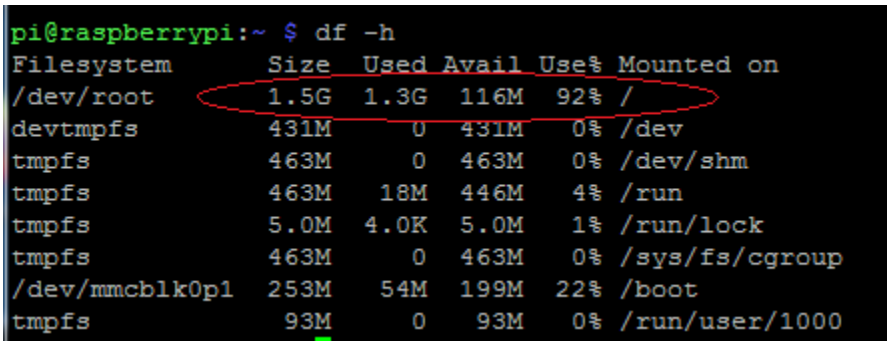
   Ready to proceed, place the new SD card in your pi, wait for the boot process to complete and connect to the pi, using Putty.

3. **Manually resizing the partition size.**
   Reference: Resize the partition to fill the SD card.

Ideally, do this just after you provisioned the SD card. We will NOT use all of the available space, since that is what causes the cloning problem.

WARNING: You can increase the size of a partition without losing data, even if the filesystem is mounted, you cannot decrease (shrink) a partition, if a filesystem on this partition is mounted.

Since we disabled automatic expansion, the current usable space will be very limited (1.5G in the screenshot.

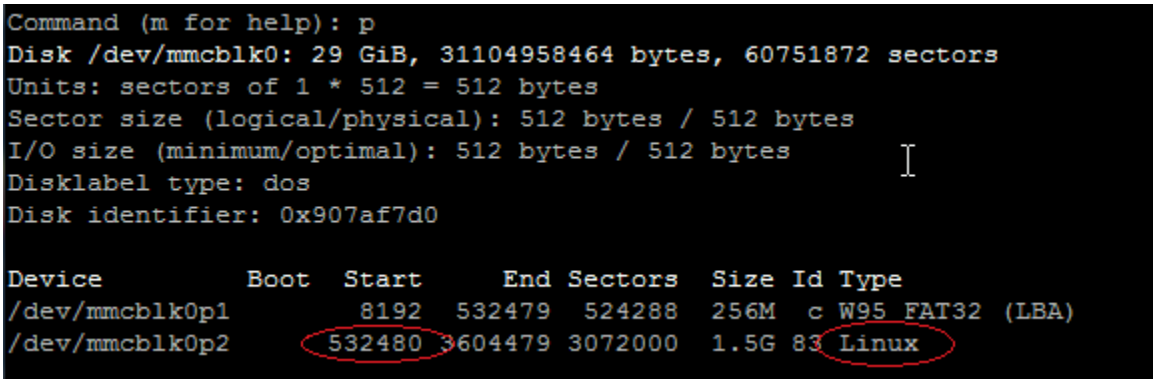


We will need to manually increase the size of /dev/root, without using all of the available space, this to ensure we will not have cloning problems.

Now run fdisk, using the device name, but not the partition indicator, e.g.:

```
sudo fdisk -uc /dev/mmcblk0
```

Press “p”, to display the partition table



Notice the **first sector value** is marked, we need this, in order to create the new partition. This value may be different for you, **use the value from your system**!

There are two partitions, we want to resize the “Linux” partition. In order to do this we’ll first delete the “Linux” partition.

Press “d” and select partition “2”

```
Command (m for help): d
Partition number (1,2, default 2): 2

Partition 2 has been deleted.
```

Now we will recreate the partition, a primary partition.

Press “n” for new, “p” for primary, “2” (second partition)

```
Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2): 2
```

Now you need to copy the first sector value, this value must be the same as the original value, highlighted in the first screenshot. Again, **use the value from your system**!

```
First sector (2048-60751871, default 2048): 532480
```

We will now ensure we don’t use all of the available space, this to ensure the image can be restored, using [Win32Diskimager], without any size warnings.

- fdisk will suggest the last available sector, this is NOT what we want. In the screenshot below, fdisk suggests 60751871, the last sector on my 32Gb SD card.

Use the values your system suggests to perform the calculation; e.g. **default – 102400 = result**

- A sector is 512 bytes, In order to leave 50Mb unused space on the SD card I need to change (decrease) the suggested number of sectors (60751871).
    - 1 sector = 512 bytes
    - 2 sectors = 1Kb
    - 1Kb * 1024 = 1Mb (2048 sectors)
    - 1Mb * 50 = 50Mb (102400 sectors)
- 60751871 – 102400 = 60649471

```
Last sector, +/-sectors or +/-size{K,M,G,T,P} (532480-60751871, default 60751871
): 60649471
```

Press “n” (don’t remove the signature)

```
Created a new partition 2 of type 'Linux' and of size 28.7 GiB.
Partition #2 contains a ext4 signature.

Do you want to remove the signature? [Y]es/[N]o: n
```

Press “w” to write the changes

```
Command (m for help): w

The partition table has been altered.
Syncing disks.
```

fdisk will automatically exit, now, start the resize command:

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

This will take a while…

As soon as the process is completed, you can see the new size:

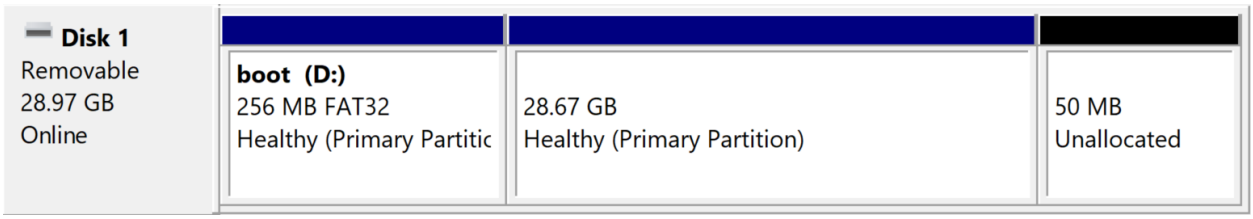
```
pi@raspberrypi:~ $ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        29G  1.3G   26G   5% /
devtmpfs        431M     0  431M   0% /dev
tmpfs           463M     0  463M   0% /dev/shm
tmpfs           463M   18M  446M   4% /run
tmpfs           5.0M  4.0K  5.0M   1% /run/lock
tmpfs           463M     0  463M   0% /sys/fs/cgroup
/dev/mmcblk0p1  253M   54M  199M  22% /boot
tmpfs            93M     0   93M   0% /run/user/1000
```

Reboot the system, in order to verify everything works:

```
sudo reboot
```

4. **Resulting partition layout.**

Windows 10, right click the “Start” button and select “Disk Management”



Because an image, created with Win32Diskimager (read) is now smaller than the available SD card size, the image can easily written to another SD card (same size), using the same software (no other tools required).

5. **Change log.**

22-11-2020

- Initial version.

30-10-2021

- Raspberry Pi OS Lite October 30th 2021 released.

03-01-2022

- Typo: cmdfile.txt -> cmdline.txt
- Added warnings to use the values from your SD card / system.