OPENSUSE LEAP 15.1 INSTALLATION GUIDE	TB000108	REV. A

Executive Summary

This installation guide goes through the steps to integrate openSUSE onto an Elo computer. It contains the instructions to install, set-up, and test openSUSE for a faultless compatibility with Elo computers.

Note:

*Elo strongly recommends using this or a later version of SUSE to ensure full hardware support. *

*All SUSE distributions share the same code base and thus SUSE Linux Enterprise should be able to be set up using the same document. *

For all terminal sudo commands in Terminal, the computer will ask for your password, enter your password in order to process the command

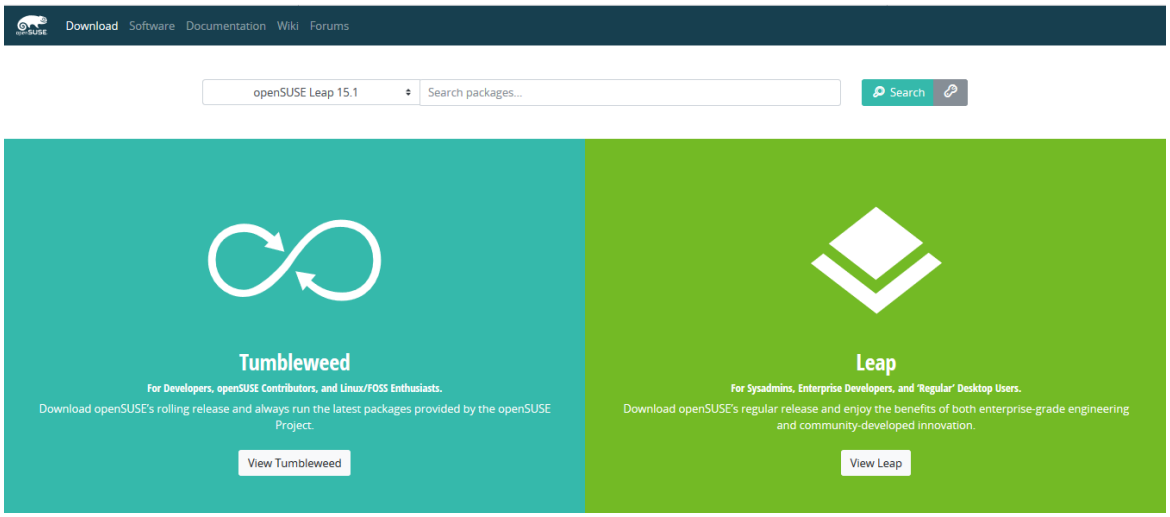
For all terminal commands, be aware of the spacing or the lack thereof in-between words and be aware of using the correct capitalization

The appendix sections are for testing purposes only

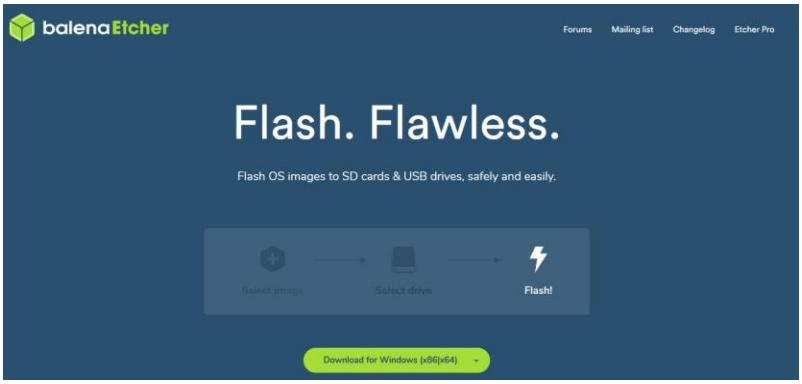
Table of Contents

Downloads Required (download files below before starting the next step):

- openSUSE iso:
    - To download openSUSE, go to openSUSE's website and download the latest LTS Desktop Version (This instruction is written using openSUSE Leap 15.1). https://software.opensuse.org/



- Etcher:
    - Etcher is the tool we will be using to format and create our OpenSUSE bootable USB drive.
    - To download, go to Etcher's website: https://www.balena.io/etcher/ .Scroll down and download the latest version.

