Debian GNU/Linux Setup Guide

For ThinkPad P43s, P53s

****Official support of Debian 10.0 and later.*

debian

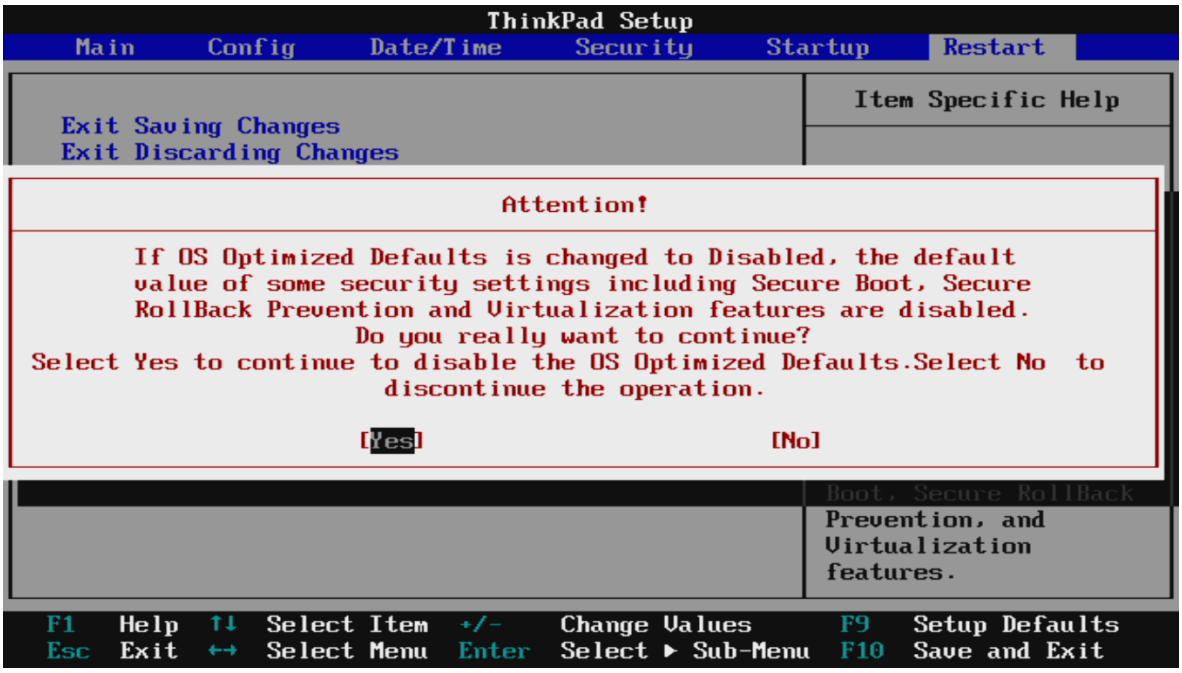
Section 1 – BIOS Setup and Pre-Installation Steps

The first step before installing Linux is to make sure the system BIOS is setup correctly.

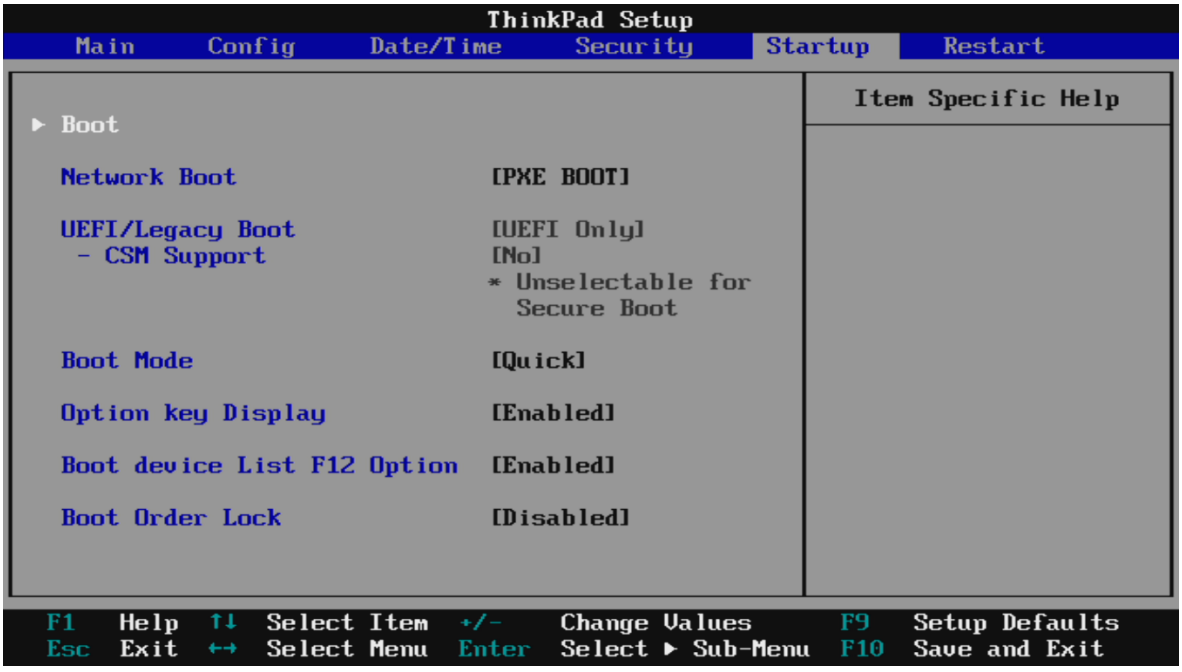
- Boot into BIOS by pressing the function F1 key at the “Lenovo” splash screen.

- Tab over to the ‘Restart’ menu tab and set “OS Optimized Defaults” to “Disabled”.

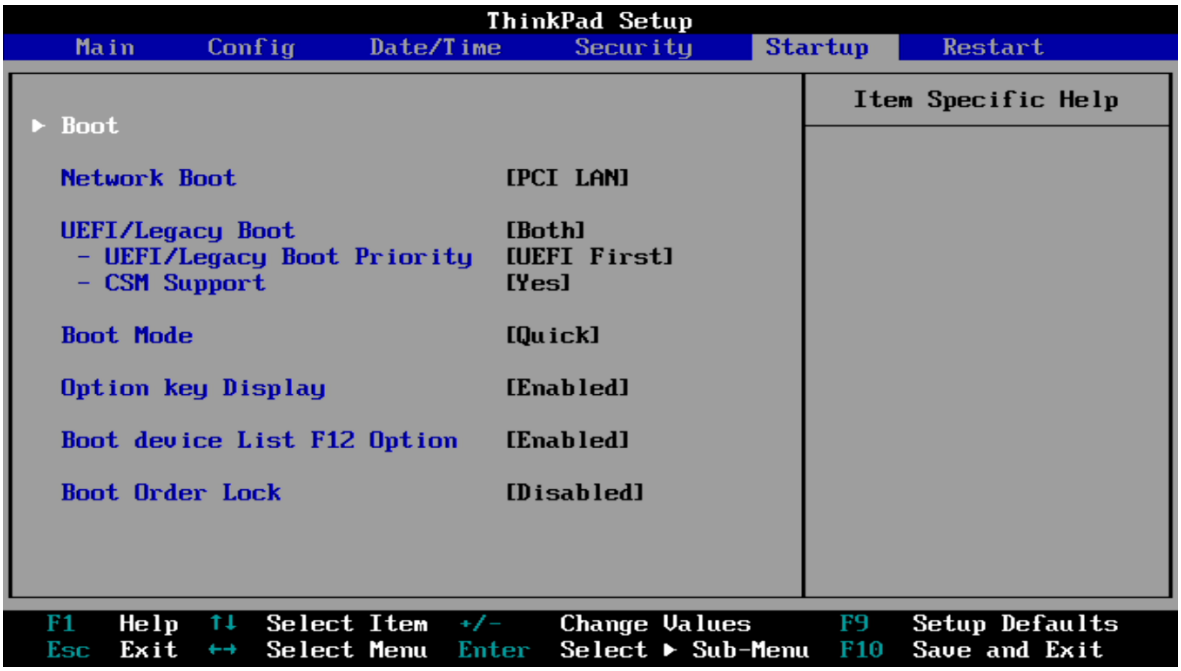
- Switching the “OS Optimized Defaults” settings may give a warning message. Select “Yes” to continue to disable OS Optimized Defaults.



