

 Pictures/TUE-Logo.jpg

Mechanical Engineering Dept.

# Edrive manual

## 2<sup>nd</sup> Version

 pictures/edriveicon.png

 EBOX\_logo.png

M. Plantinga

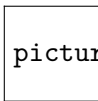
Eindhoven, February 8, 2016

## New in the 2<sup>nd</sup> Version

This version of the Edrive Manual contains modifications for the **HP 8560w** and **HP 8570w**. These modifications are with regards to the BIOS menu in section 1.1.3 and include two troubleshooting sections 3.7 and 3.8. The new troubleshooting section 3.8 might also apply to non TU/e Windows computers. All other content is the same as in the first version of the 9th of March 2015.

## Introduction

This manual will guide you to use the USB drive *Edrive* that has been made for using with the EBOX. The Edrive contains a Linux OS distribution (Lubuntu) and programs that are used to be able to work with the EBOX. It also contains a signal simulator that allows to run simulated experiments without the EBOX. You don't have to read the whole manual, just read the sections that apply to your system. Please read these sections carefully. At the end of the manual there is a troubleshooting section that you can consult if you encounter any problem.



### Caution

- Matlab licenses are linked to your hardware. You will not be able to start up Matlab from somebody else's Edrive on your computer. If you want to reactivate the license, please refer to the troubleshooting section of this document.
- Do not unplug the Edrive while it is running Lubuntu, the Edrive might get damaged.
- Do not force shut down Lubuntu, the Edrive might get damaged.
- Before modifying anything in your BIOS write down or take a picture of the original settings.

# 1 First Steps: booting the Edrive

When you normally turn on your computer it boots into Windows or Mac OS. To use the Edrive you must boot into its preinstalled Linux OS. In order to do so on Windows computers, slight changes have to be made in the BIOS (Basic Input Output System) of your computer. Computer brands have different BIOS layouts, but they basically do the same. In section 1.1 the procedure will be explained for the HP ZBook, HP 8560w and HP 8570w computers. Section 1.2 will expose it for other Windows computers. In section 1.3 the procedure to boot the Edrive will be exposed for Mac computers.

## 1.1 HP computers setup


### 1.1.1 BIOS settings on the HP ZBook

Computers with Windows preinstalled try to avoid other operating systems from being booted on the computer. This is done by the so-called *SecureBoot*. In order to boot the Edrive, SecureBoot has to be switched off. Follow the below instructions to switch off SecureBoot. This won't affect your system's performance, nor will it modify anything on your Hard Drive. Windows will start up normally after this modification.

- Turn on your computer.
- As soon as the HP logo appears press the **F10** key.
- The BIOS will start loading.
- Select **Yes** if asked if you want to log in as a guest user.
- With either the arrow keys or the mouse pad go to the **Advanced** tab and select **Boot Options**.
- Scroll down to **Secureboot** and unmark its checkbox. Click **Accept** to save the changes.
- Go to **Boot Mode** and make sure that it is set to **UEFI Native**.
- Save and exit the BIOS, your computer will restart as usual.

Video Link:  
**Bios setup HP ZBook**

### 1.1.2 Booting the Edrive on the HP ZBook

The HP ZBook comes with both USB 2.0 and USB 3.0 ports. USB 3.0 ports are recognized by the following logo next to the port:  `pictures/usb_3_logo.png`

- Plug the Edrive in a USB 3.0 port.
- Turn on your computer.
- As soon as the HP logo appears press the **F9** key.
- A menu appears in which you can choose to boot from the Edrive (*External USB Hard Drive*), select it with the arrow keys and press enter