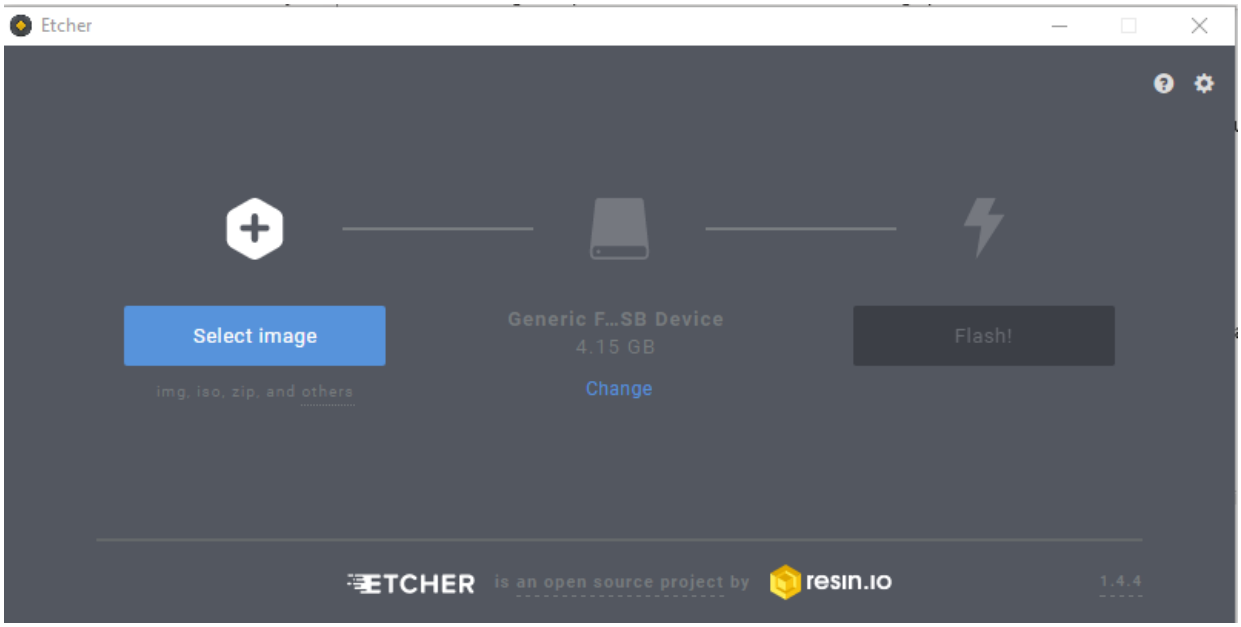


- Serial port, Cashdrawer and NCR Printer Drivers:
    - To download the driver packages, go to Elo's website:

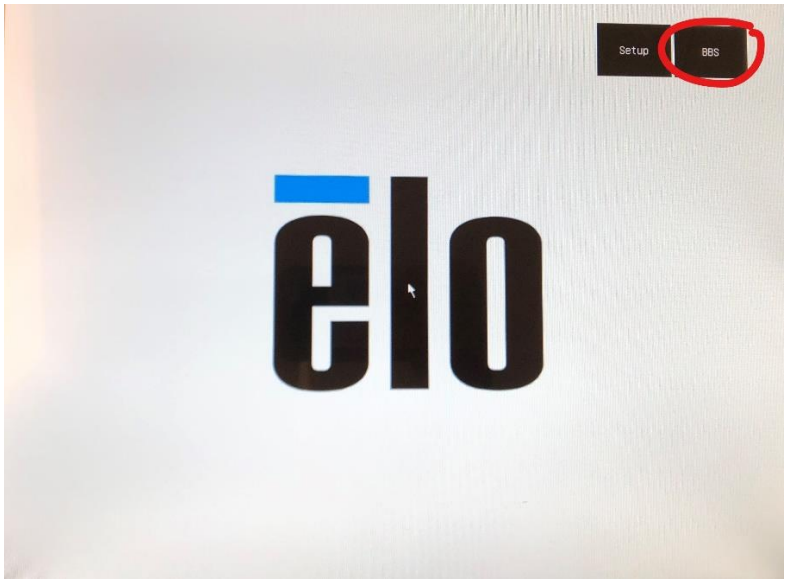
Installing openSUSE onto the Elo computer:

* Warning: to create an installation USB drive, we will need to wipe out an USB drive. When choosing the disk to write to, make sure that you are choosing the correct disk, and that there are no files you want to preserve on the drive. *

1. Create an openSUSE bootable flash-drive using Etcher.
   - Launch Etcher and plug in an USB thumb drive (at least 32GB capacity).
   - In Etcher, select your thumb drive under device. Then select the SUSE iso file you have downloaded.
   - Click “Flash”. This process could take up to 30 minutes.
   - Wait for Etcher to finish formatting the flash-drive and an openSUSE bootable flash-drive is created!