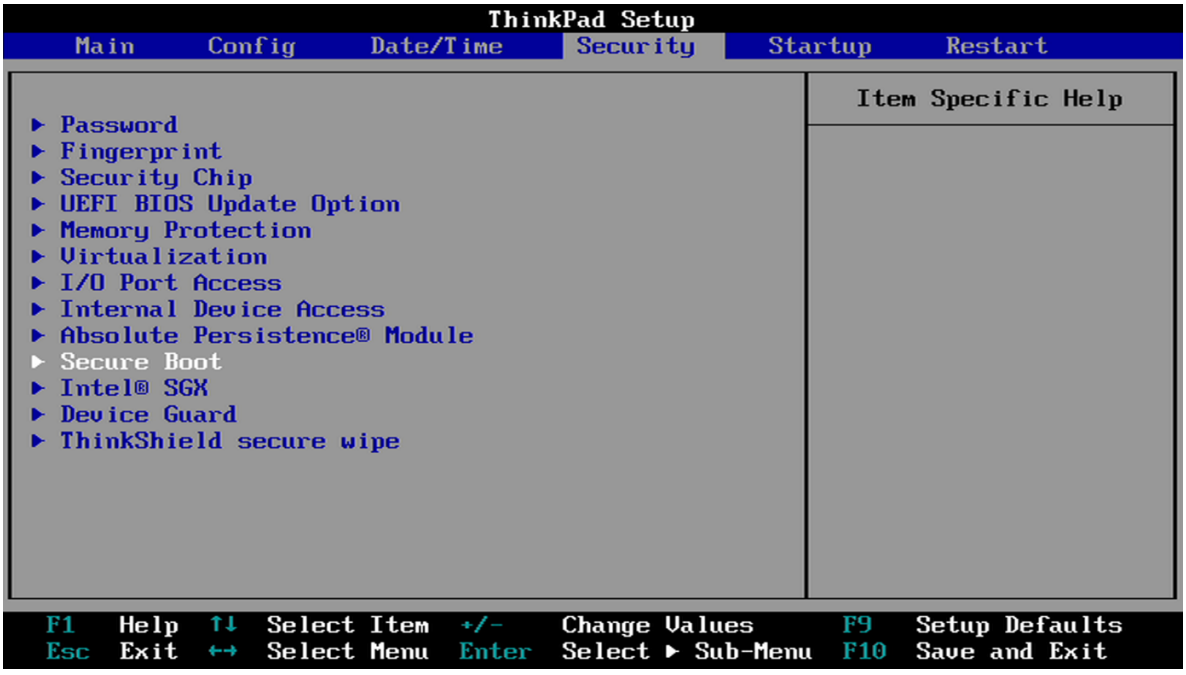
- Tab over to the “Startup” menu tab.



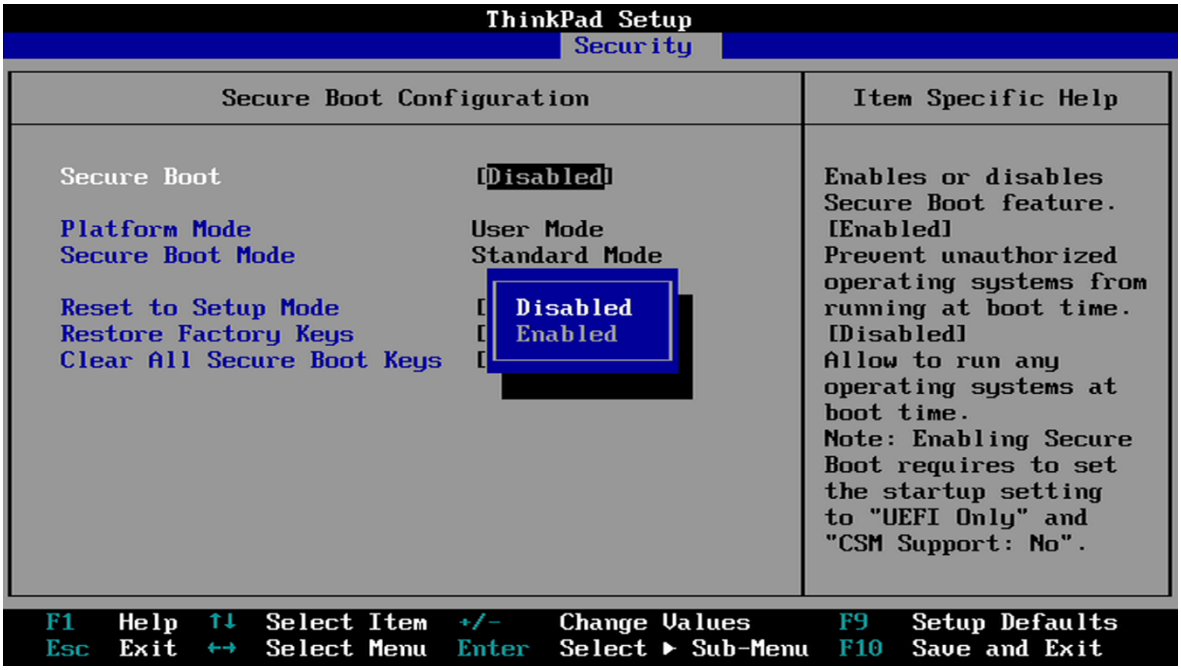
- Pressing F9 function key will allow Legacy and UEFI bootable devices by setting “UEFI/Legacy Boot” to “Both”; otherwise, it will be an unchangeable setting to “UEFI only”.



