

HOW TO install and configure Debian and ptask on an SD card for the BeagleBone Black

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1.1 Flash Debian to the SDcard

To install Debian you need to go to the website: <https://beagleboard.org/latest-images>

and download the Debian image you want to install. Please make sure to select one of the images that is fitting for the Beagle Bone Black to avoid complications (For each image, there are the fitting boards stated).

After downloading, you have to extract the image you can use *unxz (Linux) * or 7zip(Win)*.

*It's not working on the machines in the lab since there is too little space allocated to the user

The following step is to flash the image to the SD card. There are several tools you can use for that. Here are two examples¹ one for windows and one for Linux

Windows

1. Insert your SD card into your computer and note down the drive letter it is assigned.
2. Download and install the [Win32DiskImager](#).
3. Select the image file you extracted earlier and the drive letter of the SD card.

Warning There is a significant risk you could damage your file system if you select the wrong drive letter. Make sure you get it right!

4. Click "Write" and watch the pretty progress bar.

Linux

1. Insert your SD card into your computer.
2. Locate the device by running `sudo fdisk -l`. It will probably be the only disk about the right size. Note down the device name; let us suppose it is `/dev/sdx`. If you are in any doubt, remove the card, run `sudo fdisk -l` again and note down what disks are there. Insert the SD card again, run `sudo fdisk -l` and it is the new disk.
3. Unmount the partitions by running `sudo umount /dev/sdx*`. It may give an error saying the disk isn't mounted - that's fine.
4. Copy the contents of the image file onto the SD card by running

```
sudo dd bs=1M if=your_image_file_name.img of=/dev/sdx
```

¹ <https://raspberrypi.stackexchange.com/questions/931/how-do-i-install-an-os-image-onto-an-sd-card>

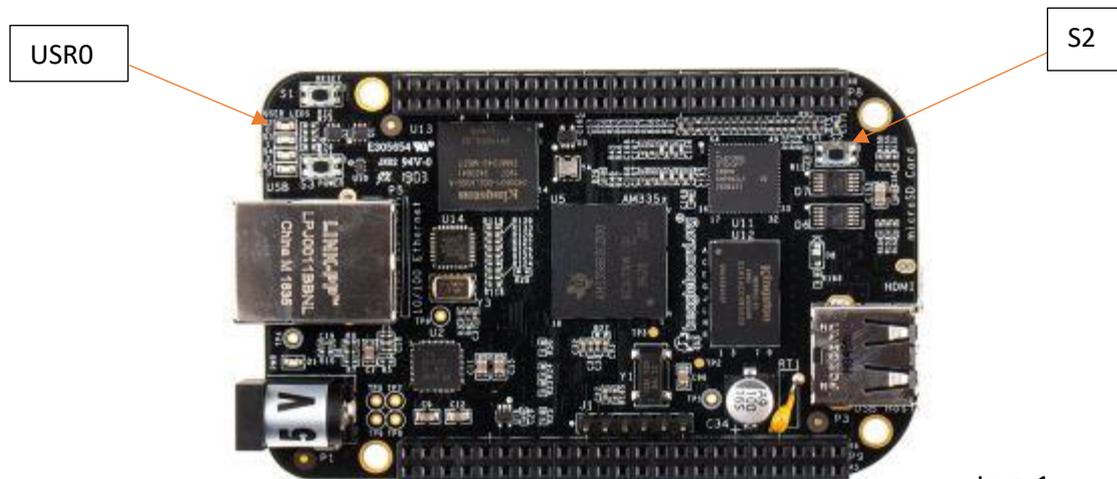
1.2 Running the BeagleBone with the SDcard

After flashing the image to the SD card, you can insert it into your unplugged BeagleBone.

We recommend powering the BeagleBone with your computer since you get easy access to the webserver running on the BeagleBone. Furthermore, you will have access to the documentation of the BeagleBone via your file explorer.

To boot the board from the SD card, you have to press the S2 button (next to the SD card slot, see img 1) and simultaneously power the board. Hold down the button until the USR0 LED (left upper corner of the board/see img 1) lights up for the first time and then let go.

Note: If you press the button longer than 5 Seconds you start to flash the SD card onto the internal storage



Img. 1

1.3 Connect to the Board

There are several ways to connect to the board, first of all, you can connect via minicom as described by Peter:

- a. Connect the usb cable (the one with the blue usb end)
 - a.1 connect the blue usb end to your Linux workstation
 - a.2 connect the other end to the board pins behind the edge connector (using pins 1, 4 and 5)
 - a.3 connect the micro usb cable to the board for power
- b. Use minicom to connect through the blue usb using default values (save in .minicom.dfl)

```
pu port          /dev/ttyUSB0
pu baudrate     115200
pu bits         8
pu parity       N
pu stopbits     1
```

Note: Depending on how you power up your BeagleBone the port will differ.

With the same setup, you also can access the board via PuTTY if you prefer to use that.

If your BeagleBone is connected to your computer, you also can access the board via connecting to the web server, which is running on the board. To do so, you can open your browser and access 192.168.7.2

There should be a cloud9 environment that provides an editor and a terminal. You also can open multiple terminals, which is quite handy. If there is only the “getting started”-page from BeagleBone, your board is running from the internal storage instead of the SD card.

1.4 Configuring Debian

Before you do anything else, you should resize the partition so you have enough space.

To do so just run the following command:

```
sudo /opt/scripts/tools/grow_partition.sh
```

After that you have to restart the board to apply the changes

The next step to configure your board is to connect it to the Wifi². The following is the description is for connecting to an enterprise wifi. For connection instructions for private wifi, look at <http://beagleboard.org/upgrade> .

First of all, scan for all networks with connman(run the bold commands)

```
debian@beaglebone:/var/lib/cloud9$ sudo connmanctl
[sudo] password for Debian: temppwd
connmanctl> scan wifi
Scan completed for wifi
connmanctl> services
eduroam                wifi_f45eab4e7ce3_656475726f616d_managed_ieee8021x
viu-guest              wifi_f45eab4e7ce3_7669752d6775657374_managed_none
viu-secure            wifi_f45eab4e7ce3_7669752d736563757265_managed_ieee8021x
connmanctl> quit
```

After scanning you have to set up a configuration file for your Wifi named [Wifi code].config:

```
debian@beaglebone$ sudo nano /var/lib/connman/
wifi_f45eab4e7ce3_7669752d736563757265_managed_ieee8021x.config
```

In the file you have to write down your data like this:

```
[service_wifi_f45eab4e7ce3_7669752d736563757265_managed_ieee8021x]
Type = wifi
SSID = 7669752d736563757265
EAP = peap
Phase2 = MSCHAPV2
Identity= USERNAME
Passphrase= PASSWORD
```

After creating this file you have to restart connman:

```
debian@beaglebone$ sudo systemctl restart connman
```

² <http://beagleboard.org/upgrade>

Now you should be connected to the wifi you can check for example with `ifconfig wlan0` or try to ping google

After connecting to the internet, you should run `update&upgrade`

2.Install PTask

To install PTask you need to clone the repository:

```
debian@beaglebone$ git clone https://github.com/glipari/ptask.git
```

Before you can build the project you must install cmake and Allegro:

```
sudo apt-get install cmake  
sudo apt-get install liballegro4-dev
```

After that you can build PTask with the following commands:

```
mkdir build  
cd build  
cmake ..  
make
```