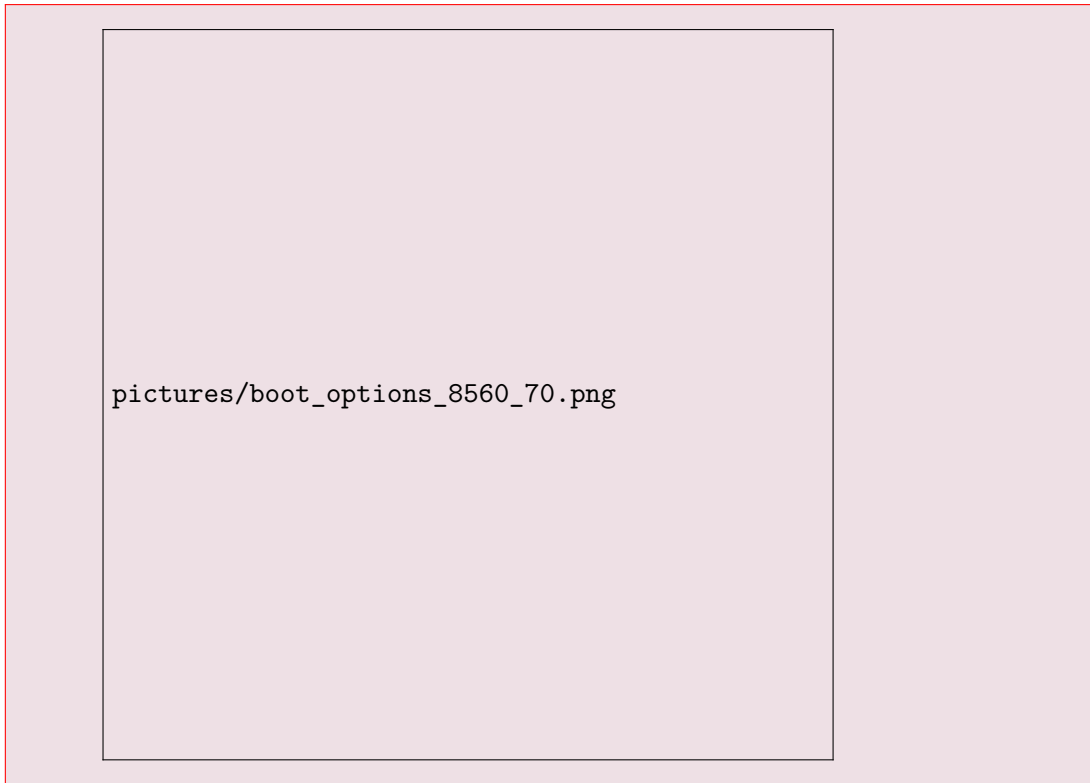
Video Link:  
[Booting the Edrive](#)

### 1.1.3 BIOS settings on the HP 8560w and 8570w

The BIOS settings for both the HP 8560w as the HP 8570w should be correct by default. If you however encounter a problem when trying to boot the Edrive, please consult section 3.7 to see if your BIOS settings are correct.

### 1.1.4 Booting the Edrive on the HP 8560w and 8570w

- Unlike the ZBook, both the 8560w and 8570w don't allow booting from a USB 3.0 port, you have to use either a USB 2.0 port or the eSATA port on the left side. *Be gentle when plugging in the USB to the eSATA port as forcing it might damage the connections.*
- Plug the Edrive in a USB 2.0 port or the eSATA port.
- Turn on your computer.
- As soon as the HP logo appears press the **F9** key.
- A menu appears in which you can choose to boot from the Edrive (*USB Hard Drive 1 - Kingston DataTraveler 3.0*), select it with the arrow keys and press enter.



You can now proceed to section 2.

## 1.2 Other Computers

If you own another Windows computer, the steps are similar to those described for HP computers, however the user interface will differ and so might the function keys. Please refer to the following link to see the equivalent function keys you have to press in order to enter the BIOS and boot the Edrive:

<https://craftedflash.com/info/how-boot-computer-from-usb-flash-drive>

You can consult the steps for HP computers as guidance.

### 1.2.1 BIOS settings on other Windows computers

**Important:** Before modifying anything write down or take a picture of the original settings.

Once you know how to enter into your BIOS, you need to check how your system boots, that is in Legacy, Hybrid or UEFI mode.

**Case 1:** your boot mode is set to Legacy only

You don't have to modify anything, proceed to the next section.

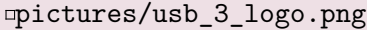
**Case 2:** your boot mode is set to UEFI native/only

Deactivate SecureBoot if it is activated and save your settings.

**Case 3:** your boot mode is set to Hybrid (or equivalent name, e.g. *both*)

Deactivate SecureBoot if it is activated and save your settings.

### 1.2.2 Booting the Edrive on other Windows computers

- If your computer has a USB 3.0 port, insert the Edrive in a USB 3.0 port. USB 3.0 ports are recognized by the following logo next to the port:  `pictures/usb_3_logo.png`  
Otherwise insert it in any USB port. Note that some computer brands only allow booting from specific USB ports on the computer. If you are not able to boot from a port, try other USB ports (2.0 or 3.0). If your computer has an eSATA port, you can also try this one (*be gentle when plugging in the USB in an eSATA port, if you force it you might damage the connections*).
- Turn on your computer
- As soon as you turn on the computer press the function key to select the boot drive, see the above [Link](#)
- A menu appears in which you can choose to boot from the Edrive (*External USB Hard Drive* or equivalent name), select it with the arrow keys and press enter. Some computers might give the Edrive the name of the USB brand (i.e. [Kingston](#) or [DataTraveler](#)).