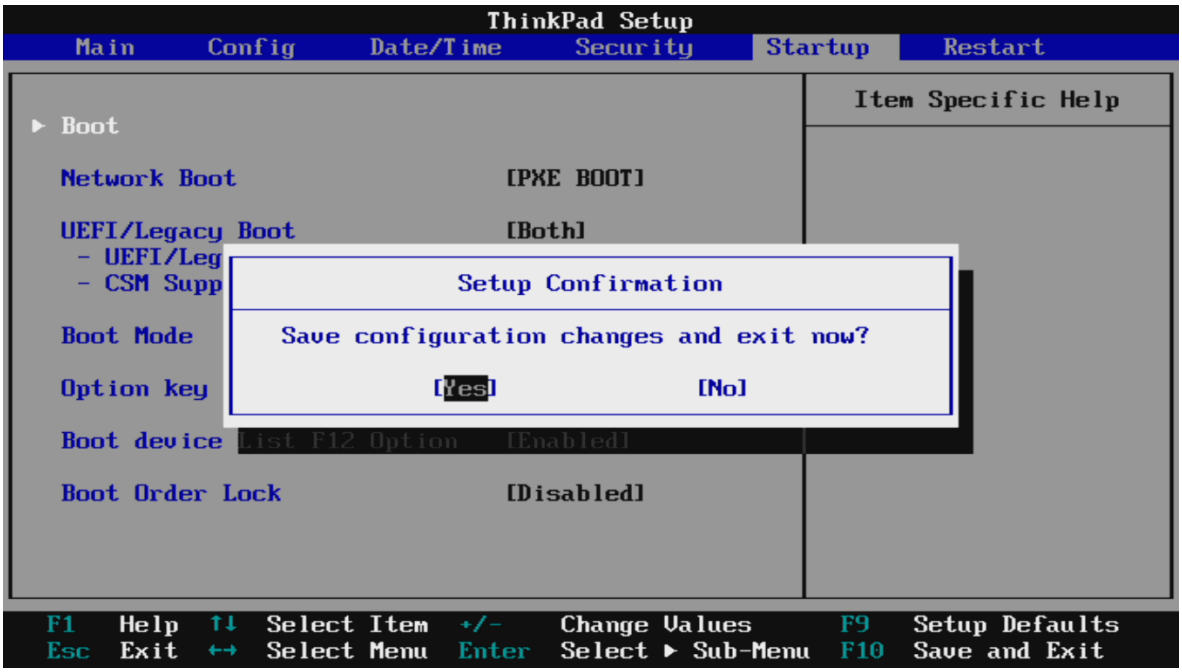
- If using a P53s tab over to the Security menu tab and select secure boot.



- If secure boot is enabled by default, then disable it.



- Press function F10 key to save and exit BIOS setup.

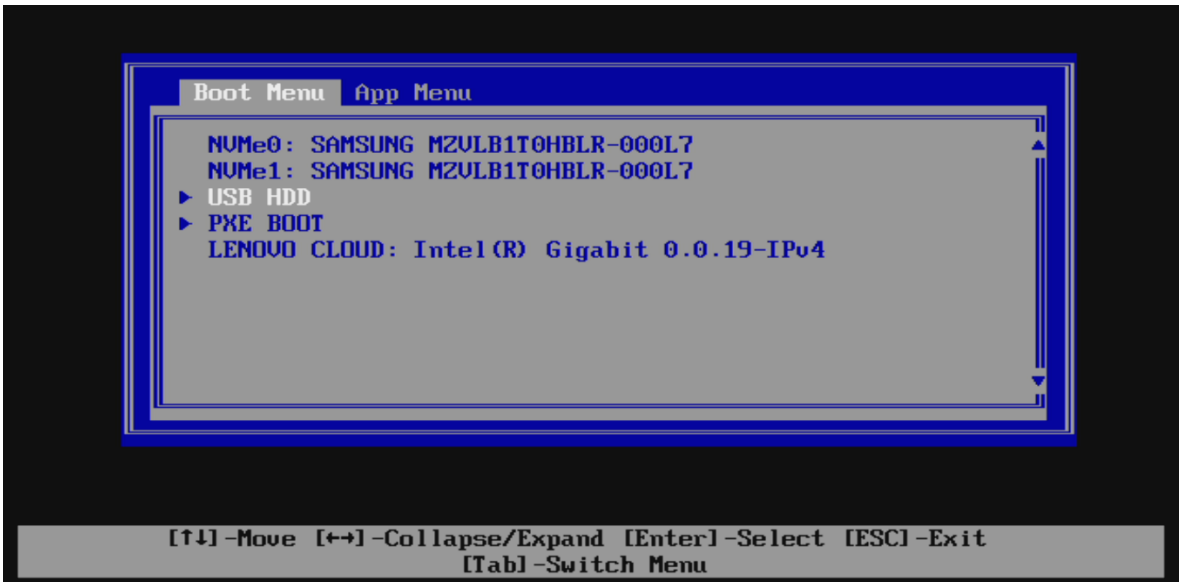


Section 2 – Installing Debian 10.x

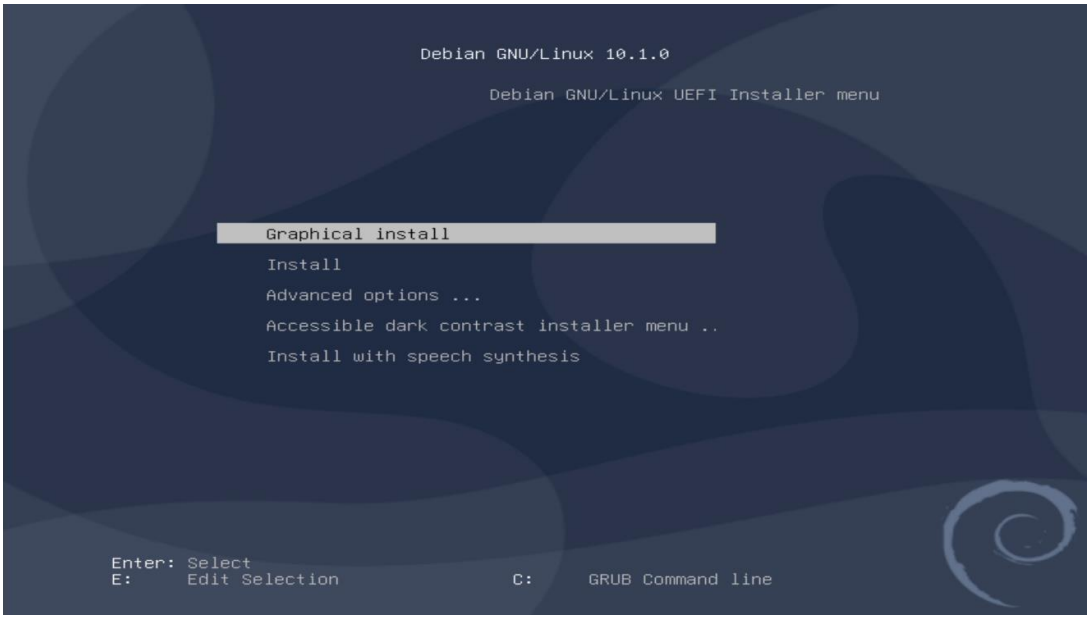
Please refer to the following instructions and screenshots on how to install Debian 10 on the Lenovo ThinkPad P43s and P53s.

- Insert the Debian 10 installation media (either through USB or CD/DVD).
- Power on the system and press the F12 function key whenever the following Lenovo splash screen appears.

- Select the Linux bootable installation media from the F12 boot menu list.



