

Ubuntu Linux Setup Guide

For ThinkPad P43s, P53s

**** Official support of Ubuntu 18.04 LTS and later.*



Section 1 – BIOS Setup and Pre-Installation Steps

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

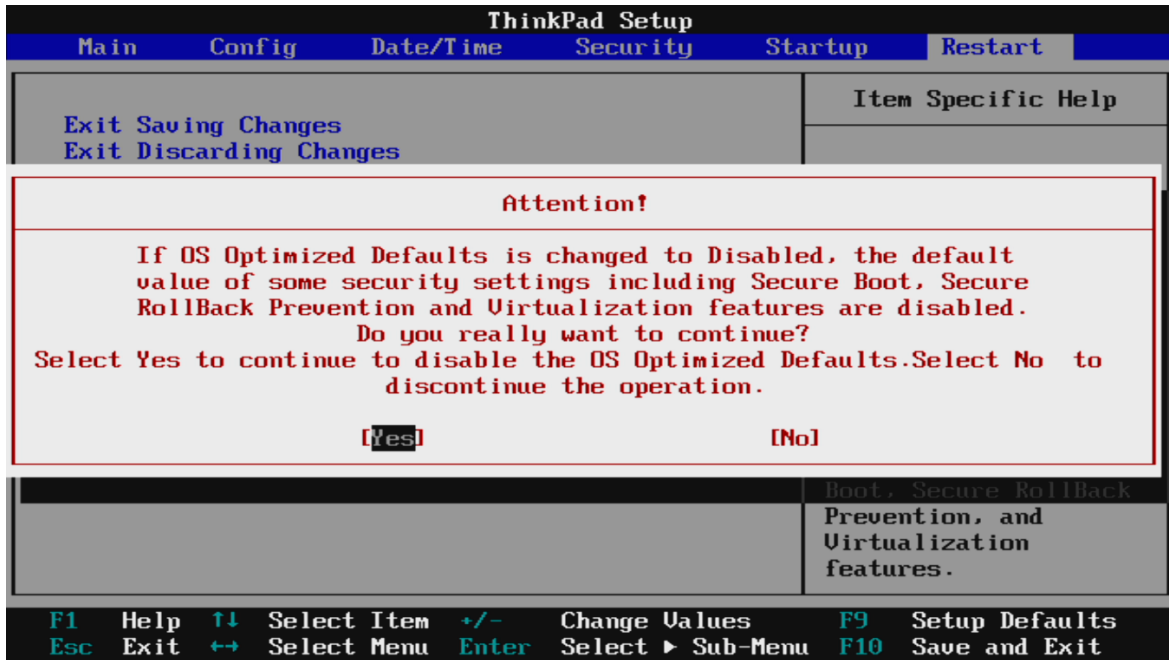
- Boot into BIOS by pressing the function “F1” key at the Lenovo splash screen.



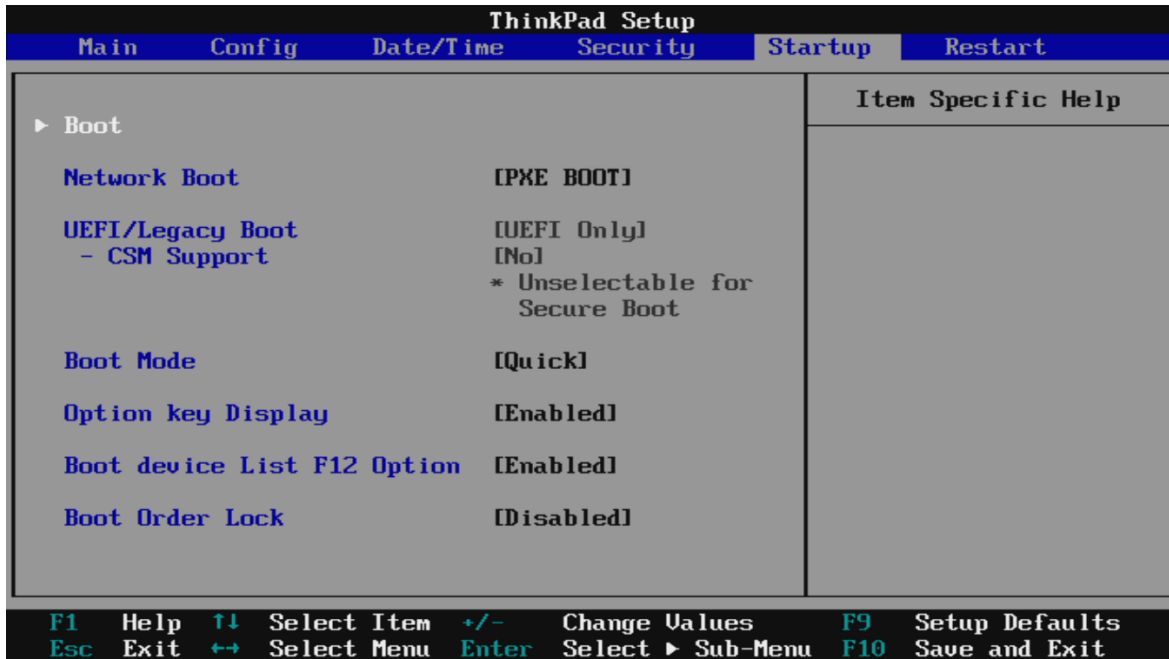
- Tab over to the “Restart” menu tab and set “OS Optimized Defaults” to “Disabled”.



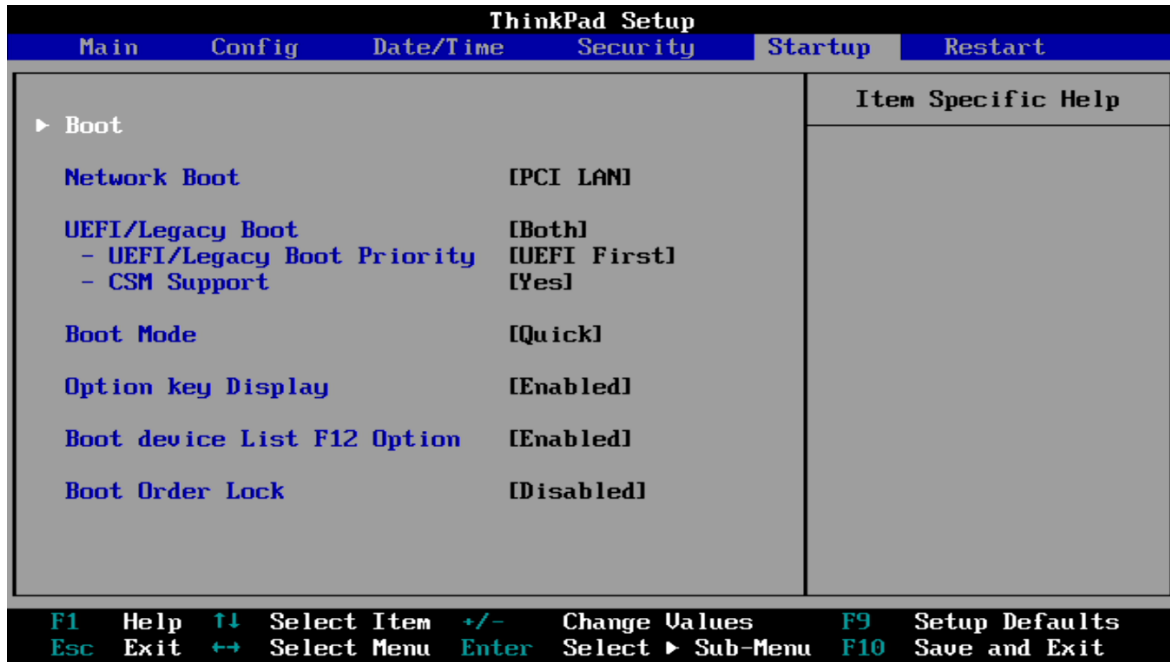
- Switching the “OS Optimized Defaults” settings may give a warning message. Select “Yes” to continue to disable OS Optimized Defaults.