You can now proceed to section 2.

## 1.3 Mac Computers

If you own a Mac, you can use the EBOX if your computer has an Ethernet port. If this is not the case (Macbook Retina and Macbook Air), use of a USB-to-Ethernet adapter is not guaranteed to work as it has not been tested. The Edrive will work independently of whether your Mac has an Ethernet port or not, for you will be able to run the simulated experiments.

On Mac computers nothing has to be modified in the BIOS as, unlike Windows computers they do not have one.

### 1.3.1 Booting the Edrive

**Important:** in order to be able to boot the Edrive you it is recommended to have Mac OS updated to the latest version (Yosemite at the time of writing this manual).

- Plug the Edrive in a USB port.
- Turn on your Mac.
- Immediately **press and hold** the `Option/Alt` key. After a few seconds, the Startup Manager appears.
- With the arrow keys select **EFI** and press enter.



`pictures/StartupManager.jpg`

- Lubuntu will begin starting up now.

## 2 Working with the Edrive

### 2.1 Login

When starting up you don't have to log in. If your computer goes to sleep mode, you can log in again with the following credentials:

username: **ebox**  
password: **ebox123**

### 2.2 Setting up your Network

#### 2.2.1 Setting up TU/e's WiFi network

- In the lower right corner of the screen click on the WiFi icon.
- Select **tue-wpa2**. *If you are on a Mac and don't see any network, consult section 2.2.3.*
- In the Wi-Fi Network window do the following:
  - Set **Authentication** to **Protected EAP (PEAP)**
  - Username: **tue\s\*\*\*\*\*** (your s-number, don't forget to add **tue\**)
  - Password: insert your password
- Click **Connect**.
- A popup window will appear warning that no Certificate is chosen, click **Ignore**.
- You should now have access to the Internet.

Video Link:  
**Setting up TU/e's WiFi network**

#### 2.2.2 Connecting to your Home network

Follow the first 3 steps from previous subsection and proceed from there.



### 2.2.3 Mac computers

The WiFi driver of your Mac may not be recognized by default. If you don't see any connections when clicking on the WiFi icon in the lower right corner of your screen, proceed as follows:

- Connect your Mac to the Internet with an Ethernet cable. This cannot be done on the TU/e network as your computer has not been registered with this OS and therefore you won't get Internet access. You will have to do it on your home network.
- In the lower left corner of the screen click on the [TU/e](#) icon.
- Go to [Preferences](#) followed by [Additional Drivers](#)
- Wait for the drivers to appear and select the Broadcom driver
- Click [Apply Changes](#) and wait for the driver to be installed.
- You should now be able to see WiFi networks.

### 2.2.4 Setting up TU/e's VPN

This is not an essential step to work with the software, for you can skip it if not specifically needed (e.g. adding additional Matlab toolboxes from outside the TU/e)

- In the lower right corner of the screen click on the WiFi icon.
- Go to [VPN Connections](#) and then [Configure VPN](#).
- Click [Add](#) to create a new VPN.
- Under connection type choose [Point-to-Point Tunneling Protocol \(PPTP\)](#) and click [Create](#).
- In the Editing VPN connection window enter the following:
  - Connection name: `TU/e VPN`
  - Gateway: `vpn.tue.nl`
  - Username: `tue\s*****` (your s-number, don't forget to add `tue\`)
  - Password: insert your password
  - enter your password
- Click [Save](#) and then [Close](#).

Video Link:  
[Setting up TU/e's VPN](#)

## 2.3 Activating your Matlab licence

You don't need to be connected to TU/e's network for this step, but you do need to have Internet access.

- Press `Ctrl` + `Alt` + `T` to open a Terminal.
- Type: `sudo su`
- Enter the password: `ebox123`
- Type: `matlab`

The Matlab licence activation will appear. You have to enter your personal account credentials (user name and password). If you don't have one yet, go to the following link [Matlab Activation](#) to see how to create an account.

Congratulations, your Edrive is fully set up now!