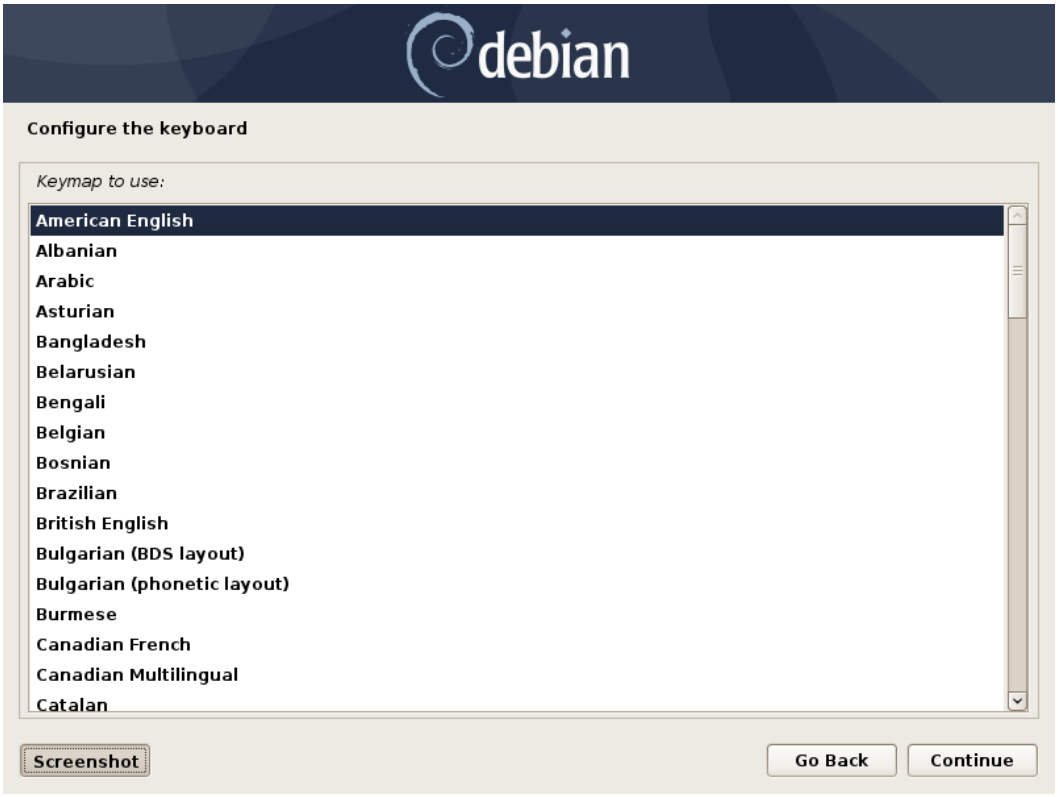
- Select “Graphical install” from the Debian boot menu to begin setup.



  - The Touchpad may not be usable until the setup is complete, and the system boots up. In this case the TrackPoint must be used during setup.

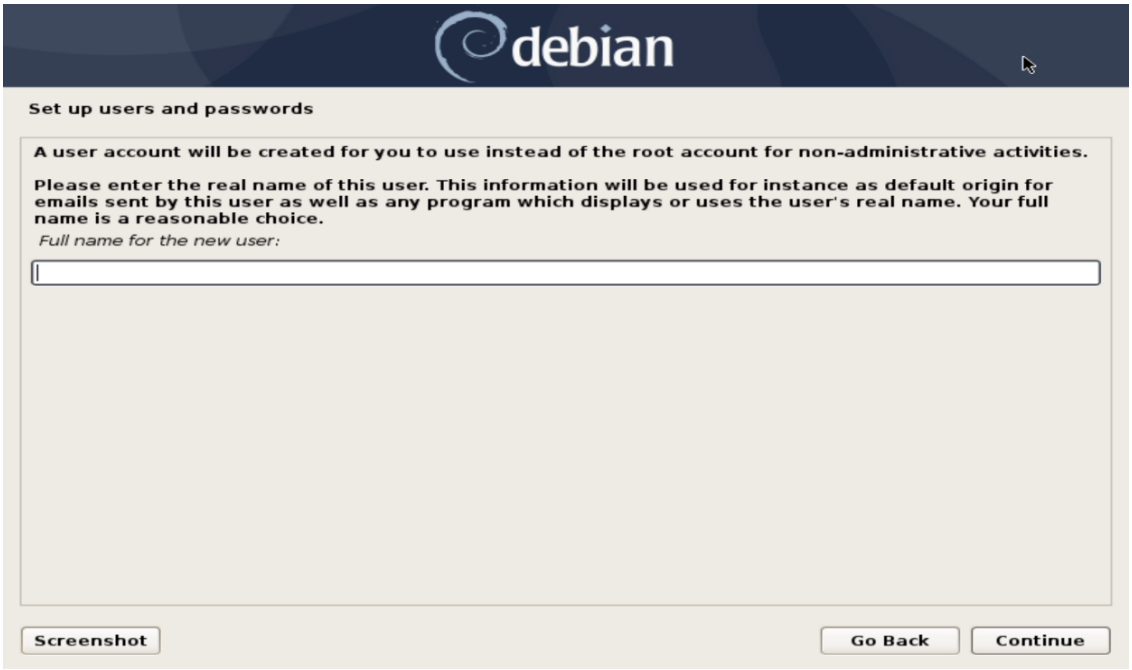
- Select the appropriate language and “Continue”.

- Continue to personalize options.



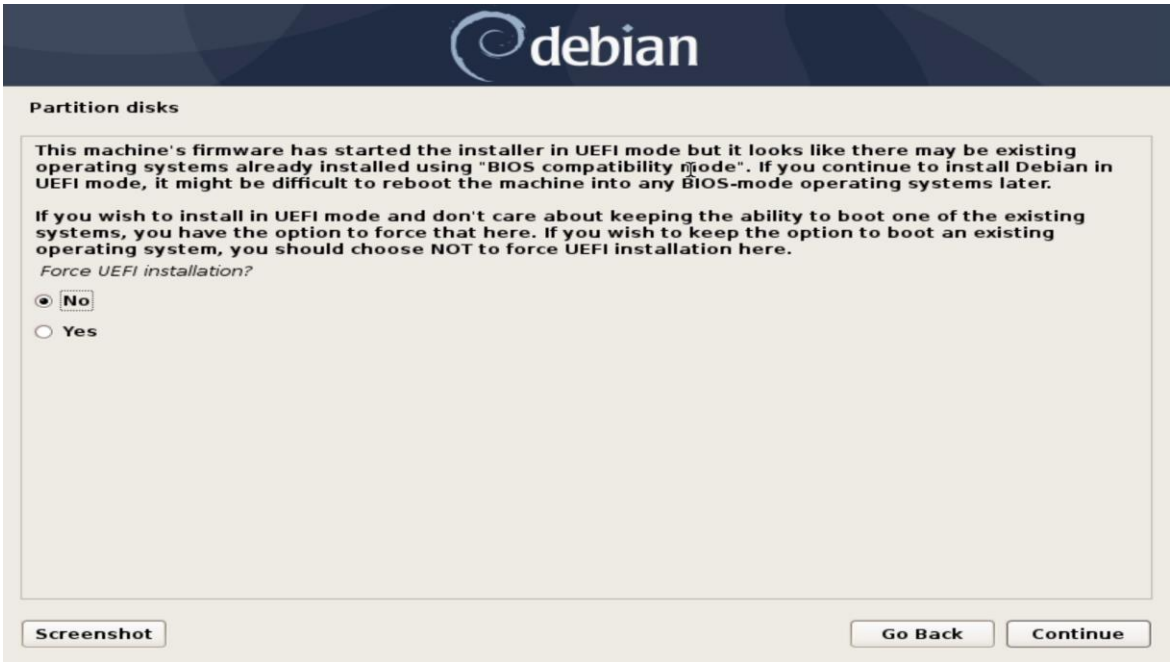
- Set the desired root password

- Set the desired user name.