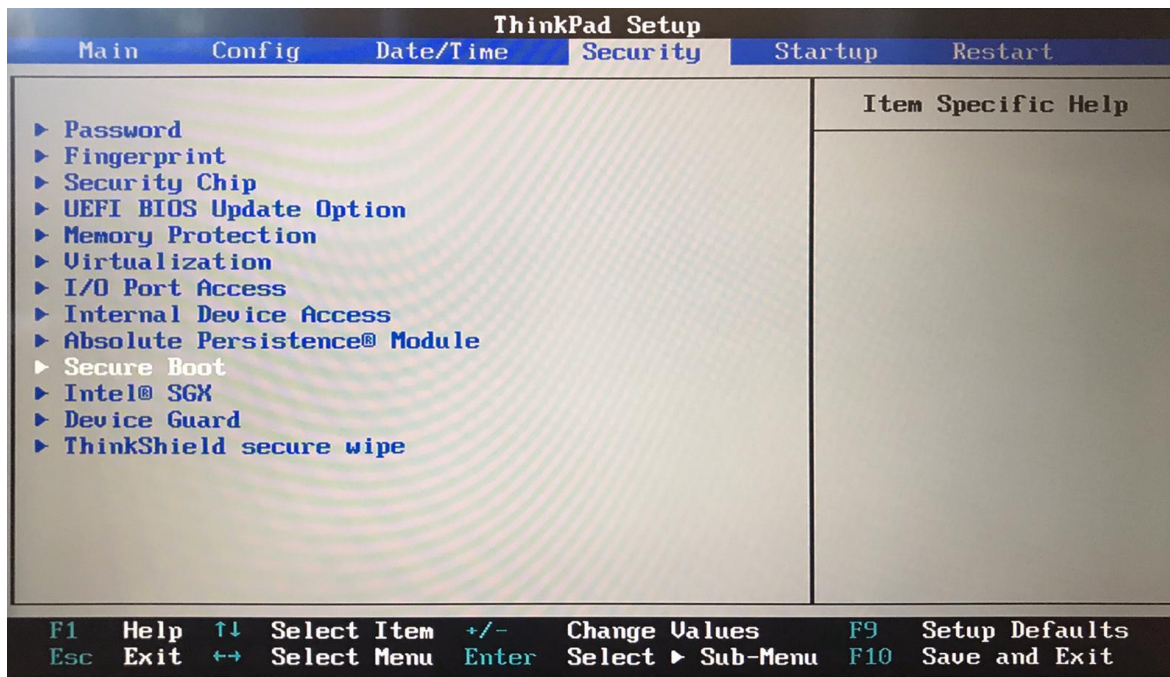
- Tab over to the “Startup” menu tab.

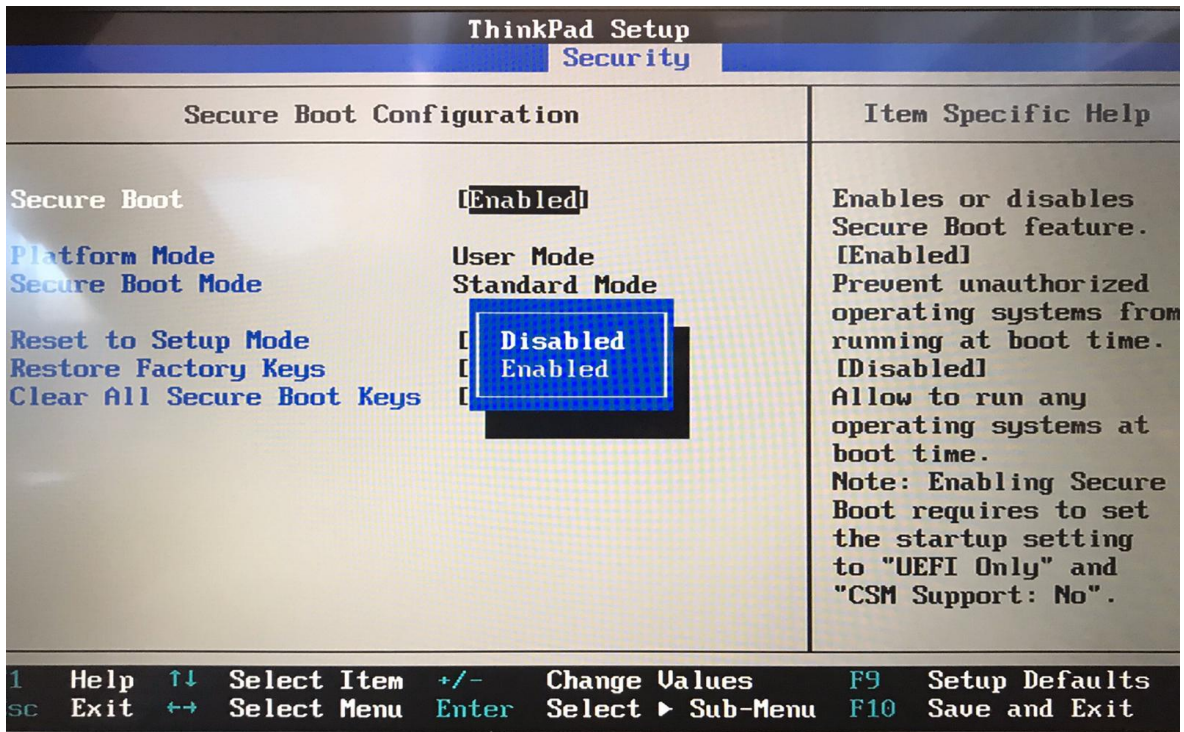


- Pressing F9 function key will allow Legacy and UEFI bootable devices by setting “UEFI/Legacy Boot” to “Both”; otherwise, it will be an unchangeable setting to UEFI only.

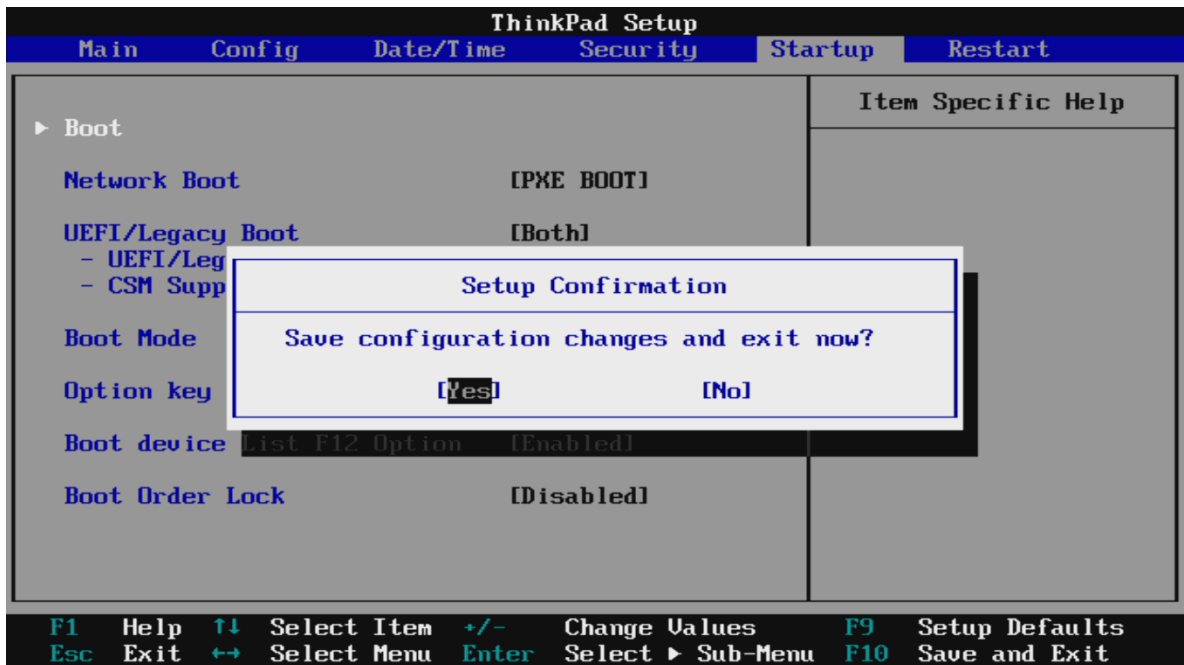


- Only for P53s- Tab over to the “Security” menu tab, press “Secure Boot”. If Secure Boot is Enabled by default, then “Disable” it.