***Note 1:** You can have an active Matlab on both a Windows, Mac or Linux computer and an Edrive.*

***Note 2:** You cannot use an Edrive from someone else on your computer as the Matlab license is linked to your hardware.*

Video Link:  
[Activating Matlab](#)

## 2.4 Running Matlab, QADScope & the simulated experiments

### 2.5 Matlab

- Press `Ctrl` + `Alt` + `T` to open a Terminal.
- Type: `sudo su`
- Enter the password: `ebox123`
- Type: `matlab`

## 2.6 QADScope

- Type: `qs` in Matlab's command window and press enter.
- Qadscope will launch and you can start with the experiments.

**Important:** In order to run QADScope, the EBOX needs to be connected to your computer. The Ethernet cable has to connect the IN port of the EBOX to your computer's Ethernet port.

## 2.7 Simulated Experiments

- Type the name of one of the simulated experiments in Matlab's command window and press enter.
- There are 5 simulated experiments you can do:
  1. `loopback`
  2. `twomass`
  3. `twomassspring`
  4. `truck`
  5. `twotone`
- Qadscope will launch and you can start with the simulated experiments.

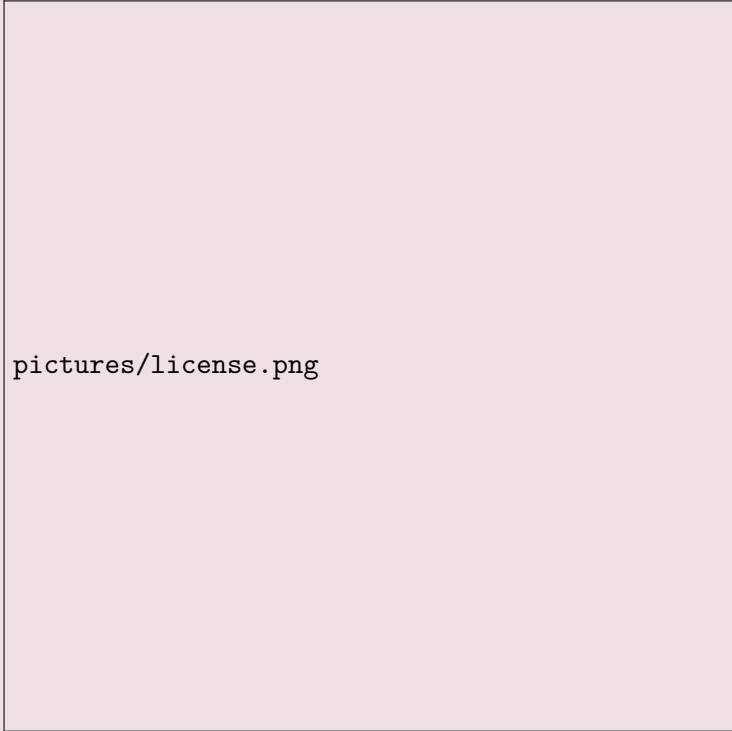
Video Link:  
[Running Matlab & QADScope](#)

## 3 Troubleshooting

### 3.1 Reactivate Matlab license

If you want to use your Edrive on another computer, you have to reactivate your Matlab licence.

- Press `Ctrl` + `Alt` + `T` to open a Terminal.
- Type: `sudo su`.
- Enter the password: `ebox123`.
- Type: `matlab`.
- An error message indicating that your license is not valid will be prompted.
- Within the error message the path to the license file is prompted. This file ends with `.lic`, see selected text within below figure:



`pictures/license.png`


*e.g.: `/root/.matlab/R2014b_licences/license_ebox_XXXX_2014b.lic`, where `XXXX` is the license number.*

- copy the whole path together with the licence file and `.lic` extension.

- type: `rm <path_that_you_copied>`,  
*e.g.:* `rm /root/.matlab/R2014b/licences/license_ebox_XXXX_2014b.lic`,  
where XXXX is the license number.
- you have removed the license file and can reactivate Matlab by following **Section 2.3**.

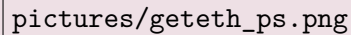
### 3.2 QADScope doesn't start up

If you get the following message in Matlab when trying to start up QADScope:

 `pictures/geteth_error.png`

proceed as follows:

- Check if the EBOX is connected correctly to your computer. The Ethernet cable has to go from the **IN** port of the EBOX to your computer's Ethernet port.
- Try another Ethernet cable, it might be that the cable is damaged.
- If the error persists  
open a terminal by pressing `Ctrl` + `Alt` + `T`, type `geteth` and press enter.  
You should see the following in your terminal:



```
pictures/geteth_ps.png
```

If you do not see this, please ask an assistant for help.

- Without closing the terminal, go to Matlab and type `qs` in the command window. QADScope should start up normally.