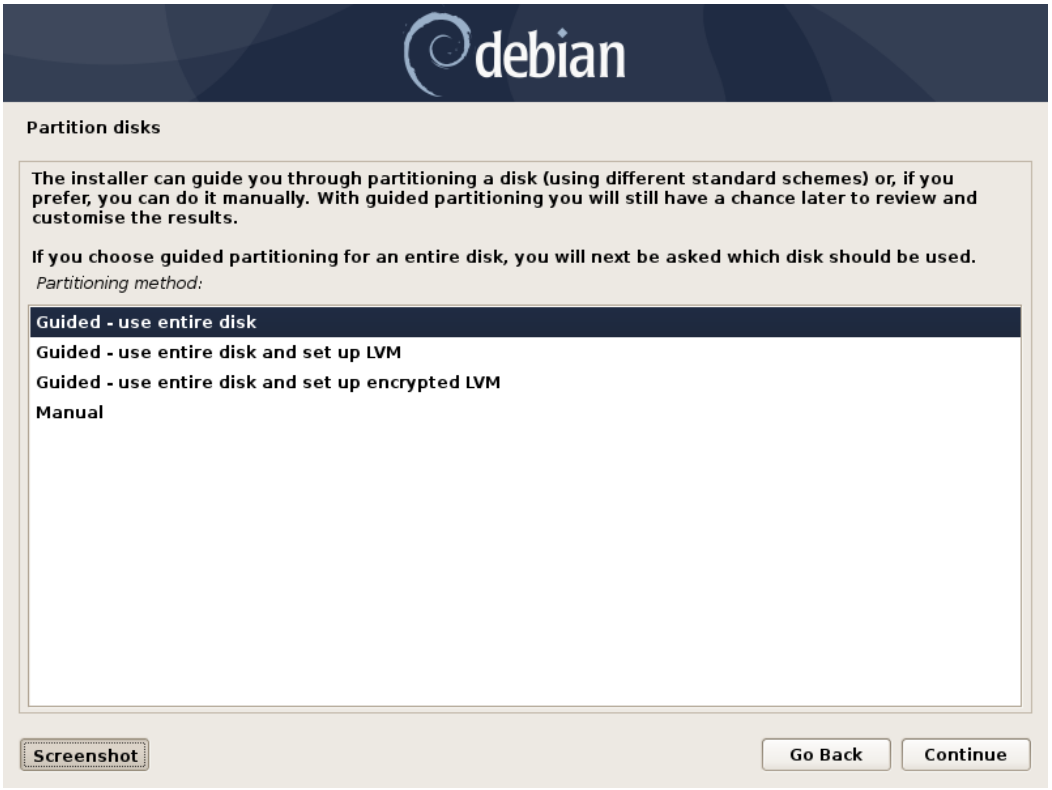


- Set the password for the user.

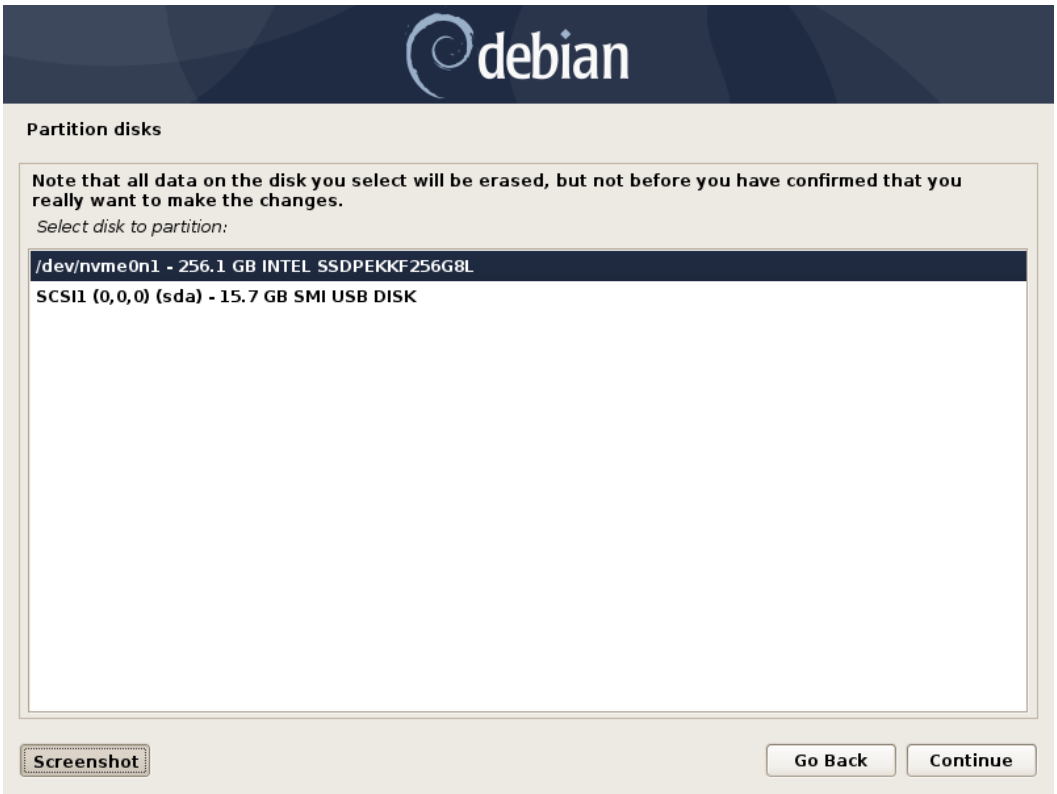
- Select “No” when asked to force UEFI Installation.



- Choose “Guided – use entire disk” partitioning method.

