



**Purpose:**

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

**Note:**

- \*Elo strongly recommends using this or a later version of CentOS to ensure full hardware support. \*
- \*For all terminal su 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\*

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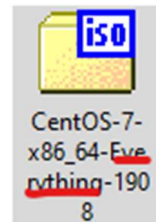
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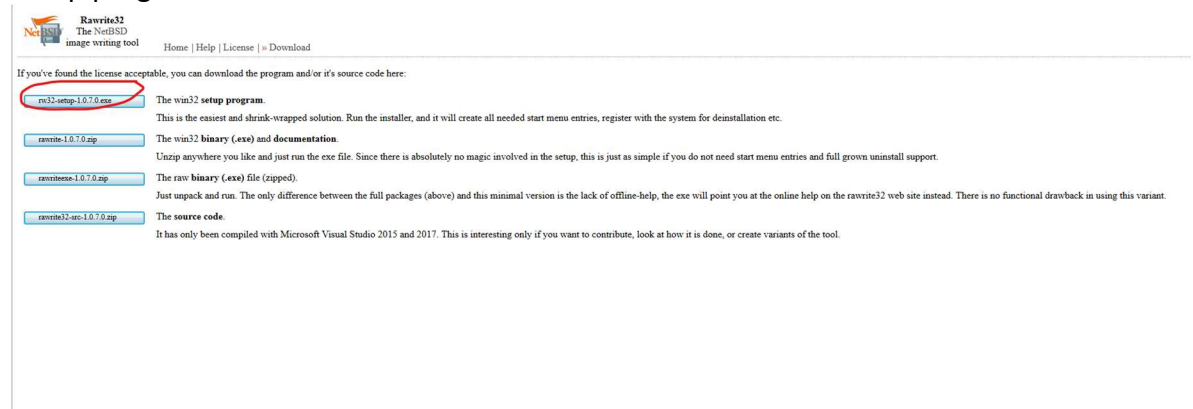
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### Downloads Required (download files below before starting the next step):

- CentOS 7 iso:
  - To download CentOS 7's iso, go to CentOS's website and download the DVD iso (This instruction is written using CentOS 7): <https://www.centos.org/download/>. Clicking on the orange button will bring you to a list of distributors. Pick any mirror close to your region. Make sure to download an iso that contains the whole DVD or are marking with "everything".



- Rawrite32 (download this only if you are using a Windows computer to create the bootable flash drive).
  - We will be using Rawrite32 to create a CentOS 7 bootable USB drive. Alternatives to Rawrite32 are Fedora Media Writer and Win32 Disk Imager. You may use those instead of Rawrite32 is unavailable to you.
  - To download, go to NetBSD: <https://www.netbsd.org/~martin/rawrite32/download.html> and download the setup program.



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

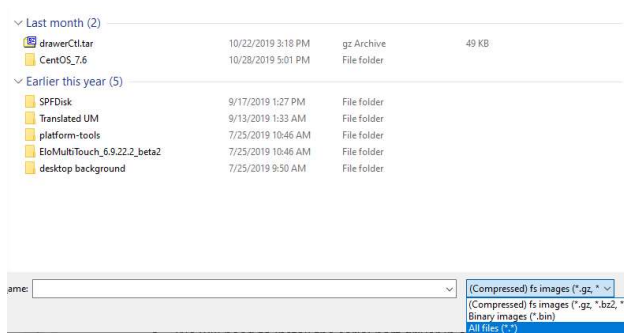
### Creating an Installation USB Media:

**\* 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. \***

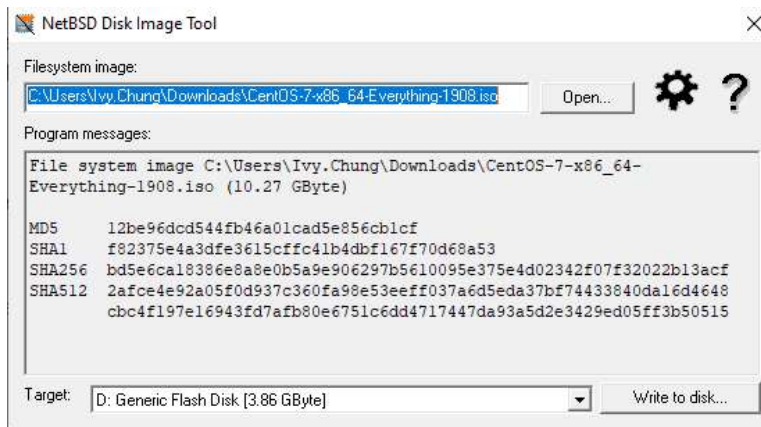
#### 1. Creating a CentOS bootable flash-drive in Windows:

If you are using Linux to create the bootable flash-drive, skip to step 2.