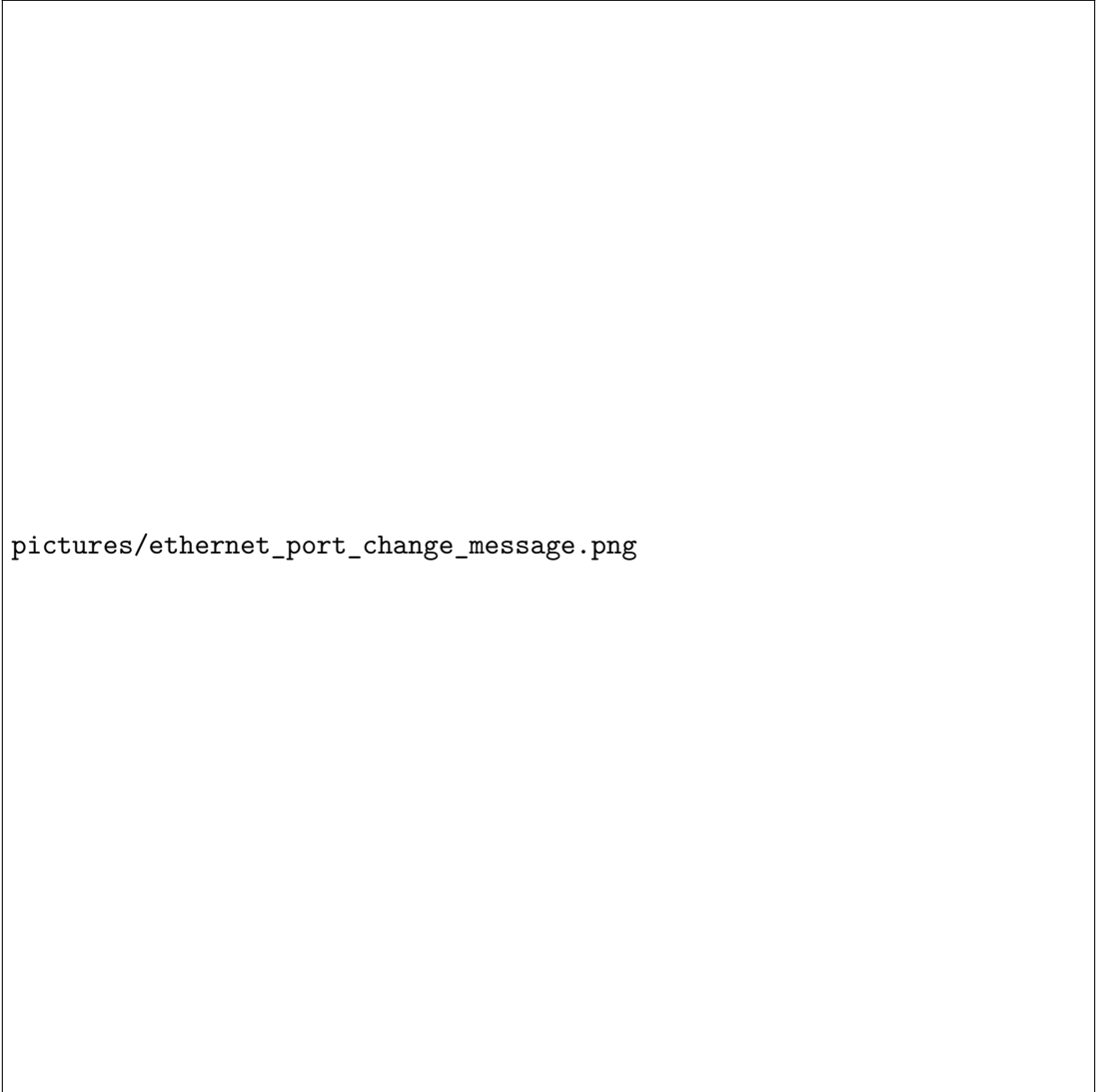
### 3.3 No WiFi connection on a Mac

If you do not see any Wi-Fi networks on your Mac, you have to download the Broadcom WiFi driver. Go to **Section 2.2.3** and proceed from there.

### 3.4 Ethernet Port name Error

If you get the following error:

The Ethernet port name has been reset to be able to work with the EBOX. This modification is only applied to the EDrive and will not affect your usual operating system. You have to reboot your computer in order for the modification to become effective. Without rebooting you won't be able to run QADScope or the simulated experiments.