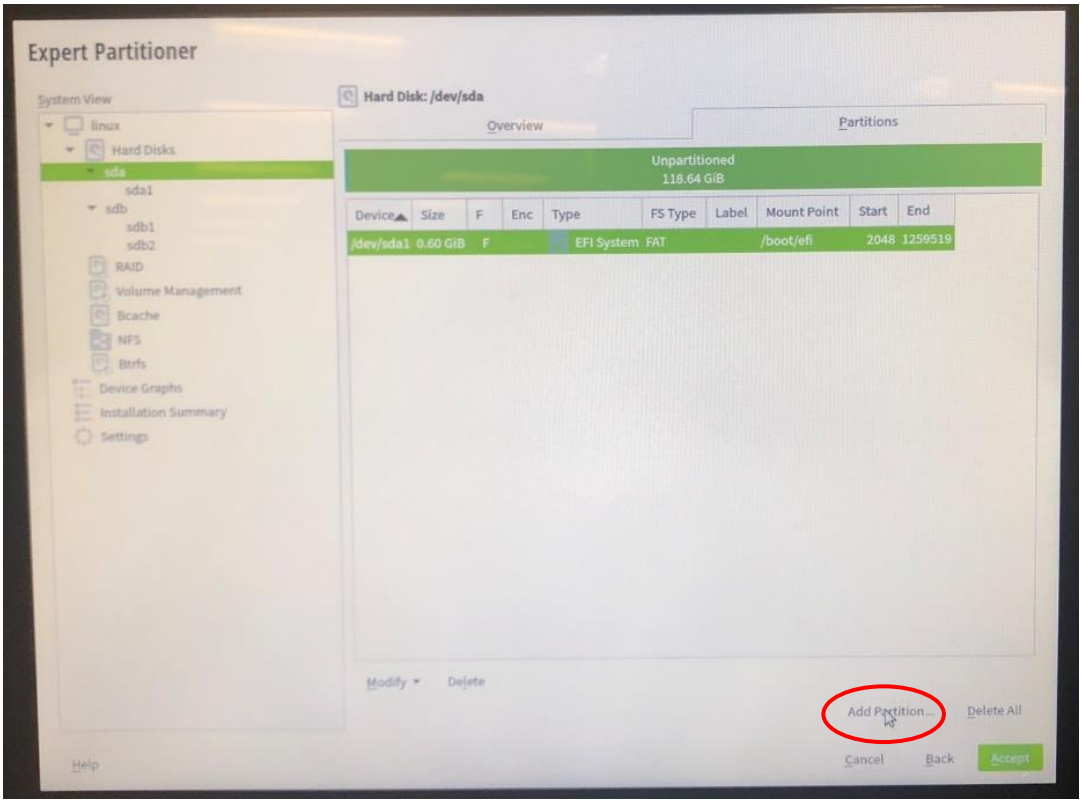
2. Install openSUSE onto the Elo computer.
   - Plug the openSUSE bootable flash-drive into the Elo computer.
   - Turn on or restart the computer. Go to the BBS Menu. This can be done by clicking on the BBS button on the top right corner during computer start-up.



- Now, select your thumb drive.

- This should bring up a menu. Select the second option, “Installation”.
- openSUSE installation manager would launch. If the screen rotates sideways, we will fix it by modifying the 60-sensor.hwdb file later. For now, use a keyboard and mouse for later steps. Alternatively, turn the Elo computer sideways so OpenSUSE would be in landscape mode, bring down the slider menu on the top right corner, and turn off Auto-Rotate.
- Choose your language, keyboard layout, and agree to the license agreement.
- On the screen to select your desktop environment, select **“Desktop with GNOME”**.

- Click on **“Configure Online Repositories”** if you want to add additional repo’s.
- Click on **“Expert Practitioner”** and select **“Start with Existing Partitions”**.
- Delete all partitions in sda.
  - Add a 0.60 GiB of EFI Boot Partition; select FAT as file system and mount at /boot/efi
  - Add a 12.00 GiB of Swap; select Swap as file system and mount at swap
  - Add a Maximum Size of Operating System; select BtrFS as file system and mount at /