- Launch Rawrite32 and plug in an USB thumb drive.
- In Rawrite32, select your thumb drive under Target's drop-down menu. Then, click on "Open" under the Filesystem image, change the file type to "All files", and choose the CentOS iso that you've downloaded



- When the program is done preparing the image, click on "Write to Disk".



#### 2. Creating a CentOS bootable flash-drive in Linux:

1. Insert an USB thumb drive into an USB slot on your Elo computer. Launch terminal.
2. Log in as root by running command  
\$ **su**
3. Run lsblk command to check the assignment device of your USB:  
# **lsblk -So NAME,SIZE,TRAN**  
In my case, the assigned USB device is sdb1.

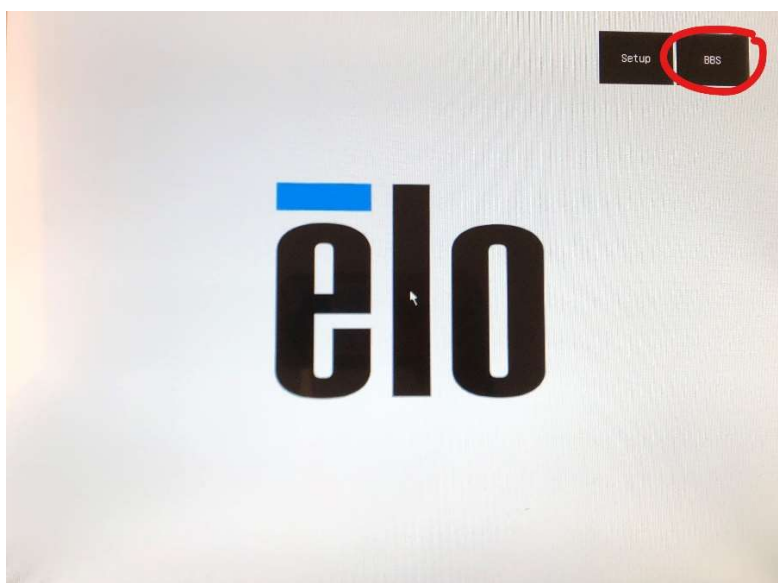
4. Now, we can format the USB drive using the dd command:  

```
# dd if=CentOS_your_version.iso of=your_usb_device_path
```

Fill in the full name of the iso file that you downloaded and your usb device path.  
Make sure to put the whole device instead of just a partition of the device. In my case, it would be sdb instead of sdb1.

#### Installing CentOS onto the Elo Computer:

1. Plug the bootable USB installation device into the Elo computer.
2. 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.