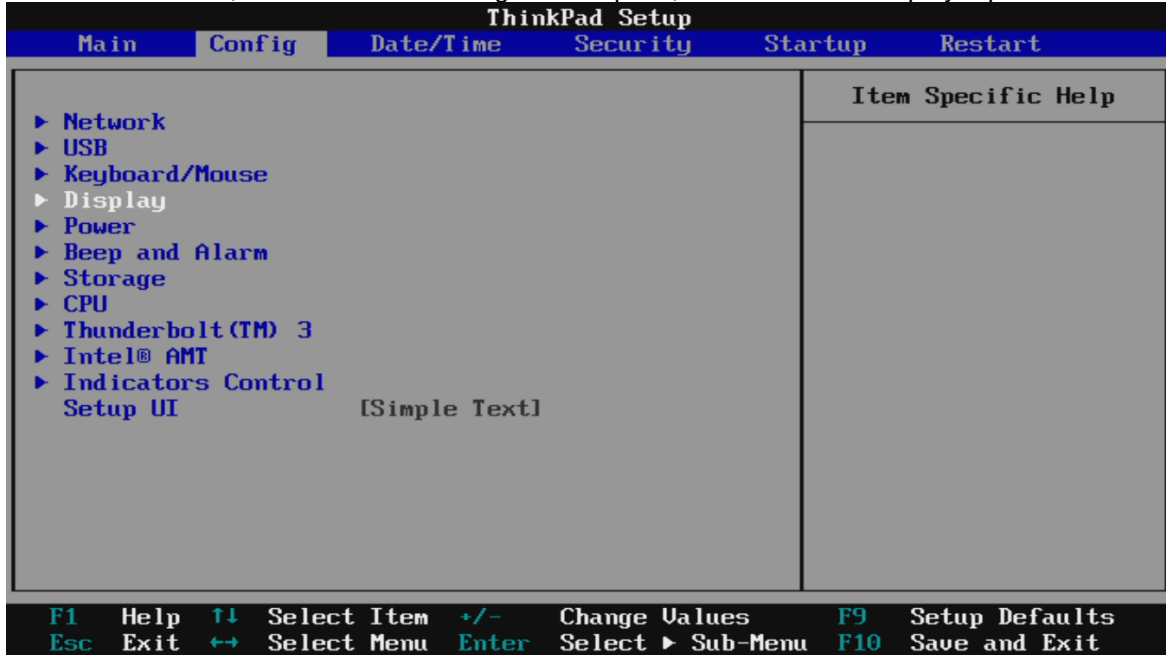
- Press function "F10" key to save and exit BIOS setup.



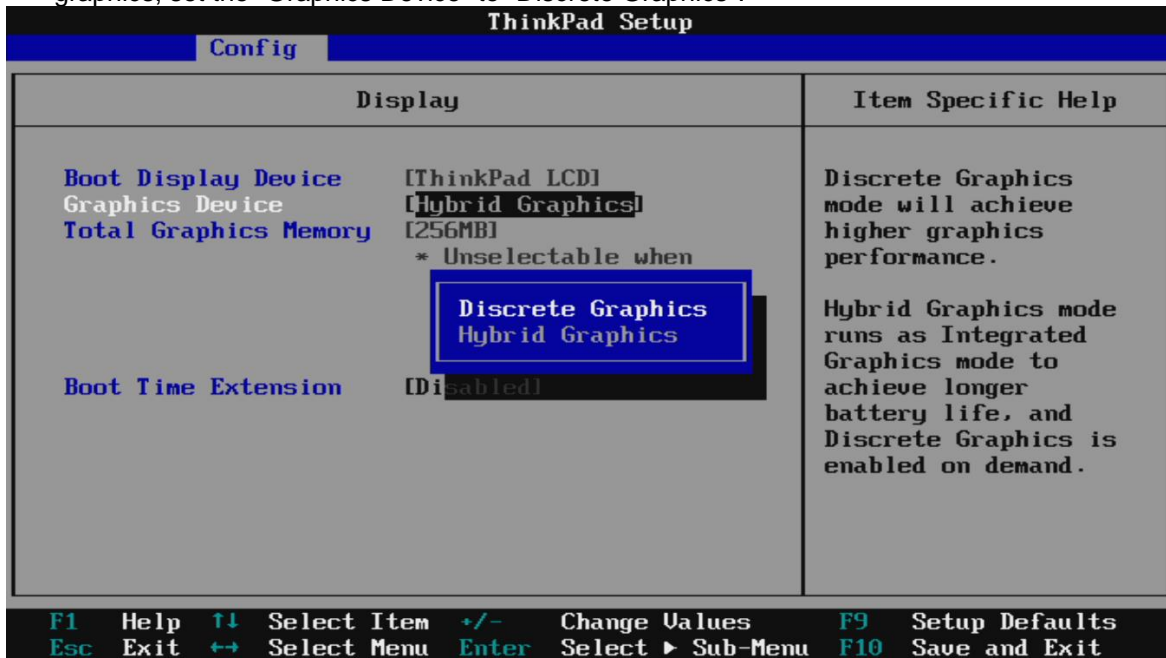
Section 2 – Discrete vs Hybrid Graphics

The Thinkpad P43s and P53s offer both Nvidia and Intel graphics. To run exclusively Nvidia graphics, use the discrete graphics mode highlighted below.

- Boot into BIOS, tab over to the “Config” menu option, and select the “Display” option.



- By default, the Graphics Device will likely be set to Hybrid Graphics. To run exclusively Nvidia graphics, set the “Graphics Device” to “Discrete Graphics”.



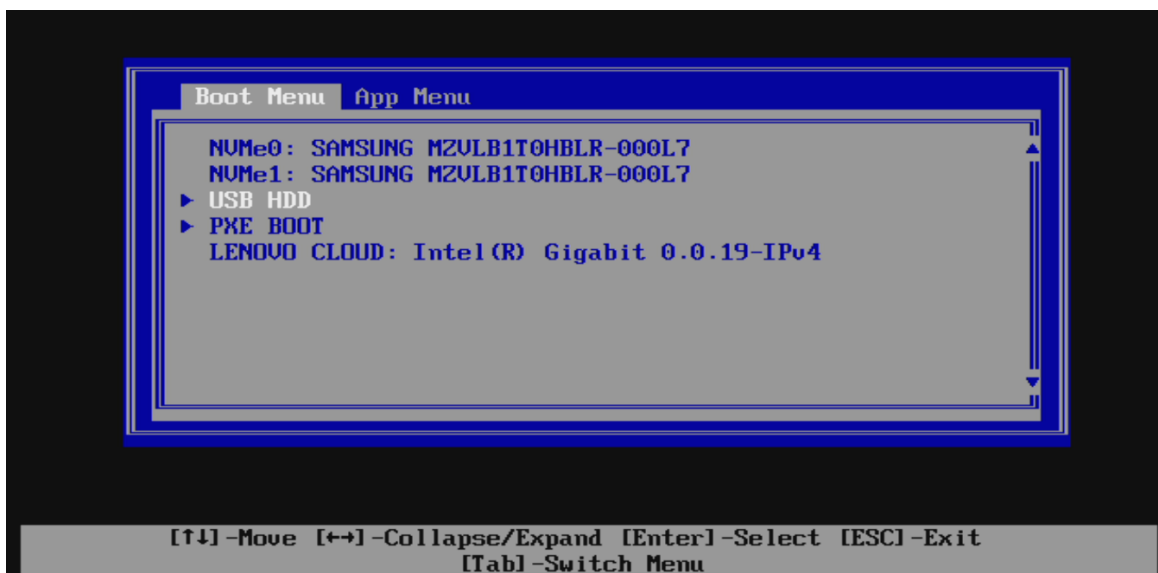
Section 3 – Installing Ubuntu Linux 18.04 LTS

Please refer to the following instructions and screenshots on how to install Ubuntu 18.04 LTS on the Lenovo Thinkpad P43s and P53s

- Insert the Ubuntu 18.04 LTS 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.