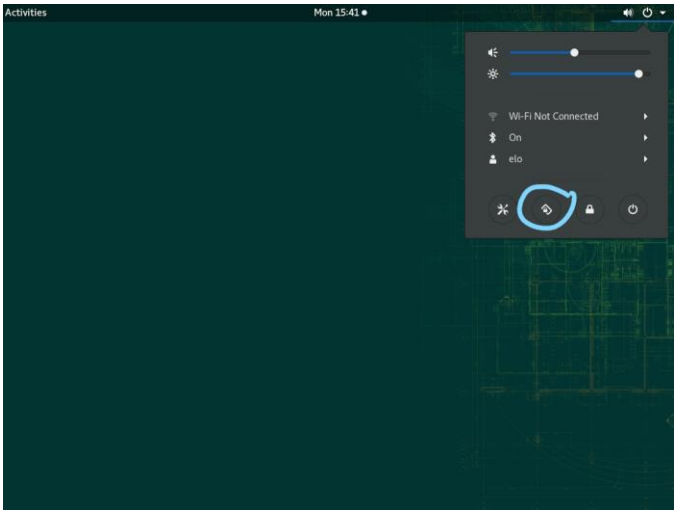


Updating the Linux Kernel

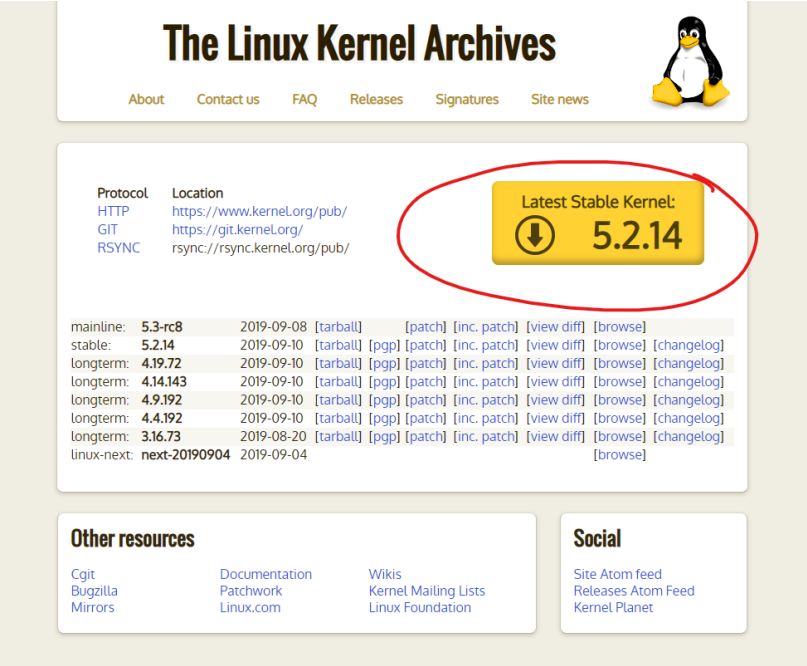
*This step is only required for users with versions of openSUSE that does not work with Elo’s auto rotation sensor. You can check this by sliding down the drop-down menu from the top

right corner of your screen and checking if there is an auto-rotation icon as shown below. If your drop-down menu has this icon and can auto-rotate, please skip to section “Correcting Auto-Rotation Behavior” at the end of this guide”

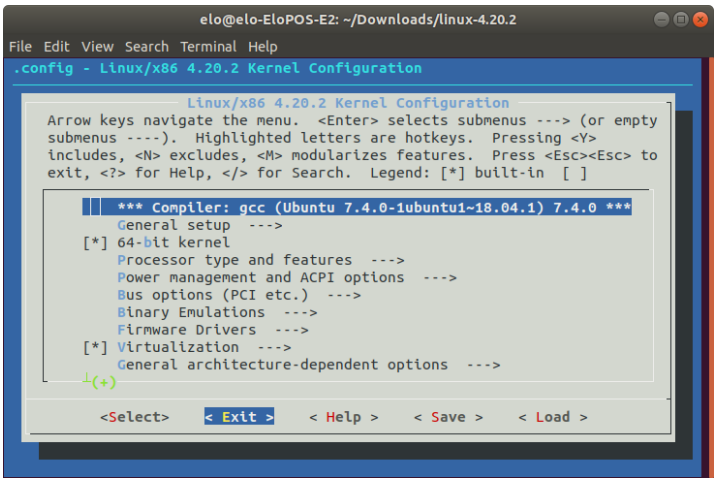
1. Check that your OpenSUSE’s drop-down menu does not have an auto rotation icon. If your computer has the icon shown below, please skip this section.