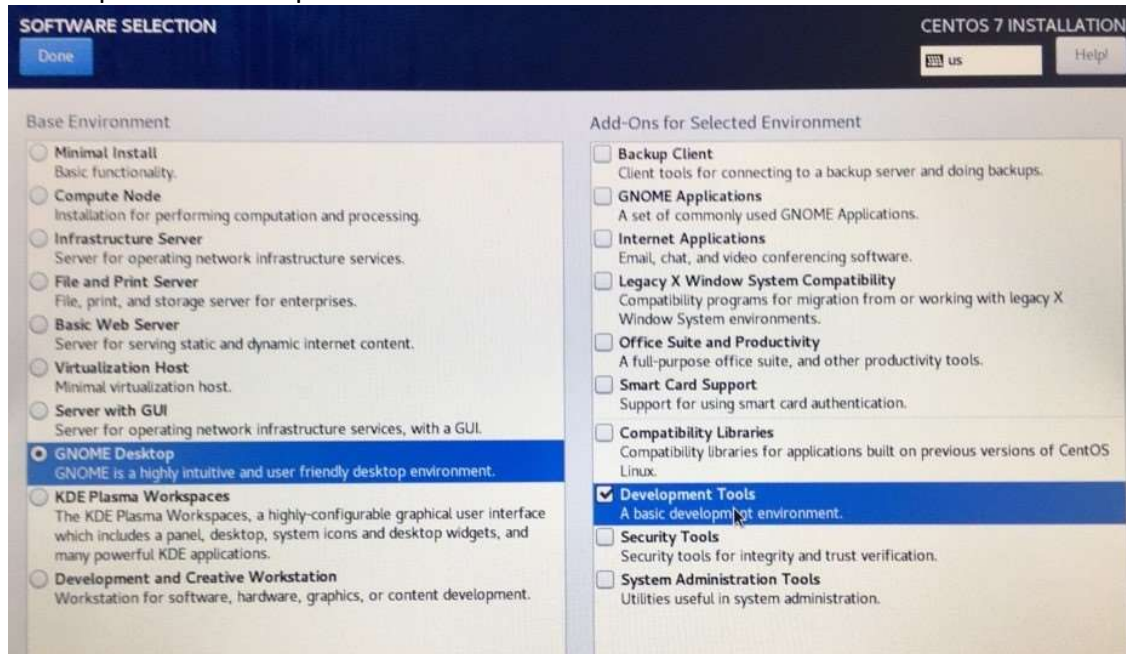


3. Now, select your thumb drive.

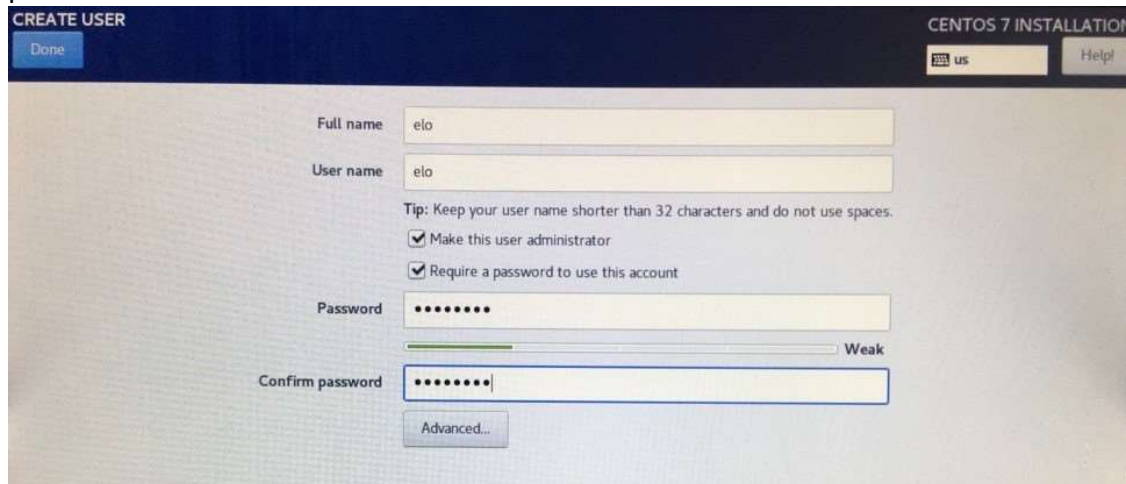


4. Follow the installation process. Set the location.

5. Add development tools option. Go to “SOFTWARE SELECTION”, choose “GNOME Desktop” and “Development tools”.



6. Set root password.
7. Set the user name and password. Choose “Make this user administrator” and “Require a password to use this account”. Our demonstration is to use “elo” as the user name and password is “elo1234”.



8. The CentOS Installation is now completed.

**Note:** The current kernel for CentOS 7.x does not support G-sensor (auto rotation) on EloPOS or I-Series for Windows products.



## Appendix A: Testing Serial Port Functionality

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

1. Check if your CentOS 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.

```
[root@localhost ~]# ls /dev/ttyXRUSB*
/dev/ttyXRUSB0  /dev/ttyXRUSB1
```

2. Prepare `xr_usb_serial_drv` and script. Download Exar's USB serial driver at Elo's website. Copy `xr_usb_serial_drv` folder to `/usr/elo`. Now, you need to use command "su" to change the privilege to be the root. Please do not use "sudo -i" to change user to be the root. It does not get the root privilege.

- (1) Change to the root privilege

```
$ su
Enter your root password.
```

```
[elo@localhost ~]$ su
Password:
[root@localhost elo]# pwd
/home/elo
```

- (2) Copy and untar `xr_usb_serial_drv.tar.gz`

```
# mkdir -p /usr/elo
# cd /usr/elo
# tar zxvf xr_usb_serial_drv.tar.gz
```

- (3) Check `/usr/elo/xr_usb_serial_drv/`

```
# cd xr_usb_serial_drv/
# ls
[root@localhost xr_usb_serial_drv]# ls
build.sh          startup.sh          xr_usb_serial_common.o
built-in.o        xr_usb_serial_common.c  xr_usb_serial_common.o.ur-safe
Makefile          xr_usb_serial_common.h  xr_usb_serial_hal.c
modules.order     xr_usb_serial_common.ko  xr_usb_serial_ioctl.h
Module.symvers    xr_usb_serial_common.mod.c
README.txt        xr_usb_serial_common.mod.o
[root@localhost xr_usb_serial_drv]#
```

- (4) Change .ko files mode.

```
# chmod 666 xr_*
```

- (5) Edit `startup.sh` script, put your password to the script. If the `xr_usb_serial_drv` path is not `/usr/elo/xr_usb_serial_drv/`, please modify the relevant path.

```
# gedit /usr/elo/xr_usb_serial_drv/startup.sh
```



```
Open startup.sh /usr/elo/xr_usb_serial_drv Save
sleep 2
echo 'elo1234' | sudo -S rmmod xr_usb_serial_common.ko
echo 'elo1234' | sudo -S rmmod cdc-acm
#echo 'elo1234' | sudo -S modprobe -r usbserial
#echo 'elo1234' | sudo -S modprobe usbserial
echo 'elo1234' | sudo -S insmod /usr/elo/xr_usb_serial_drv/xr_usb_serial_common.ko
sleep 0.2
echo 'elo1234' | sudo -S chmod 666 /dev/ttyXRUSB0
echo initial finish...
```

```
sh Tab Width: 8 Ln 10, Col 1 INS
```

\*NOTE. 'elo1234' => should change to your password.