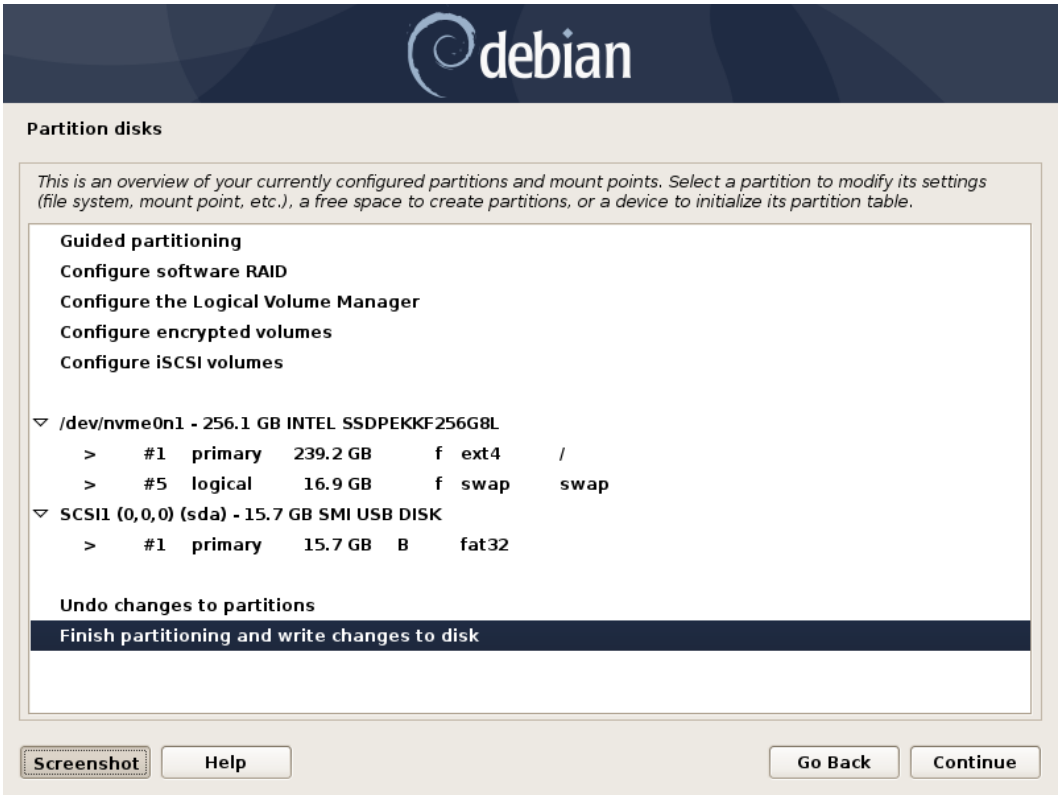


- Select the storage device on which to install the operating system.



- Chose “All files in one partition…” as the partitioning scheme.

- Choose to “Finish partitioning and write changes to disk”



- Next select “Yes” to write the changes to the disk.

- Choose “No” when asked to use a network mirror.

- Choose desired software to install.

- Choose the desired default display manager.

- Select “Yes” to install the GRUB boot loader to the master boot record.

- Select the boot disk for boot loader installation.

Section 3 – Wireless Network Driver

The wireless network driver is not native to the Debian 10 kernel, so users will not be able to connect to wireless networks by default. The following methods can be used to enable the wireless network on a ThinkPad P43s and P53s.

Option 1: Update the *iwlwifi* module:

Step 1: Make sure you are connected to a network via a wired LAN connection

Step 2: Update the sources as follows:

su -

nano /etc/apt/sources.list

- Comment out the “deb cdrom:…” source

  deb http://deb.debian.org/debian buster main

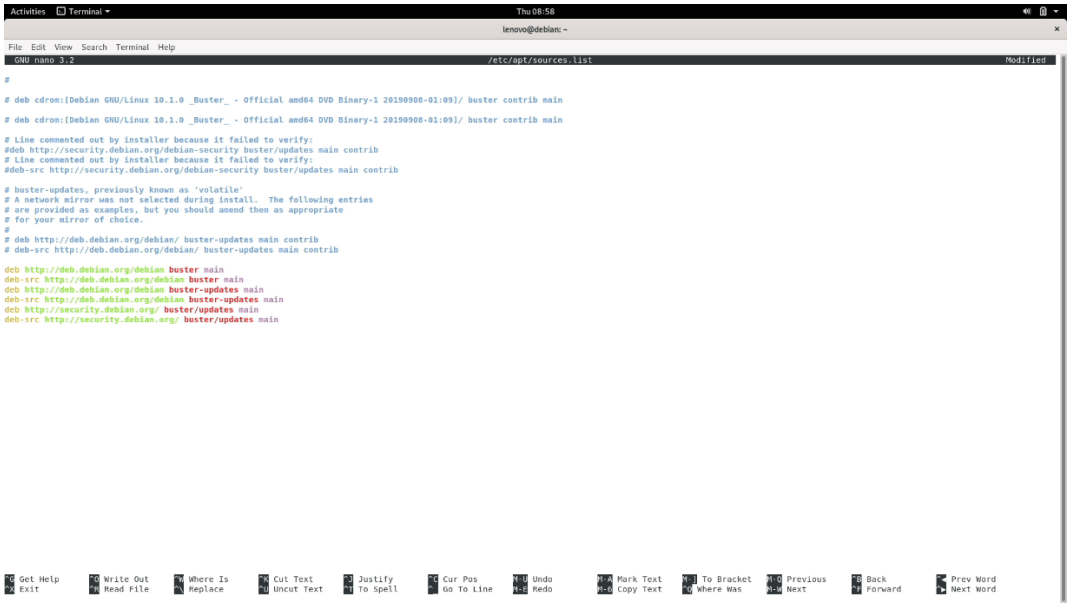
  deb-src http://deb.debian.org/debian buster main

  deb http://deb.debian.org/debian buster-updates main

  deb-src http://deb.debian.org/debian buster-updates main

  deb http://security.debian.org/ buster/updates main

  deb-src http://security.debian.org/ buster/updates main



Step 3: Update the sources.list file

apt-get update

Step 4: Install the development tools package

apt install git build-essential

Step 5: Install linux kernel headers package

apt install linux-headers-$(uname -r)

Step 6: Install the *iwlwifi* package.

git clone https://git.kernel.org/pub/scm/linux/kernel/git/iwlwifi/backport-iwlwifi.git

cd backport-iwlwifi/

make defconfig-iwlwifi-public

sed -i 's/CPTCFG_IWLMVM_VENDOR_CMDS=y/# CPTCFG_IWLMVM_VENDOR_CMDS is not set/' .config

make -j4

make install

Step 7: Install the Intel Wireless Driver

wget https://wireless.wiki.kernel.org/_media/en/users/drivers/iwlwifi-9000-pu-b0-jf-b0-34.618819.0.tgz

tar zxf iwlwifi*

cd iwlwifi*/

cp iwlwifi* /lib/firmware/

cp LICENSE* /lib/firmware/

modprobe iwlwifi

reboot now

- When the system boots back up the wireless network should be enabled.

Option 2: Update the Linux kernel to 5.0:

apt install linux-oem-osp1 linux-firmware

Section 4 – Installing the Nvidia Graphics Driver

In order to get optimal performance out of the Nvidia GPU, it's a good idea to install the Nvidia graphics driver.

To install the latest Nvidia graphics driver, follow the steps below:

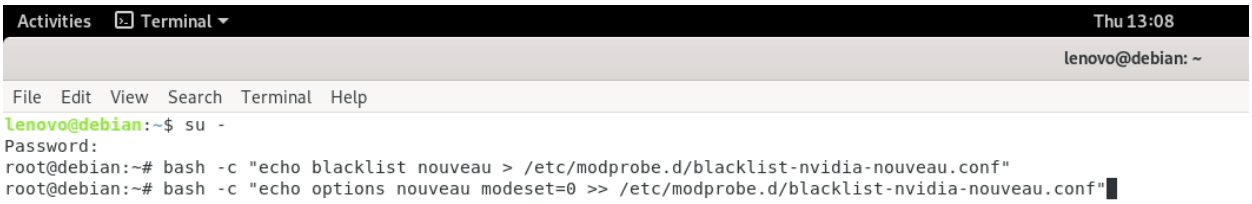
Step 1: Download the latest Nvidia graphics driver for the appropriate Nvidia GPU from https://www.nvidia.com/Download/Find.aspx?lang=en-us.