2. Back up important files in an external storage unit.
3. Perform an independent kernel upgrade. If that cannot be done, update your kernel independently after copying the current config files over to the new kernel installation file.
4. On the Elo computer, download the latest stable version of Linux kernel from The Linux Kernel Achieves: https://www.kernel.org/



5. Launch terminal.
6. Install the necessary package. Run command: $ sudo zypper install --type pattern devel_basis devel_kernel
7. Go to the directory where the Linux kernel is downloaded at in the Terminal using cd + location of the directory (in my case $ cd /home/elo/Downloads), or go to that folder in the computer, right click and click “open in terminal”.
8. Run command: $ tar xf your-kernel-file.tar.xz file (in my case, $ tar xf linux-4.20.2.tar.xz) to unzip the file.
9. Go to the unzipped directory by typing in $ cd kernel-vers (in my case $ cd linux-4.20.2)
10. Configure the kernel modules by running command: $ cp /boot/config-$(uname -r) .config.
11. Run command: $ make menuconfig. A configuration menu will pop up. Select Exit and Yes to save configurations.



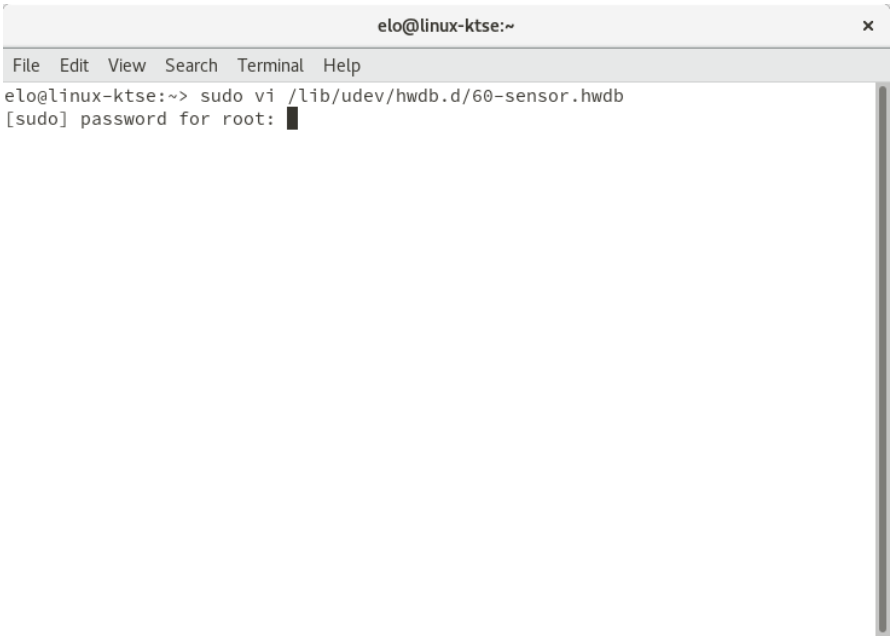
12. Configure settings
    a. Select Device Driver
    b. Select Industrial I/O support
    c. Select Accelerometers
    d. Select “M” to enable STMicroelectronics accelerometers 3-Axis Driver modules
13. Compile kernel.
14. It will return to Terminal automatically. Compile kernel by running the following commands one at a time:

```
$ sudo make
$ sudo make modules_install
$ sudo make install
$ reboot
```

15. Choose the newly installed kernel on bootup.
16. Your computer should have the auto-rotation icon in the drop-down menu after rebooting and should be able to auto-rotate. The direction may be off. This is okay. Please check this step before proceeding.

Correcting Auto-Rotation Behavior when the Display is not Calibrated in the Right Orientation

1. To correct the rotation behavior of the computer, we will change the direction matrix of the sensor reading. We will do so by modifying the 60-sensor.hwdb file.
2. Launch Terminal and run command `sudo vi /lib/udev/hwdb.d/60-sensor.hwdb`.



3. You will now be in the vim editor. Make all lines of code irrelevant by typing in command `:%s!^!#!`. This will add a "#" in the beginning of every line.
4. Now, move to the bottom of the file and type "i" to enter interactive mode. Type in the two lines of code matching your computer model. Make sure to leave a space in the beginning of the second line.