(6) Change mode of startup.sh, let it get executable permissions:

```
# chmod 777 /usr/elo/xr_usb_serial_drv/startup.sh
```

3. Add root permissions to the user, it needs to use the root privilege.

(1) Modify sudoers

```
# vim /etc/sudoers
```

(2) Add the following content:

```

elo@localhost:~
File Edit View Search Terminal Help
## which machines (the sudoers file can be shared between multiple
## systems).
## Syntax:
##
##      user    MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)    ALL
elo     ALL=(ALL)    ALL
## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOC
ATE, DRIVERS

## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)    ALL

## Same thing without a password
# %wheel    ALL=(ALL)    NOPASSWD: ALL

## Allows members of the users group to mount and unmount the
102,1 91%

```

(3) Use **:wq!** to save and exit.

4. Set the startup procedure, it does not need the root privilege. Please use your user account instead.

(1) Exit the root privilege

```
# exit
$
```

(2) Modify `bash_profile` file which is in `/home/elo/`. The folder `"~/` is `"/home/elo/`

```
$ gedit ~/.bash_profile
```

(3) Edit `bash_profile` like the following picture. Add content at the end:

```
echo 'yourpassword' | sudo -S gnome-terminal -e
/usr/elo/xr_usb_serial_drv/startup.sh > /home/elo/Templates/elobuildxr.log 2>>
/home/elo/Templates/elobuildxr.log
```



A screenshot of a text editor window titled ".bash\_profile" showing the contents of the file. The file contains shell script code for setting up the environment, including aliases, PATH, and a command to launch a terminal with specific startup scripts.

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/.local/bin:$HOME/bin

export PATH

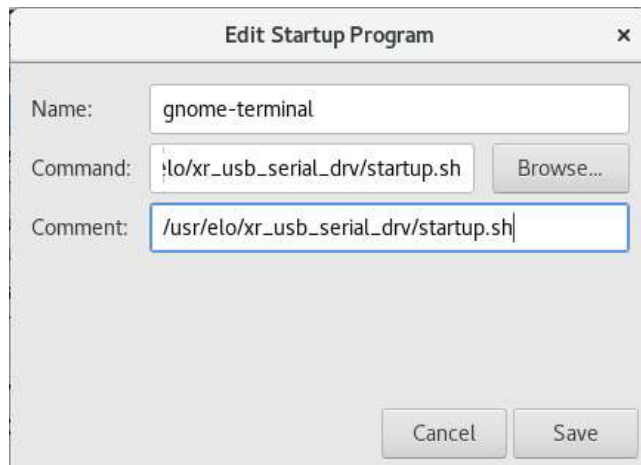
echo 'elo1234' | sudo -S gnome-terminal -e /usr/elo/xr_usb_serial_drv/startup.sh > /home/elo/
Templates/elobuildxr.log 2>> /home/elo/Templates/elobuildxr.log
```

NOTE. 'elo1234' => should change to your password

(4) Launch the startup task manager

\$ gnome-session-properties

(5) At Startup Programs => choose "Add"

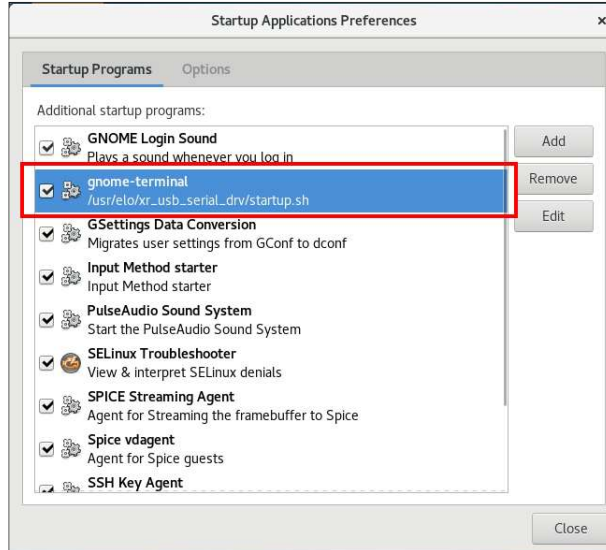


Name : gnome- terminal

Command: /usr/elo/xr\_usb\_serial\_drv/startup.sh

Comment: /usr/elo/xr\_usb\_serial\_drv/startup.sh

Click Save.



Close.

5. Reboot and 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.

