

# Instructions for burning the SAM Cloud Image to an SD Card on Linux without using the SAM Burner

## Option 1: Using ImageWriter (graphical interface)

If you are using Ubuntu and or don't want to use the terminal, you can use the ImageWriter tool (nice graphical user interface) to write the .img file to the SD card.

1. Download the zip file named 'image only' from: <https://samlabs.me/cloud>
2. Right click the zip file and select "Extract here"
3. Remove the SD card from your cloud module, insert the SD card into the SD card reader provided and put the reader into your computer
4. Install the ImageWriter tool from the Ubuntu Software Center
5. Launch the ImageWriter tool (it needs your administrative password)
6. Select the image file to be written to the SD card (note: because you started ImageWriter as administrator, the starting point when selecting the image file is the administrator's home folder, so you'll need to change to your own home folder to select the image file)
7. Select the target device to write the image to (your device will be something like `"/dev/mmcblk0"` or `"/dev/sdc"`)
8. Click the "Write to device" button
9. Wait for the process to finish and then insert the SD card back into the cloud module

## Option 2: Using the Linux command line

Please note that the use of the "dd" tool can overwrite any partition of your machine. If you specify the wrong device in the instructions below you could delete your primary Linux partition. Please be careful.

1. Download the zip file named 'image only' from <https://samlabs.me/cloud>
2. Extract the image, with

```
unzip ~/samcloud-1.0.0.img.zip
```

3. Run `df -h` to see what devices are currently mounted
4. If your computer has a slot for SD cards, insert the card. If not, insert the card into a SD card reader. Plug in the reader to your computer
5. Run `df -h` again. The device that wasn't there last time is your SD card. The left column gives the device name of your SD card. It will be listed as something like `"/dev/mmcblk0p1"` or `"/dev/sdd1"`. The last part ("`p1`" or "`1`" respectively) is the partition number, but you want to write to the whole SD card, not just one partition, so you need to remove that last part from the name (for example `"/dev/mmcblk0"` or `"/dev/sdd"`). Note that the SD card can show up more than once in the output of `df`. This is the case if you have previously written a cloud module image to this SD card, because the cloud module images have more than one partition.
6. Now that you've noted what the device name is, you need to unmount it so that files can't be read or written to the SD card while you are copying over the SD image. If your SD card shows up more than once in the output of `df` due to having multiple partitions on the SD card, you should unmount all of these partitions.
7. Run the command below, replacing `"/dev/sdd1"` with your SD card's device name (including the partition number)

```
umount /dev/sdd1
```

8. In the terminal write the image to the card with this command, making sure you replace the input file `if=` argument with the path to your `.img` file, and the `"/dev/sdd"` in the output file `of=` argument with the right device name (**this is very important: you will lose all data on the hard drive on your computer if you get the wrong device name**). Make sure the device name is the name of the whole SD card as described above, not just a partition of it (for example, `sdd`, not `sdds1` or `sddp1`, or `mmcblk0` not `mmcblk0p1`)

```
dd bs=4M if=~/SAM_Image_name.img of=/dev/sdd
```

- Please note that block size set to `4M` will work most of the time, if not, please try `1M`, although `1M` will take considerably longer.
- Note that if you are not logged in as root you will need to prefix this with `sudo`
- The `dd` command does not give any information of its progress and so may appear to have frozen. It could take more than five minutes to finish writing to the card. If your card reader has an LED it may blink during the write process. To see the progress of the copy operation you can run `pkill -USR1 -n -x dd` in another terminal

(prefixed with **sudo** if you are not logged in as root). The progress will be displayed (perhaps not immediately, due to buffering) in the original window, not the window with the **pkill** command.

9. Instead of **dd** you can use **dcfldd**; it will give a progress report about how much has been written.
10. Another option to monitor progress is to use Pipe Viewer (**pv**). Pipe **dd** input part through **pv** to the output part of **dd**:

```
dd bs=4M if=SAM_image_name.img | pv | dd of=/dev/mmcblk0
```

```
2,02GB 0:06:34 [10,4MB/s] [ <=> ]
```

11. You can check what's written to the SD card by **dd**-ing from the card back to your harddisk to another image, and then running **diff** (or **md5sum**) on those two images. There should be no difference.
12. As root, run the command **sync** or if a normal user run **sudo sync** (this will ensure the write cache is flushed and that it is safe to unmount your SD card)
13. Remove the SD card from the card reader, insert it into the cloud module, and visit the video tutorial on <https://samlabs.me/cloud> for instructions on how to set up the cloud module with your account