Step 2: Open a terminal window and blacklist the nouveau driver.

su -

bash -c "echo blacklist nouveau > /etc/modprobe.d/blacklist-nvidia-nouveau.conf"

bash -c "echo options nouveau modeset=0 >> /etc/modprobe.d/blacklist-nvidia-nouveau.conf"



- Confirm the contents of the new modprobe config file with this command.

cat /etc/modprobe.d/blacklist-nvidia-nouveau.conf

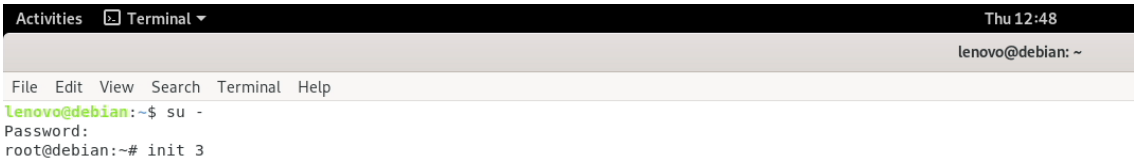
update-initramfs -u

reboot

Step 3: After rebooting the system, open a terminal window and stop x-windows as root.

su -

init 3



Step 4: Login and browse to the directory location to where the Nvidia driver installer is.

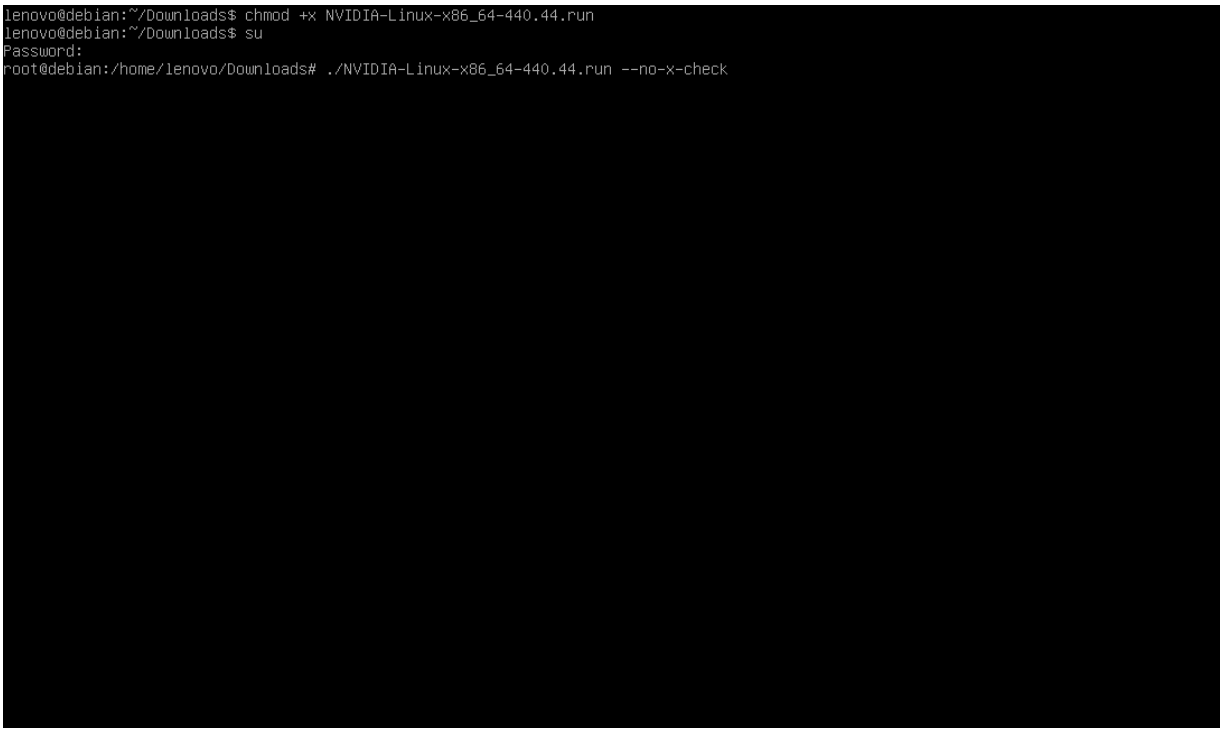
cd /home/(username)/Downloads/

Step 5: Make the Nvidia installer an executable then run it as root

chmod +x NVIDIA-Linux-x86-64-*

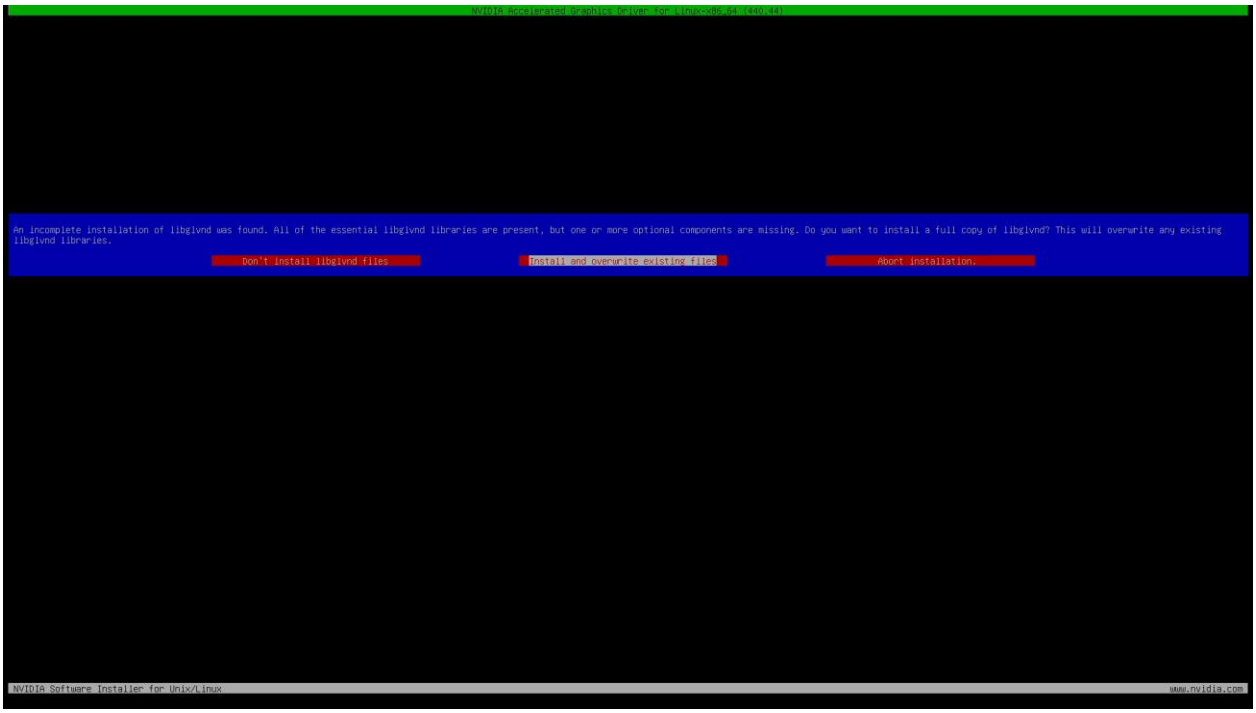
su

./NVIDIA-Linux-x86_64* --no-x-check

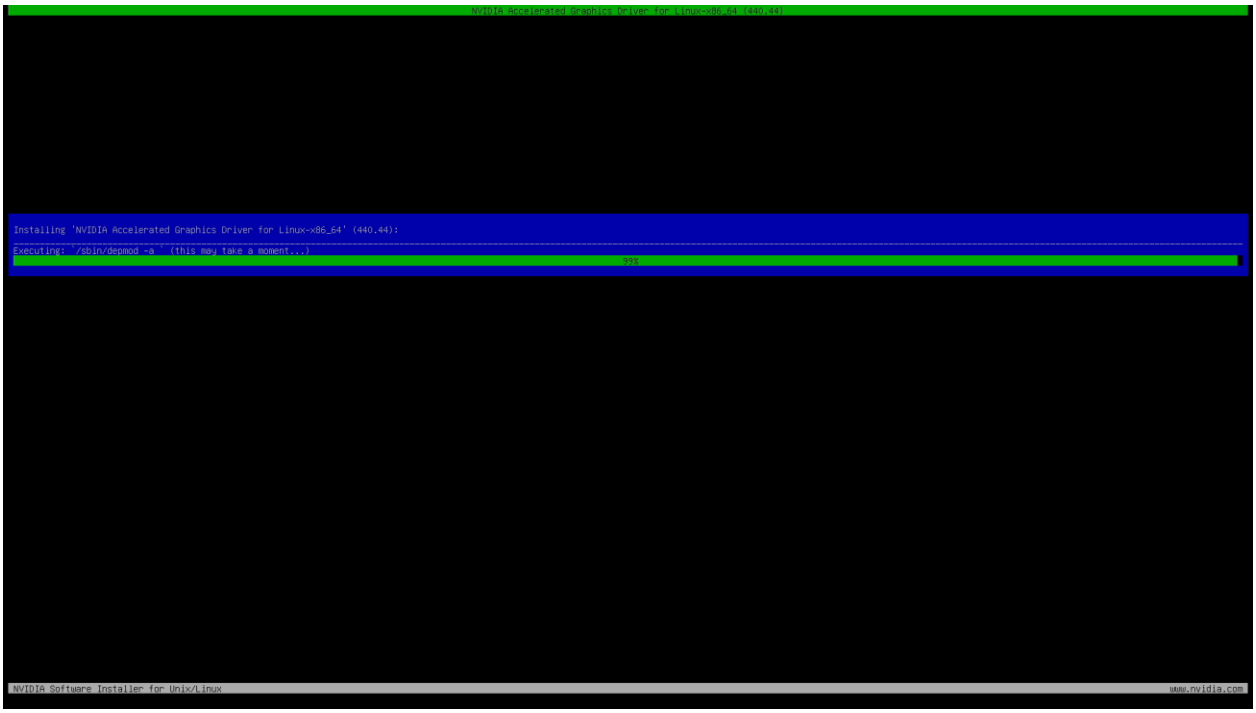


Step 6: Optional: Choose whether to install the 32-bit compatibility libraries.

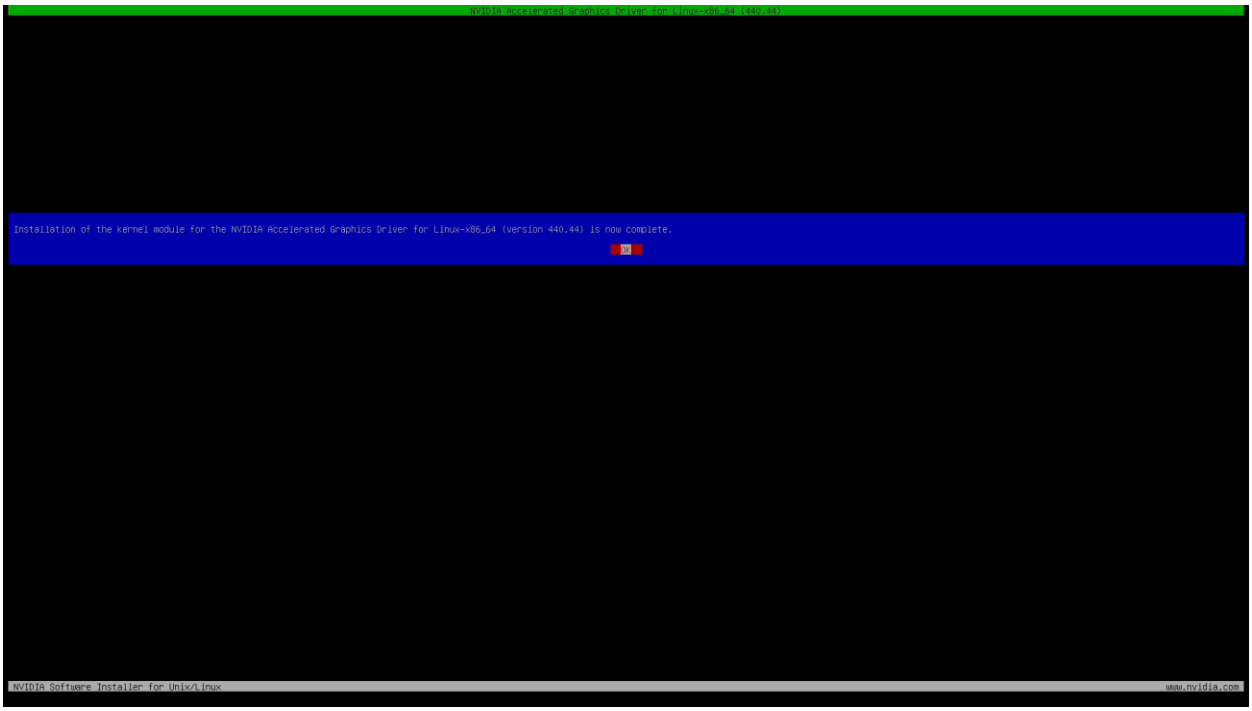
Step 7: Select to “Install and overwrite” libglvnd libraries.



Step 8: Nvidia driver installing progress bar may appear.



Step 9: The Nvidia driver should successfully be installed.



Step 10: Execute the following command to verify the Nvidia driver is loaded.

nvidia-smi

```
root@debian:/home/lenovo/Downloads# nvidia-smi
Thu Jan  9 13:22:29 2020
+-----------------------------------------------------------------------------+
| NVIDIA-SMI 440.44       Driver Version: 440.44       CUDA Version: 10.2     |
|-------------------------------+----------------------+----------------------+
| GPU  Name        Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf  Pwr:Usage/Cap|         Memory-Usage | GPU-Util  Compute M. |
|===============================+======================+======================|
|   0  Quadro P520         Off  | 00000000:3C:00.0 Off |                  N/A |
| N/A   41C    P0    N/A /  N/A |      0MiB /  2002MiB |      1%      Default |
+-------------------------------+----------------------+----------------------+

+-----------------------------------------------------------------------------+
| Processes:                                                       GPU Memory |
|  GPU       PID   Type   Process name                             Usage      |
|=============================================================================|
|  No running processes found                                                 |
+-----------------------------------------------------------------------------+
root@debian:/home/lenovo/Downloads#
```

Step 11: Reboot the system.

Section 6 – Revision History

Version	Date	Author	Changes/Updates
1.0	01/24/2020	Hady Asad	Initial launch release