```
[root@localhost ~]# ls /dev/ttyXRUSB*  
/dev/ttyXRUSB0 /dev/ttyXRUSB1
```

6. 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.
7. Connect a cable to a serial port on the Elo Computer and a serial loopback connector to the other end of the cable.



8. Launch two terminal windows and enter `su` mode for both by using the command `$ su` in both terminal windows.
9. 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.

10. To prevent infinite loops of the echo message, in the cat terminal window, run command `# stty -F /dev/ttyXRUSB0 -echo`
11. 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.
12. In the echo terminal window, run command `# echo "insert_your_test_message"> /dev/ttyXRUSB0`.
13. 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.

```

root@localhost:~
File Edit View Search Terminal Help
[elo@localhost tmx-cups]$ sudo -i
[root@localhost ~]# echo "test"> /dev/ttyXRUSB0
[root@localhost ~]# echo "test"> /dev/ttyXRUSB0
[root@localhost ~]# echo "test"> /dev/ttyXRUSB0
[root@localhost ~]# echo "test"> /dev/ttyXRUSB0
[root@localhost ~]# echo "test"> /dev/ttyXRUSB0
[root@localhost ~]# █

root@localhost:~
File Edit View Search Terminal Help
[elo@localhost tmx-cups]$ sudo -i
[root@localhost ~]# stty -F /dev/ttyXRUSB0 -echo
[root@localhost ~]# cat
cat      catchsegv  catman
[root@localhost ~]# cat /dev/ttyXRUSB0

test

test

test

test

█

```

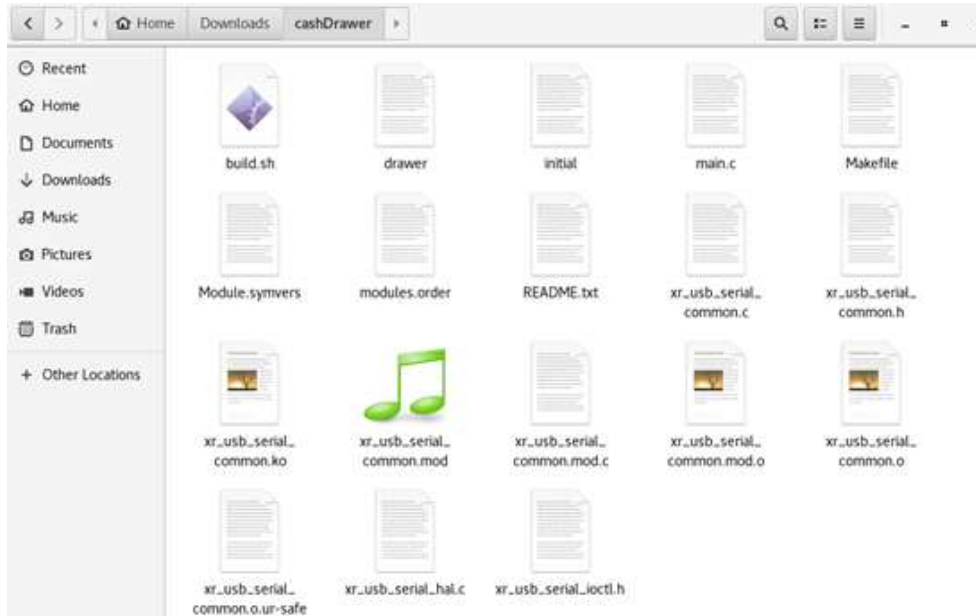
14. Once you've successfully tested the serial port, revert the echo setting by typing in the command:

```
# stty -F /dev/ttyXRUSB0 echo
```

15. 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 `$ su`. Go to the downloaded cashdrawer directory using the `cd` command. For our computer, the command is `# cd /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`.

```
[root@localhost cashDrawer]# ./drawer state
Channel control mode.
Cash drawer is close.
reg value:0x1f1, state:0x0

[root@localhost cashDrawer]# ./drawer state
Channel control mode.
Cash drawer is open.
```

## Appendix C: Testing Printer Functionality (USB)

### For NCR Printer:

1. To test the NCR Printer functionality, first download the NCR\_Printer file from the Elo website onto the Elo computer and make sure extract it in Linux system.



2. Launch terminal and change to root user by running the command `$ su`. Go to the downloaded NCR\_Printer directory using the `cd` command. For our computer, the command is `# cd /home/elo/Downloads/NCR_Printer`.