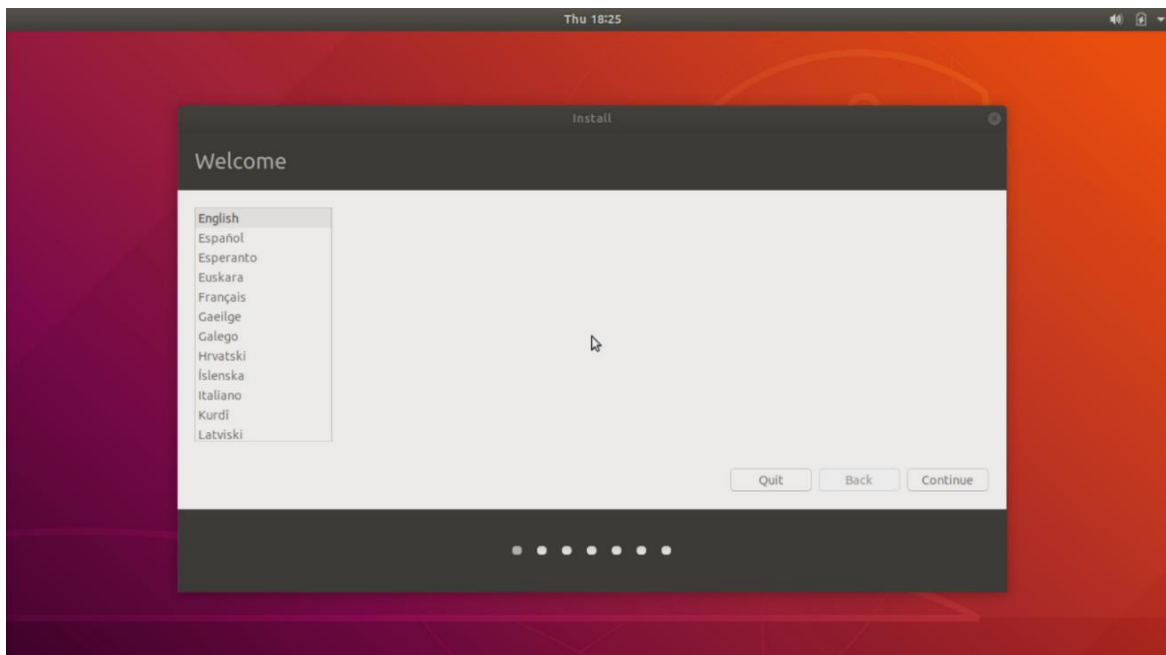
- Select the Linux bootable installation media from the “F12” boot menu list.



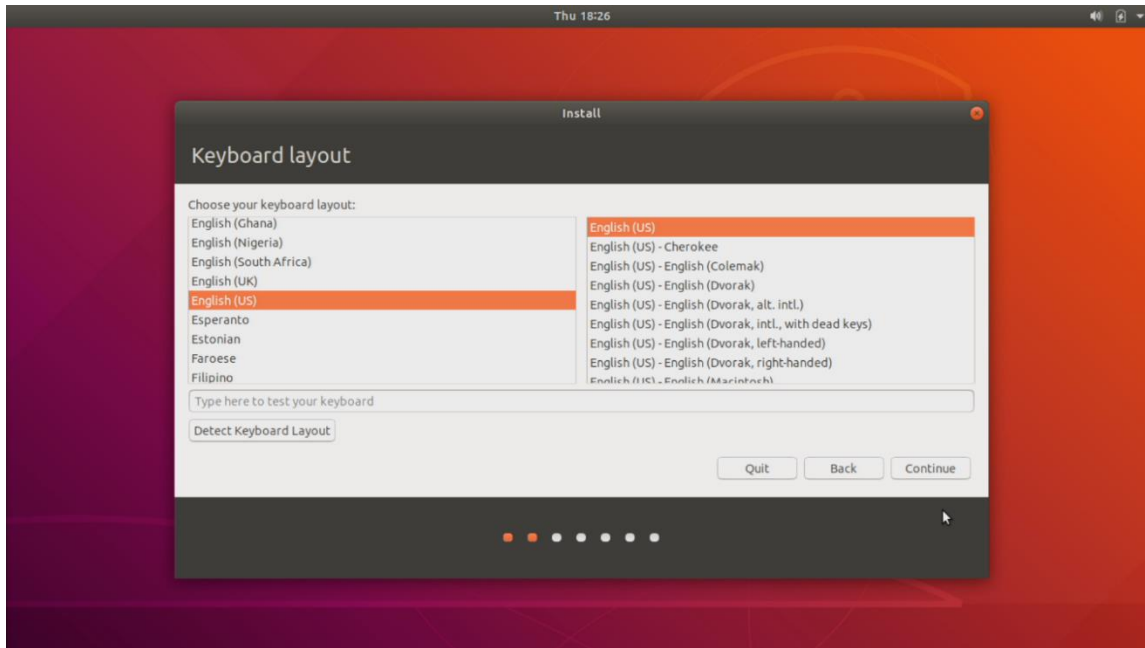
- Highlight “Install Ubuntu” from the GRUB boot menu and hit enter.



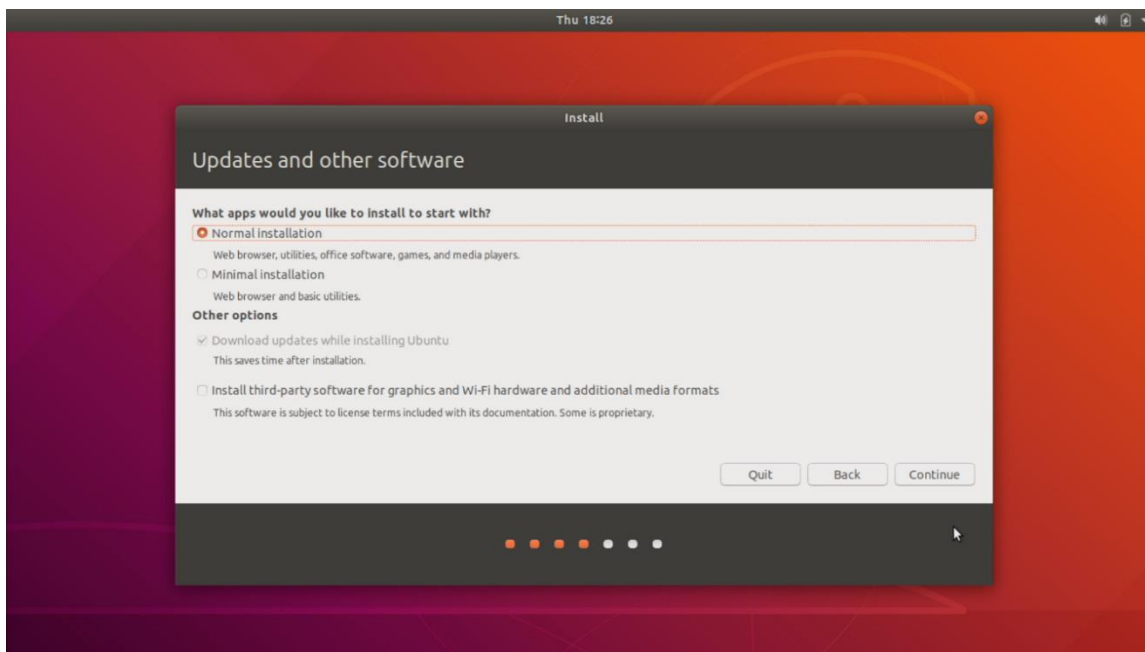
- The Ubuntu Linux Welcome Screen should appear. Select the appropriate language and “Continue”.