   For Elo computers running on an intel Celeron CPU (product model number ending with i2):

   ```
   sensor:modalias:acpi:*:dmi:*:*
    ACCEL_MOUNT_MATRIX=0, 1, 0; 1, 0, 0; 0, 0, 1
   ```

   For Elo computers running on an intel i3 CPU (product model number ending with i3):

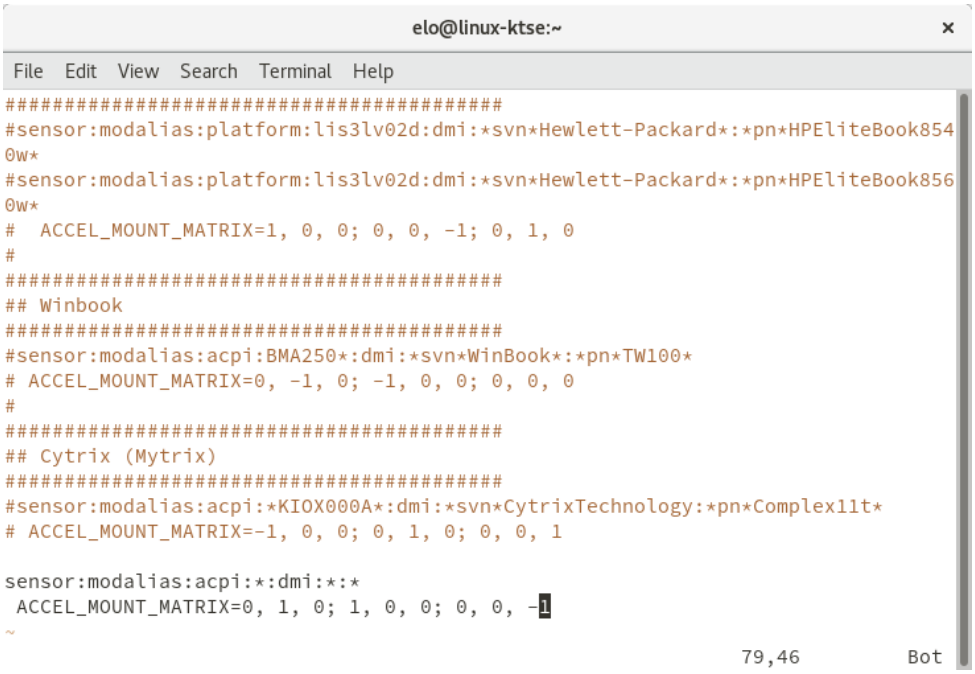
   ```
   sensor:modalias:acpi:*:dmi:*:*
    ACCEL_MOUNT_MATRIX=-1, 0, 0; 0, 1, 0; 0, 0, 1
   ```

   For Elo computers running on an intel i5 CPU (product model number ending with i5):

sensor:modalias:acpi:*:dmi:*:*

ACCEL_MOUNT_MATRIX=-1, 0, 0; 0, 1, 0; 0, 0, 1

5. Save and leave vim editor by pressing the “Esc” key to exit the interactive mode then typing in :wq.



6. You should be back in the Terminal. Now run commands:

sudo systemd-hwdb update

sudo udevadm trigger -v -p DEVNAME=/dev/iio:device*

reboot

7. Your Elo computer’s auto-rotation mechanism should now work flawlessly.

Appendix A: Testing Serial Port Functionality

In this section, we will test the functionality of the serial ports.

1. Check if your openSUSE version have Exar’s USB serial driver installed. Perform this check by running command:

$ ls /dev/ttyXRUSB*. If you see the serial ports listed in a format like the one shown below, skip to step 6.

```
linux-nhi9: # ls /dev/ttyXRUSB*
/dev/ttyXRUSB0  /dev/ttyXRUSB1
```

2. Download Exar's USB serial driver at Elo's website. Once the download is complete, launch terminal, go into sudo mode by running command $ sudo -i and go to the downloaded directory.

```
elo@linux-nhi9:~/Downloads/tmx-cups-2.0.3.0> sudo -i
[sudo] password for root:
linux-nhi9:/home/elo/Downloads #
```

3. Extract the files and run commands:

   $ zypper install kernel-default-devel

   $ tar zxvf xr_usb_serial_drv.tar.gz

   $ cd /xr_usb_serial_drv/

   $ chmod 777 build.sh

   $ ./build.sh

4. Check that USB UART is detected by the system by using the command: $ lsmod, and check device nodes by using the command: $ ls /dev/ttyXRUSB*. You should see the serial ports listed in a format like the one shown below.

```
linux-nhi9: # ls /dev/ttyXRUSB*
/dev/ttyXRUSB0  /dev/ttyXRUSB1
```

5. Seeing the port names printed means that the Elo computer registers the serial ports. Now, to test the functionality of the serial ports, we will check the output and input function of the ports by using the cat and echo commands.
6. Connect a cable to a serial port on the Elo Computer and a serial loopback connector to the other end of the cable.