```
[root@localhost ~]# cd /home/elo/Downloads/NCR_printer/
```

3. Unplug and plugin printer cable.

Check device node by running the command `# ls /dev/ttyUSB*`

```
[root@localhost NCR_printer]# ls /dev/ttyUSB*
/dev/ttyUSB0
```

Check USB device by running the command `# lsusb`

```
[root@localhost NCR_printer]# lsusb
Bus 002 Device 003: ID 0424:5807 Standard Microsystems Corp. Hub
Bus 002 Device 002: ID 0bda:0411 Realtek Semiconductor Corp.
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 007: ID 8087:0025 Intel Corp.
Bus 001 Device 009: ID 04e2:1422 Exar Corp.
Bus 001 Device 010: ID 0404:0311 NCR Corp. 7167 Printer, Receipt/Slip
```

9. Print by running the command

```
# ./async 0 print.txt true 5 false
```

```
[root@localhost NCR_printer]# ./async 0 print.txt true 5 false
```

Command format: `# ./async [port] [message_path] [cut] [lines] [beep]`

[port]: device node, get from `#ls /dev/ttyUSB*`

[message\_path]: print content file

[cut]: true or false, true: cut paper after print, false: not cut

[lines]: int, blank lines

[beep]: true or false, true: beep after print

### For Epson TM20II Printer:

1. Driver download : <https://download.epson->

[biz.com/modules/pos/index.php?page=single\\_soft&cid=5012&scat=32&pcat=52](http://biz.com/modules/pos/index.php?page=single_soft&cid=5012&scat=32&pcat=52)

and make sure extract it in Linux system. Or it can be found in Elo driver pack.

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

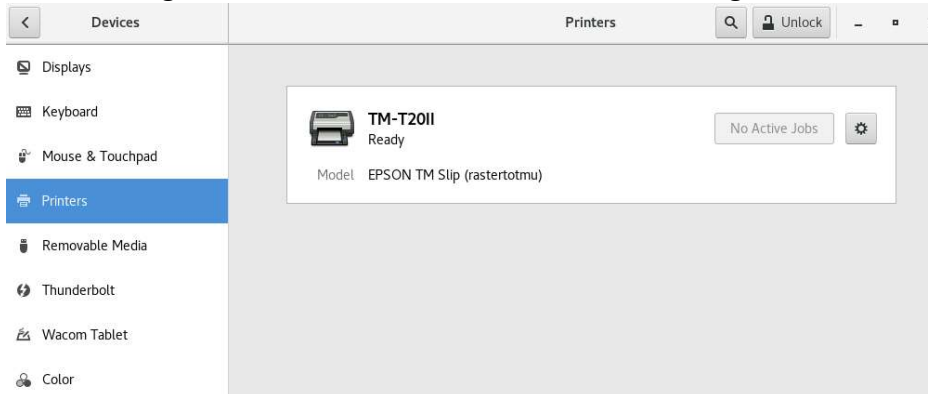
```
[root@localhost ~]# cd /home/elo/Downloads/tmx-cups/
```

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

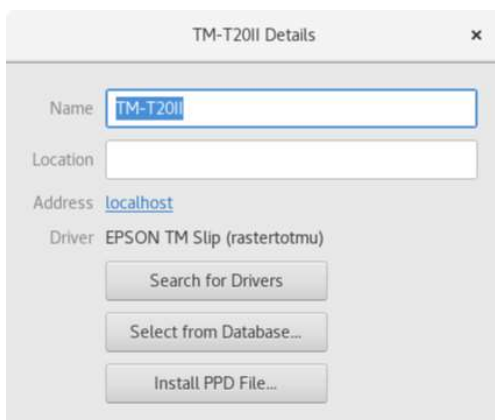
```
[root@localhost tmx-cups]# ./install.sh
```

```
[root@localhost tmx-cups]# ./install-sc.sh
```

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

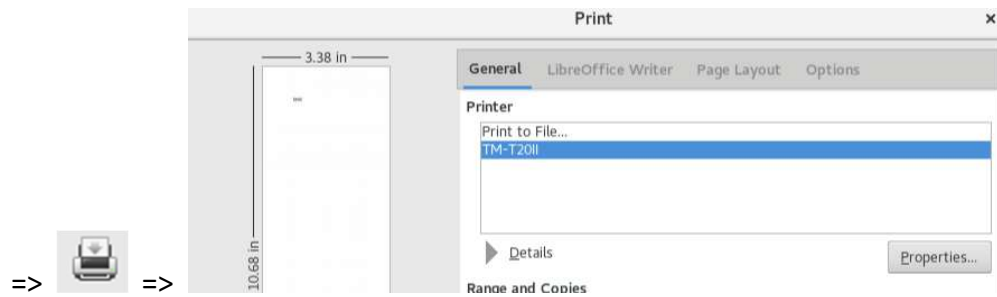


5. Go to Setting => Device => Printer => TM-T20II => setting icon => Printer Details => Install PPD File => select PPD file (tm-slip-rastertotmu.ppd.gz)



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





Reference document: TM/BA Series Printer Driver for Linux Driver Manual

<https://download.delfi.com/SupportDL/Epson/Manuals/TM-T20/Drivers/Linux/tmx-cups/manual/TmxDriverManual.en.html>

#### Appendix D: Testing Printer Functionality (Serial)

##### For Epson TV88VI Printer:

1. Launch Terminal and change to the root by running the command `$ su`

Ensure that you have the following packages pre-installed. `cmake`, `gcc`, `gcc-c++`, `cups-devel`. The following commands can check and install the latest packages.