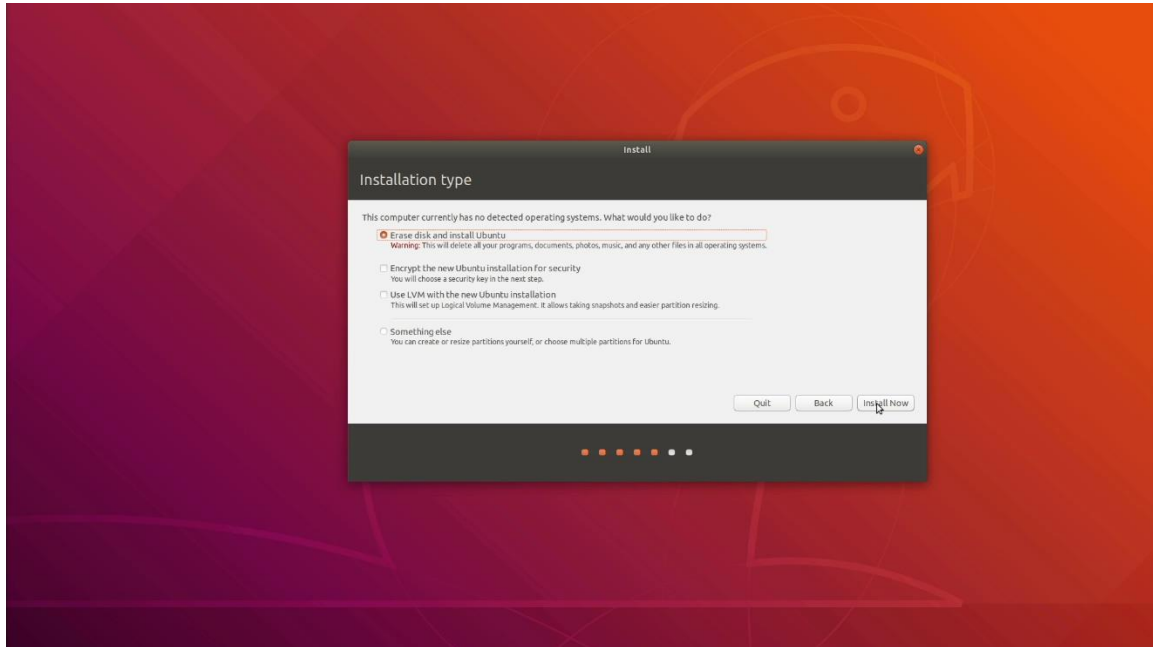
- Choose the keyboard layout and language accordingly by selecting each one.



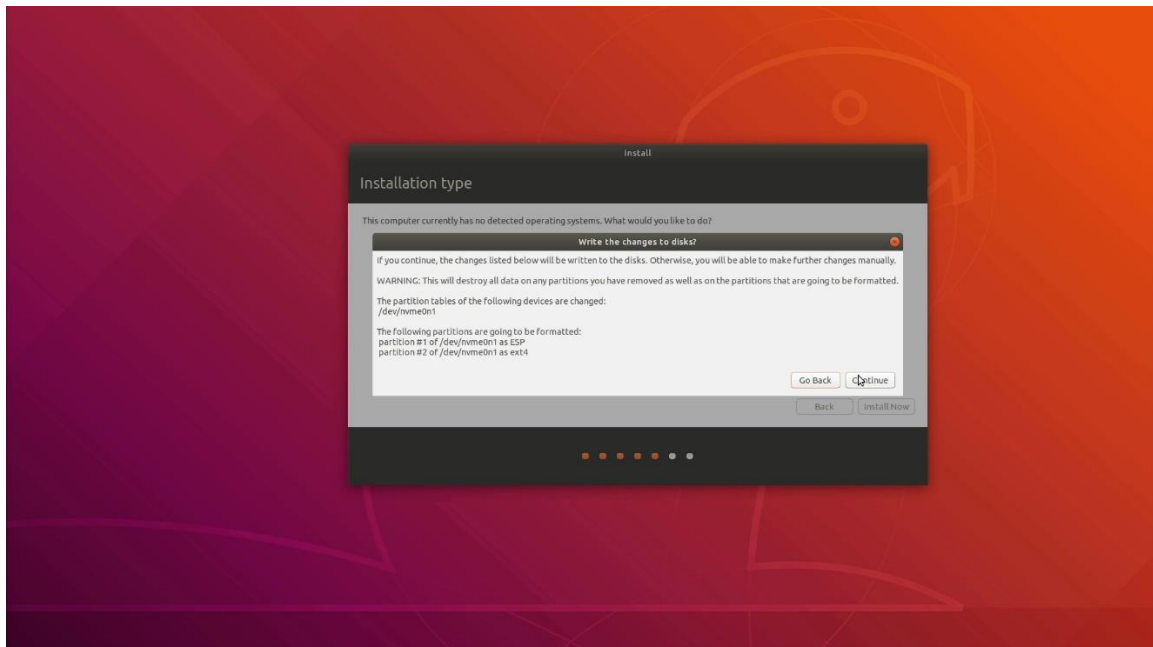
- Select "Normal Installation" and "Continue".



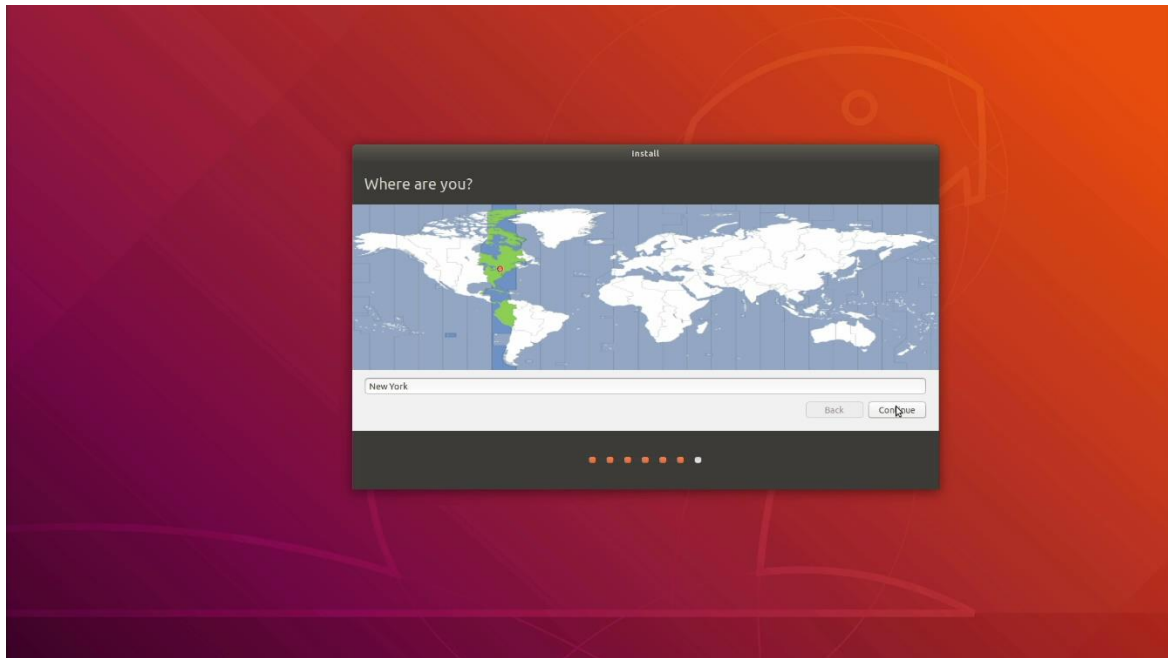
- Choose the installation type. For simplicity, this guide was done using “Erase disk and install Ubuntu”.