7. Launch two terminal windows and enter sudo mode for both by using the command $ sudo -i in both terminal windows.
8. In one of the windows, we will run echo commands and in the other window we will test cat commands. We will call these two windows “cat terminal window” and “echo terminal window” for easy identification. The messages we output from the echo terminal window should show up in the cat terminal window. This will test the output and input functionality of the serial port.
9. To prevent infinite loops of the echo message, in the cat terminal window, run command $ stty -F /dev/ttyXRUSB0 -echo
10. In the cat terminal window, run command $ cat /dev/ttyXRUSB0. This terminal will now print out all the input messages that the serial port receives.
11. In the echo terminal window, run command $ echo “insert_your_test_message”> /dev/ttyXRUSB0.
12. You should see the message printed out in the cat terminal window. If you don’t see the message, try plugging in your serial cable along with the loopback connector into another serial port and repeat step 11.

```
elo@linux-nhi9:~/Downloads/tmx-cups-2.0.3.0> sudo -i
[sudo] password for root:
linux-nhi9:~ # echo "test"> /dev/ttyXRUSB0
linux-nhi9:~ # echo "test"> /dev/ttyXRUSB0
linux-nhi9:~ #
linux-nhi9:~ # echo "test"> /dev/ttyXRUSB0
linux-nhi9:~ # echo "test"> /dev/ttyXRUSB0
linux-nhi9:~ #
```

```
elo@linux-nhi9:~/Downloads/tmx-cups-2.0.3.0> sudo -i
[sudo] password for root:
linux-nhi9:~ # stty -F /dev/ttyXRUSB0 -echo
linux-nhi9:~ # cat /dev/ttyXRUSB0
test
test
test
```

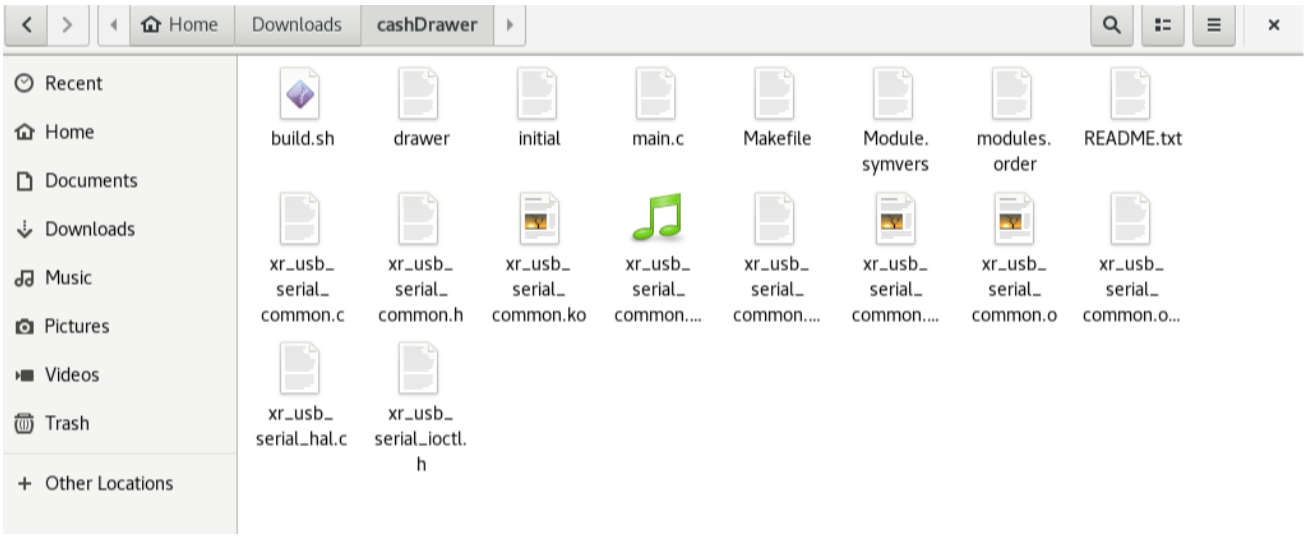
13. Once you've successfully tested the serial port, revert the echo setting by typing in the command:

    $ stty -F /dev/ttyXRUSB0 echo

14. Repeat steps 6-13 on all serial ports.

Appendix B: Testing Cashdrawer Functionality

1. To test the cashdrawer functionality, first download the cashdrawer file from the Elo website onto the Elo computer. Once all files are downloaded, copy all serial port driver files from the last step into the cashdrawer folder.