```
# yum install cmake
```

```
# yum install gcc
```

```
# yum install gcc-c++
```

```
# yum install cups-devel
```

Ensure that Exar's USB serial driver installed in Appendix A: step1. If not, please follow Appendix A: step2 to step5.

2. Driver download : [https://download.epson-biz.com/modules/pos/index.php?page=single\\_soft&cid=6408&pcat=3&pid=4983](https://download.epson.biz.com/modules/pos/index.php?page=single_soft&cid=6408&pcat=3&pid=4983)

Driver file: `tmx-cups-src-ThermalReceipt-3.0.0.0.tar.gz` and make sure extract it in Linux system. Or it can be found in Elo driver pack.

Go to your Downloads folder and untar the driver package by the following command.

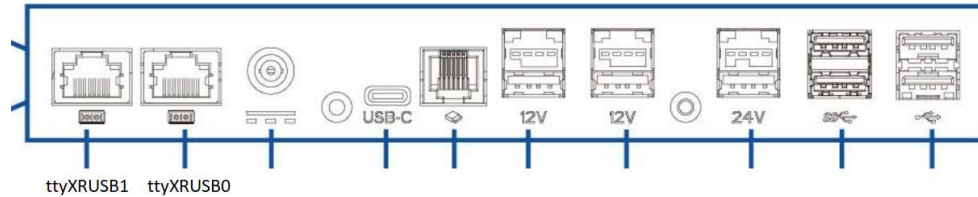
```
# cd/home/elo/Downloads/
# tar zxvf tmx-cups-src-ThermalReceipt-3.0.0.0.tar.gz
```

Go to "Thermal Receipt" directory.

Install the driver by running the command # `./build.sh` and # `./install.sh`