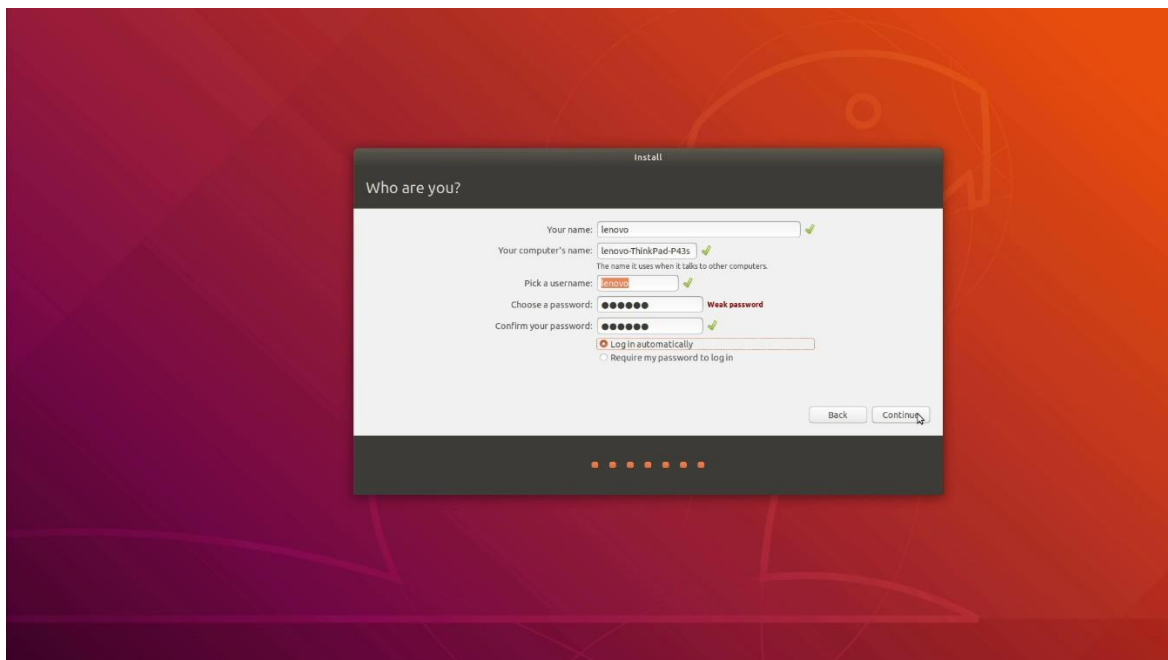
- Select “Continue” to confirm changes will be made to the disk.



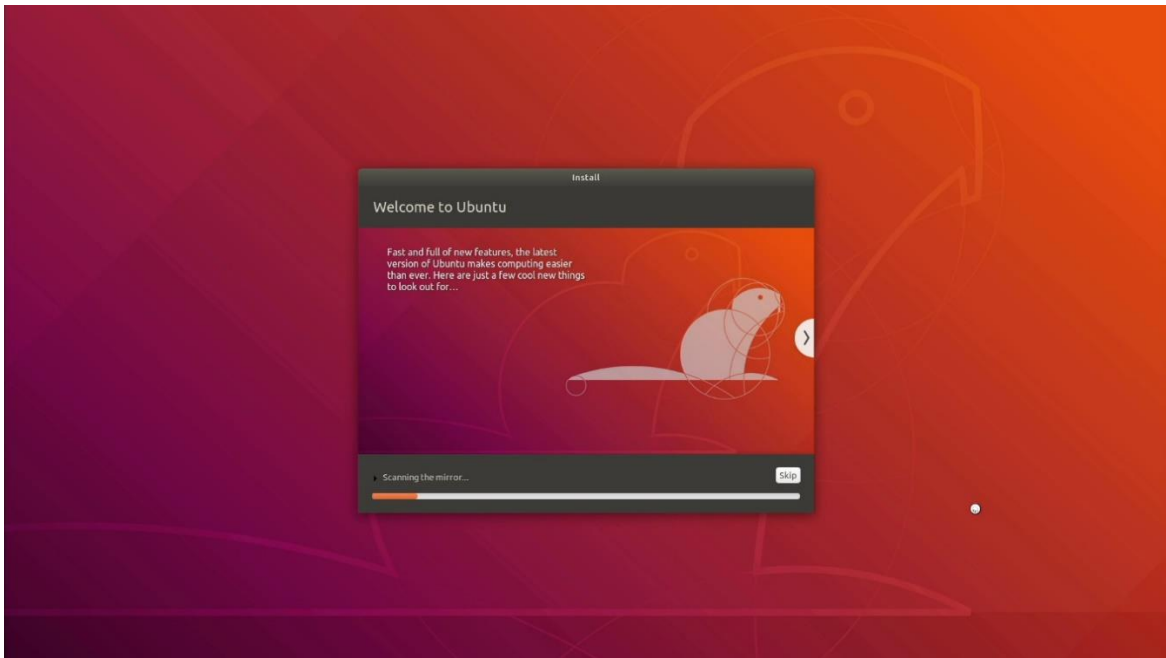
- Choose the appropriate geographical location and select “Continue”.



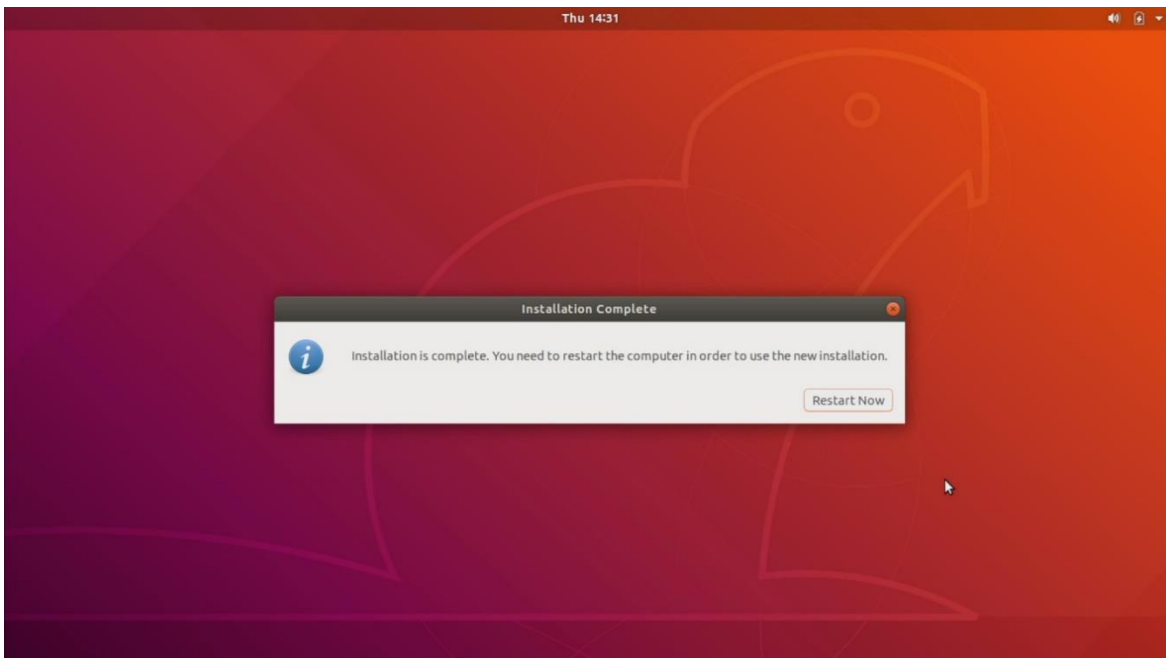
- Fill out the appropriate input boxes and select “Continue”.