2. Launch terminal and change to root user by running the command $ sudo -i. Go to the downloaded cashdrawer directory using the cd command. For our computer, the command is $ cd /home/elo/Downloads/cashDrawer.

```
linux-nhi9:/home/elo/Downloads/cashDrawer #
```

3. Change the permissions of the drawer script by running the commands:

   $ chmod 777./drawer

4. Run command:

   $ ./drawer init

5. Now you should be able to open the drawer(s) using the commands $ ./drawer cda and $ ./drawer cdb (to open cash drawer a and b).

6. You should also be able to read drawer status by running the command $ ./drawer state.

```
linux-nhi9:/home/elo/Downloads/cashDrawer # ./drawer state
Channel control mode.
Cash drawer is close.
reg value:0x1f1, state:0x0
```

```
linux-nhi9:/home/elo/Downloads/cashDrawer # ./drawer state
Channel control mode.
Cash drawer is open.
reg value:0x3f1, state:0x1
```

Appendix C: Testing Printer Functionality (with Epson – TM20II)

1. Driver download : https://download.epson-biz.com/modules/pos/index.php?page=single_soft&cid=5012&scat=32&pcat=52 and make sure extract it in Linux system.

2. Launch terminal and change to root user by running the command $ sudo -i. Go to the downloaded tmx-cups-2.0.3.0 directory using the cd command. For our computer, the command is $ cd /home/elo/Downloads/tmx-cups-2.0.3.0/tmx-cups.

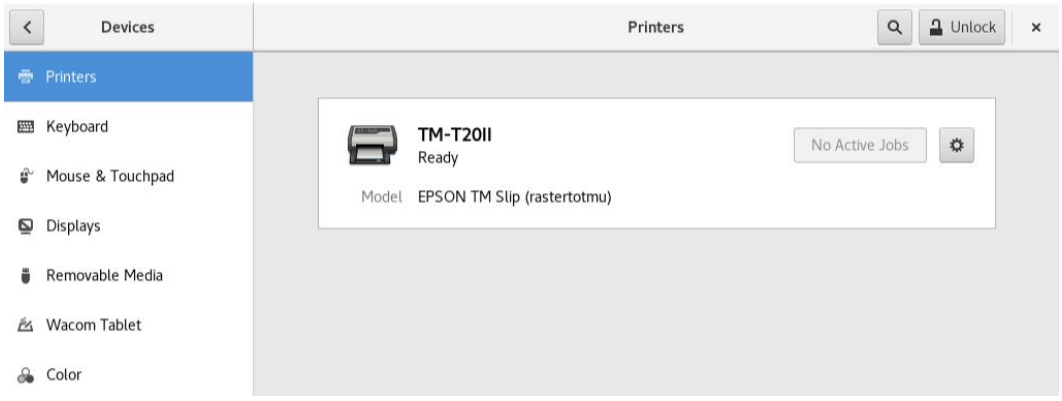
```
linux-nhi9:/home/elo/Downloads/tmx-cups-2.0.3.0/tmx-cups #
```

3. Install the driver by running the command $./install.sh and $./install-sc.sh

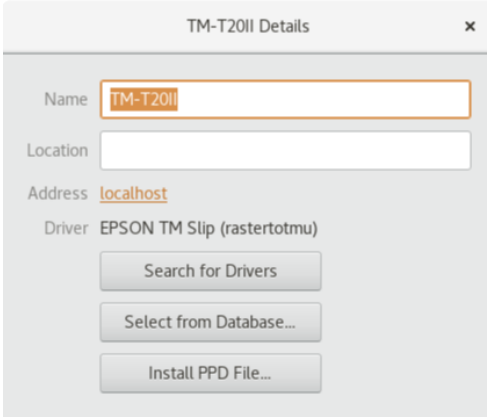
```
linux-nhi9:/home/elo/Downloads/tmx-cups-2.0.3.0/tmx-cups # ./install.sh
```

```
linux-nhi9:/home/elo/Downloads/tmx-cups-2.0.3.0/tmx-cups # ./install-sc.sh
```

4. Go to Setting => Device => Printer => TM-T20II => setting icon => Printer Details => Unlock.



5. Go to Setting => Device => Printer => TM-T20II => setting icon => Printer Details => Install PPD File => select PPD file (tm-slip-rastertotmu.ppd.gz)



6. Go to Activities => LibreOffice Write and type any wording for testing. Then select the printer TM-T20II and print it out as below:

=>  =>