Register a printer by running the command # `lpadmin -p TM-T88VI -v serial:/dev/ttyXRUSB1 -E`

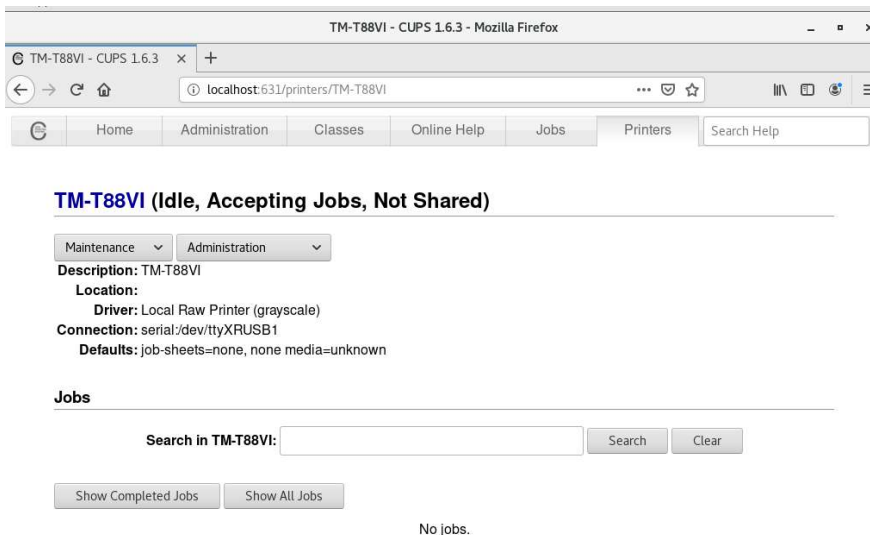
Note: Use either ttyXRUSB0 or 1 depending on the port that you connect to.



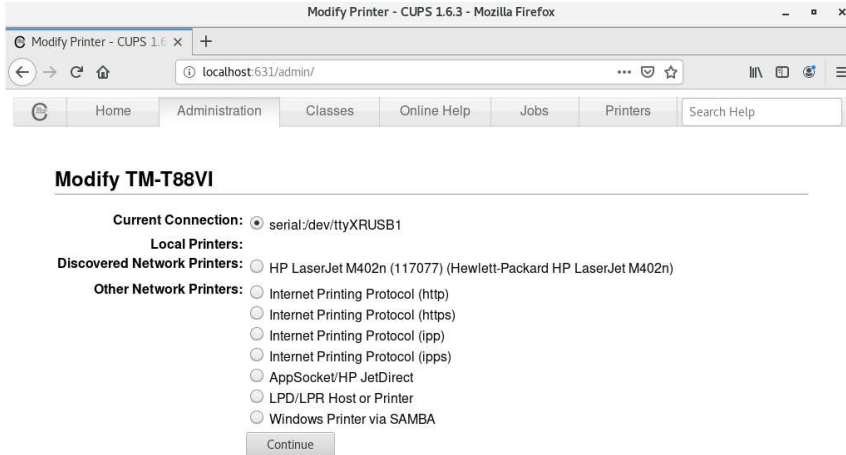
Type command # `usermod -a -G sys elo`

3. Open Firefox and go to <http://localhost:631> or <http://127.0.0.1:631>


Go to Printers → TM-T88VI → Administration → Modify Printer.



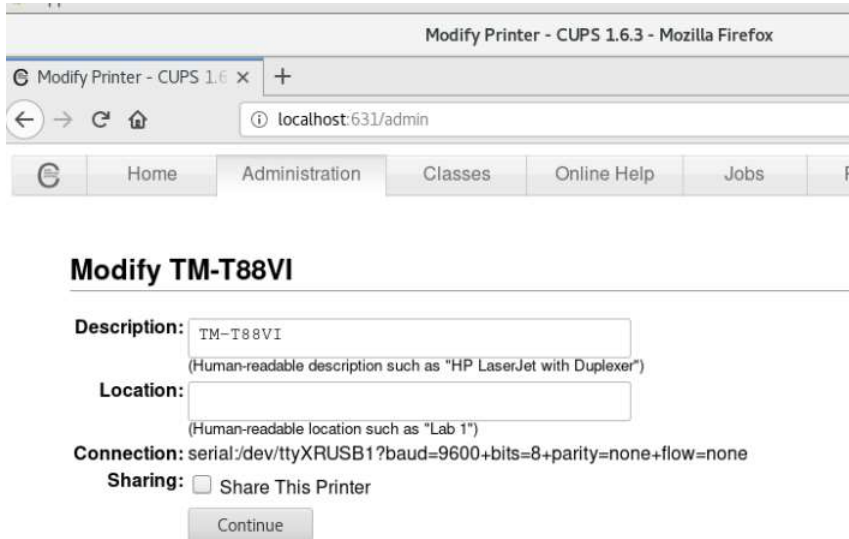
Select “serial:/dev/ttyXRUSB1” and hit “Continue”



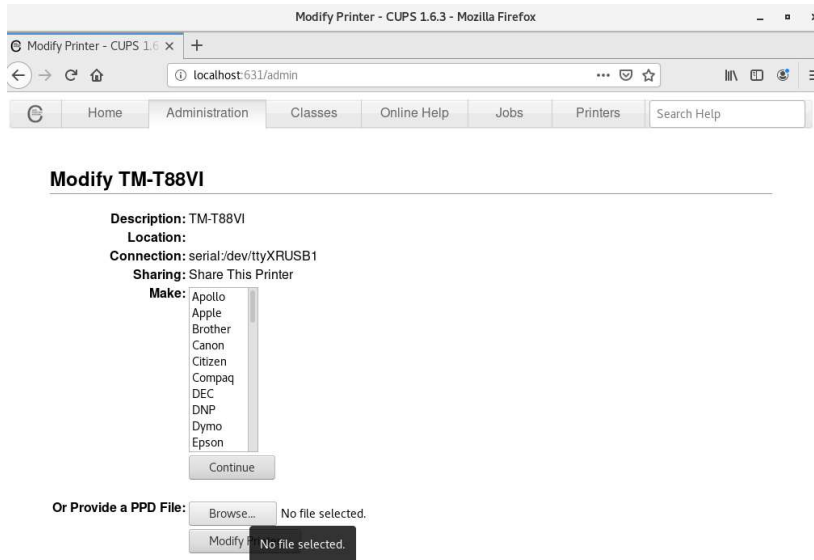
Change Baud Rate to 9600 and hit “Continue”.



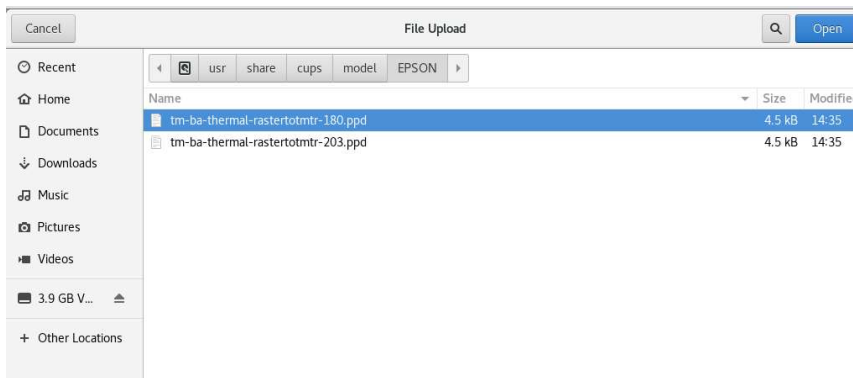
Enter the Location and select you want to share this printer or not



Click “Or Provide a PPD File” ➔ “Browse”



Choose `/usr/share/cups/model/EPSON/tm-ba-thermal-rastertotmtr-180.ppd`



Click “Modify Printer”.

You can use the command: `echo “ABCDE” > /dev/ttyXRUSB1` to test your serial printer.