`pictures/ethernet_port_change_message.png`

### 3.5 Editing your WiFi settings

If you have entered the wrong network credentials and/or settings you can remove or edit the network as follows:

- Click on the [TU/e](#) icon in the lower left corner of the screen.
- Go to [Preferences](#) followed by [Network Connections](#).
- A window will appear where you can select the network you want to modify/remove.

- If you remove TU/e's WiFi network, you can set it again as exposed in **Section 2.2.1**

### 3.6 Computer doesn't recognize the Edrive

If, when trying to boot the Edrive, your computer won't list the Edrive in the boot device options or if it won't boot after selecting it, proceed as follows:

- Check if the Edrive is listed under any other name in the boot device options. Some computers may list it as *Kingston*, *DataTraveler*, *External HDD* or any other equivalent name.
- Turn off your computer and try to boot it from another USB drive. Some computers only allow to boot external media from specific USB ports. If your computer has an eSATA port, you can also plug in your Edrive to that port and try to boot from it. Be gentle with the eSATA port, forcing to plug in the Edrive might damage the connections.

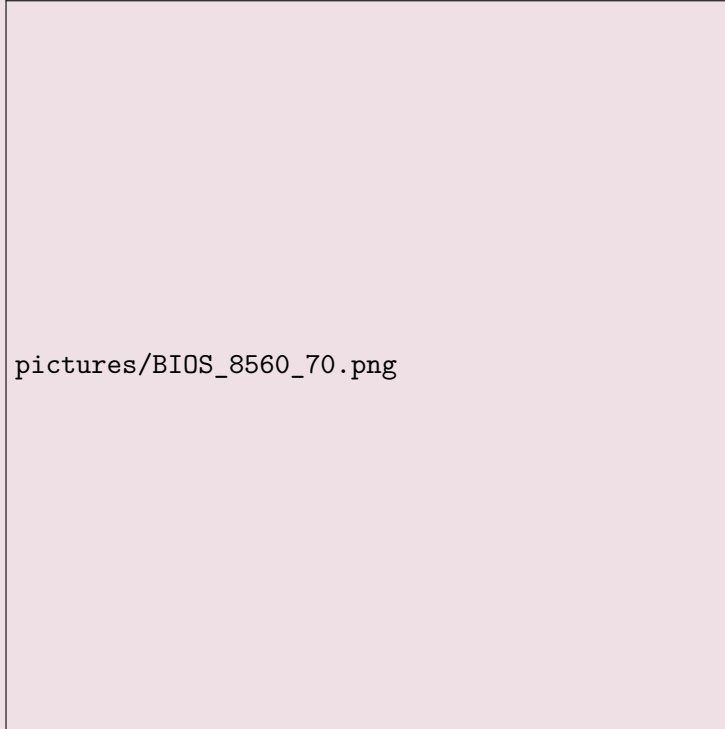
### 3.7 Verification of BIOS settings for the HP 8560w and HP 8570w

If you have a problem with booting the Edrive from your HP 8560w or HP 8570w, proceed as follows

- Check if in the *Boot Options* menu (see 1.1.4) the Edrive can be found under another name. This can for example be *USB HDD*, *External USB Hard Drive*, *Data Traveler* or any other equivalent name.
- Try booting from another USB 2.0 port or the eSATA port.
- If you have tried the above and the Edrive is still not to be found, check your BIOS settings as follows:
  - Turn on your computer.
  - As soon as the HP logo appears press the **F10** key.
  - The BIOS will start loading.
  - Select **Yes** if asked if you want to log in as a guest user.
  - With either the arrow keys or the mouse pad go to the **System Configuration** tab and select **Boot Options**.



- Go to **UEFI Boot Mode** and make sure that the checkbox is unchecked.



pictures/BIOS\_8560\_70.png

- Save and exit the BIOS, your computer will restart as usual.

### 3.8 Strange Pixelated Screen Colors

If, when having booted the Edrive, you see that Lubuntu displays a strange, blurry, pixelated colors, proceed as follows:

1. Your computer might not be fully compatible with booting from that specific USB port. You can try another USB port or an eSATA port. On the HP 8560w and HP 8570w this can be caused by booting from a USB 3.0 port instead of a USB 2.0 port
2. Your BIOS settings are not set correctly. Double check the BIOS settings of your system. If you are on a HP 8560w or HP 8570w check out Section 3.7.
3. Your computer may display two options for the Edrive under Boot Options (*e.g.* [External Hard Drive](#) and [USB Hard Drive](#)). Check if this is the case and if so, try the other option.