- Ubuntu installation progress bar will be shown.



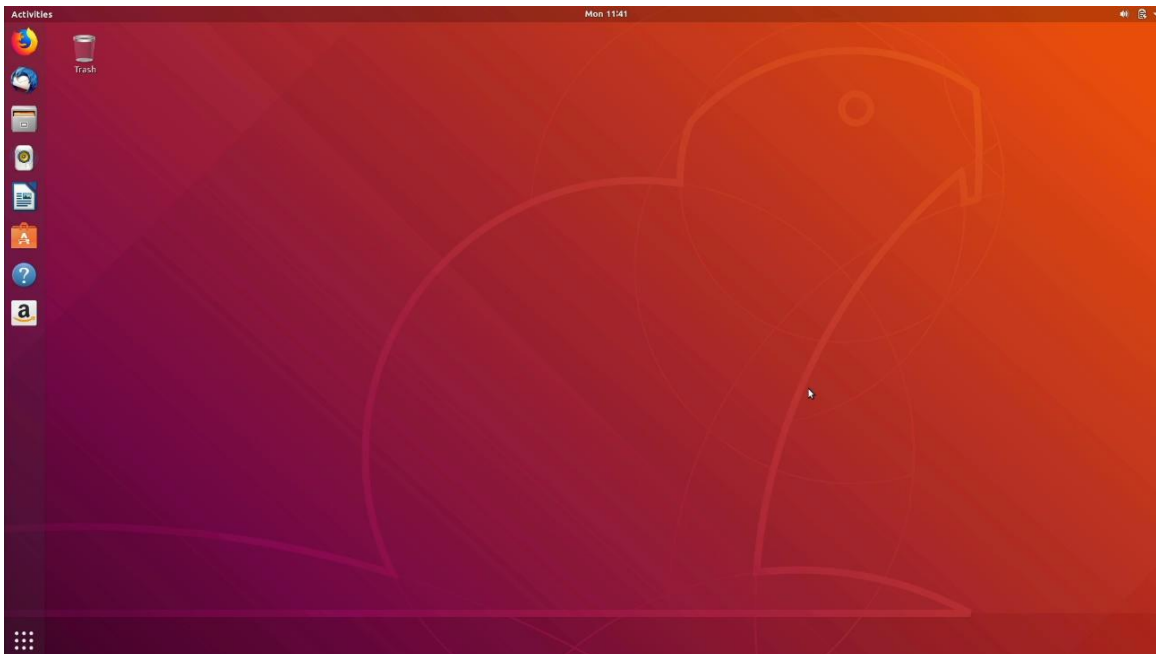
- Once the installation completes, select "Restart Now".



- Remove the installation media and hit enter.



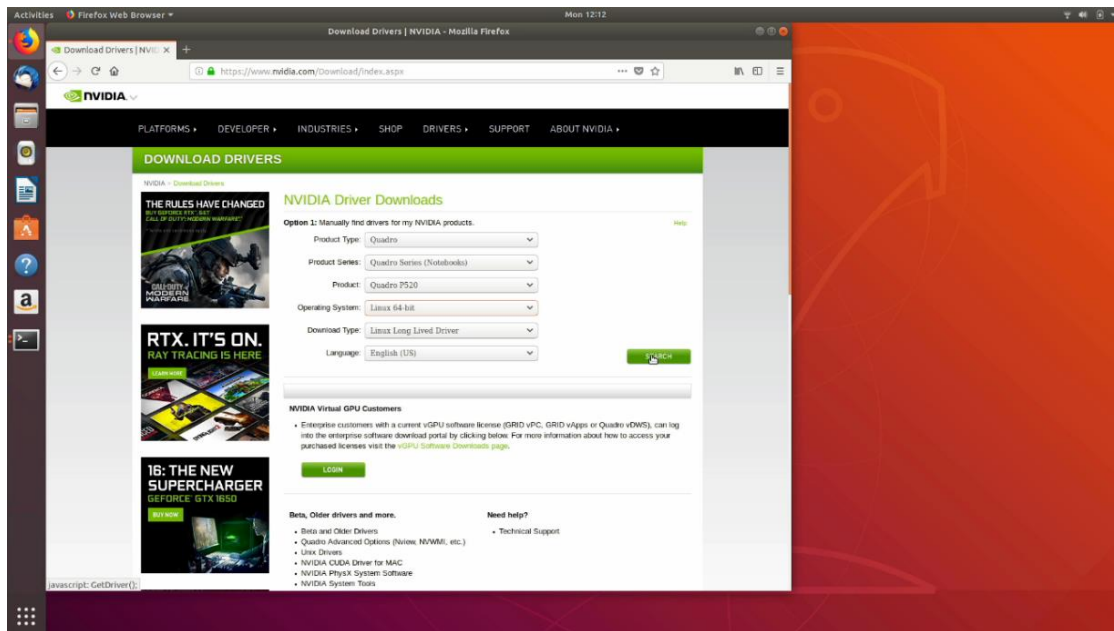
- Ubuntu Desktop Screen.



Section 5 – Installing the Nvidia Graphics Driver

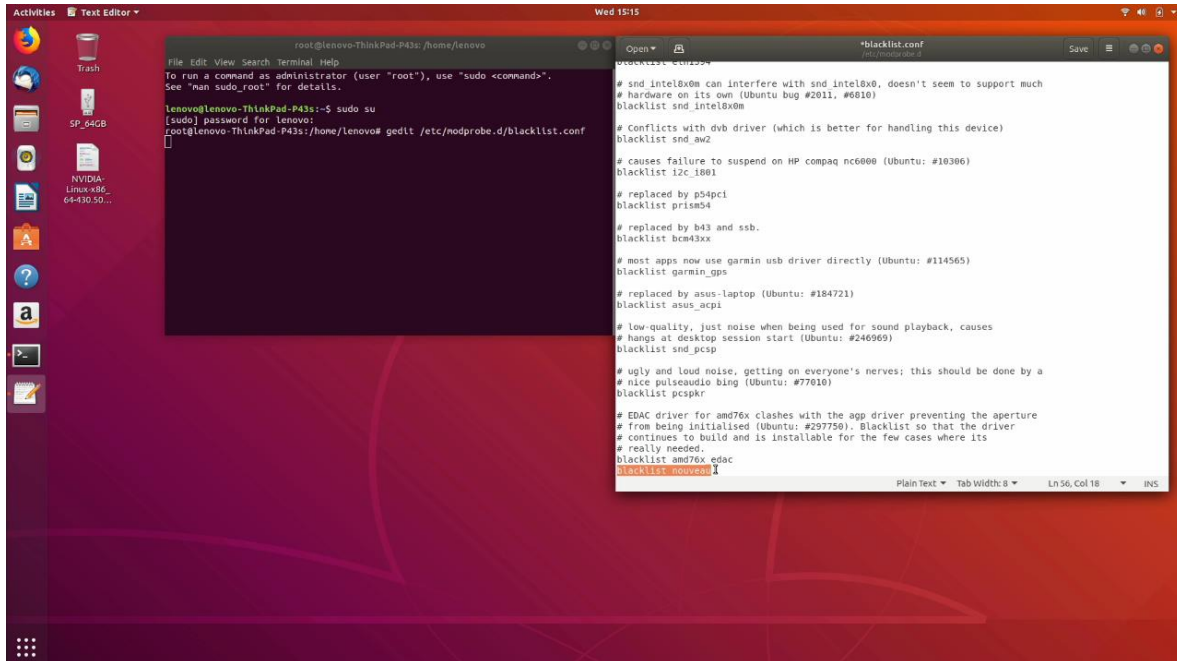
In order to get optimal performance out of the Nvidia GPU, it is a good idea to install the Nvidia graphics driver. To install the latest Nvidia graphics driver, follow the steps below:

Step 1: Download the latest Nvidia graphics driver for the appropriate Nvidia GPU from <https://www.nvidia.com/Download/index.aspx>



Step 2: In order to get the Nvidia driver running, we will need to blacklist the nouveau driver. Follow the steps below-

- Log in as root: `sudo su`
- Open blacklist.conf file: `gedit /etc/modprobe.d/blacklist.conf`
- Add line: `blacklist nouveau`
- Save and exit



```
root@lenovo-ThinkPad-P43s: /home/lenovo
File Edit View Search Terminal Help
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

lenovo@lenovo-ThinkPad-P43s:~$ sudo su
[sudo] password for lenovo:
root@lenovo-ThinkPad-P43s:/home/lenovo# gedit /etc/modprobe.d/blacklist.conf

# snd_intel8x0m can interfere with snd_intel8x0, doesn't seem to support much
# hardware on its own (Ubuntu bug #2011, #6610)
blacklist snd_intel8x0m

# Conflicts with dvb driver (which is better for handling this device)
blacklist snd_au2

# causes failure to suspend on HP compaq nc6000 (Ubuntu: #10306)
blacklist i2c_1801

# replaced by p54pci
blacklist grism04

# replaced by b43 and ssb.
blacklist bcm43xx

# most apps now use garmin usb driver directly (Ubuntu: #14565)
blacklist garmin_gps

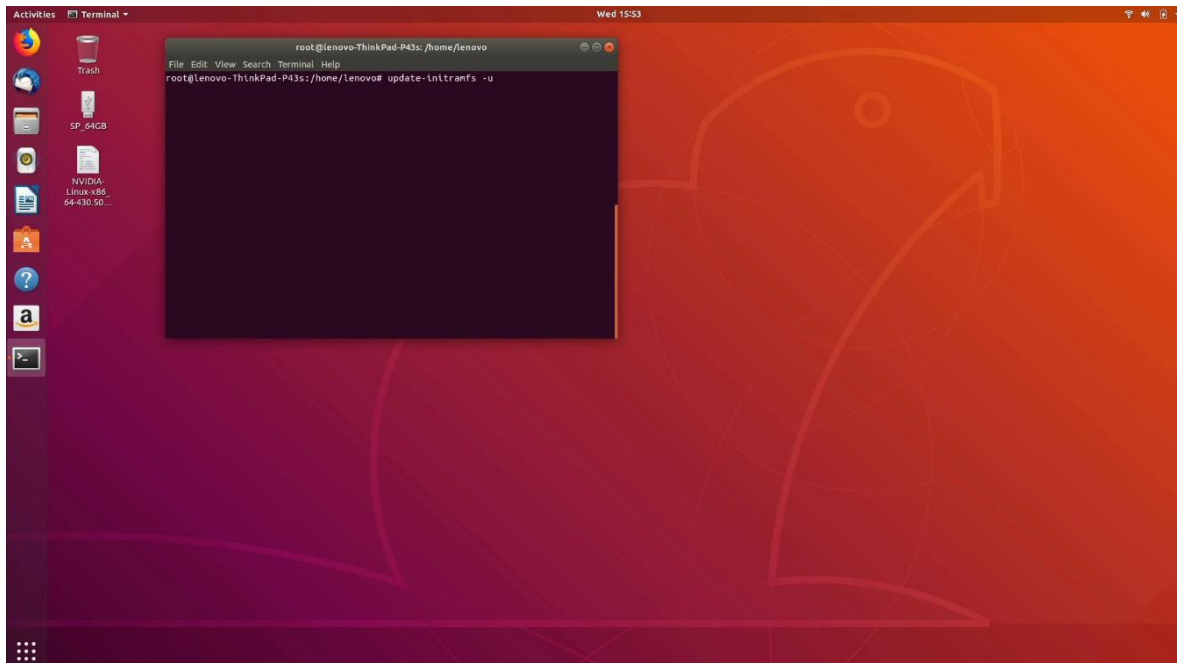
# replaced by asus-Laptop (Ubuntu: #184721)
blacklist asus_acpi

# Low-quality, just noise when being used for sound playback, causes
# hangs at desktop session start (Ubuntu: #246969)
blacklist snd_pcsp

# ugly and loud noise, getting on everyone's nerves; this should be done by a
# nice pulseaudio bing (Ubuntu: #77010)
blacklist pcsprkr

# EDAC driver for amd76x clashes with the app driver preventing the aperture
# from being initialised (Ubuntu: #297750). Blacklist so that the driver
# continues to build and is installable for the few cases where its
# really needed.
blacklist amd76x_edac
blacklist nouveau
```

- Run the command: `update-initramfs -u`

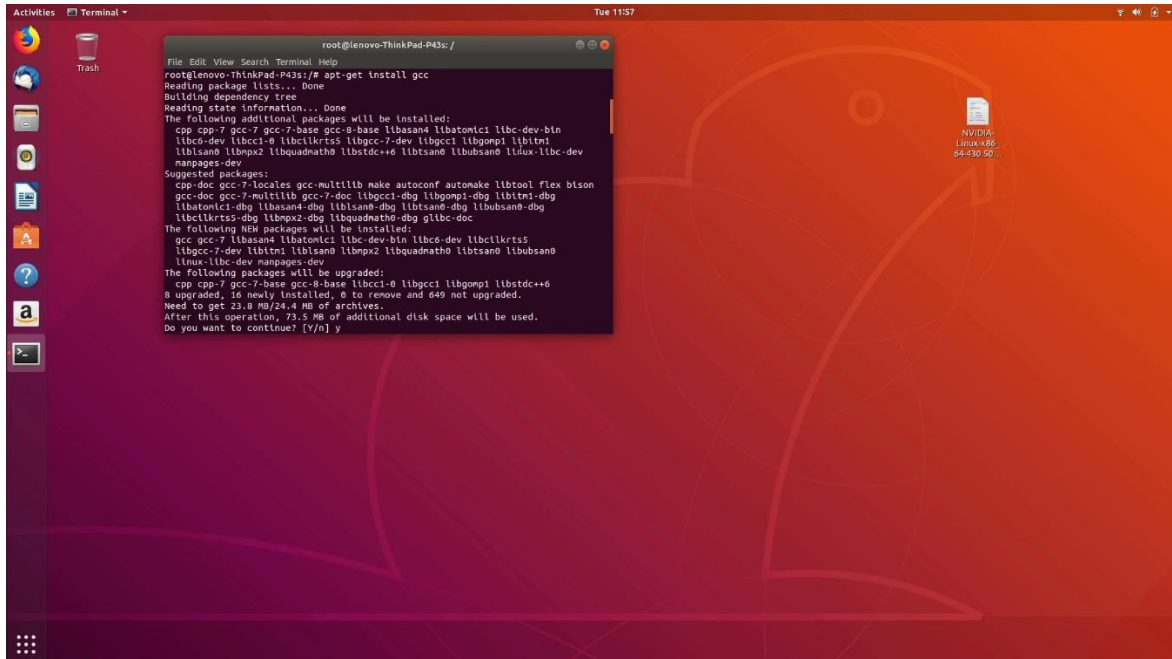


```
root@lenovo-ThinkPad-P43s: /home/lenovo
File Edit View Search Terminal Help
root@lenovo-ThinkPad-P43s:/home/lenovo# update-initramfs -u
```

- Reboot the system: reboot

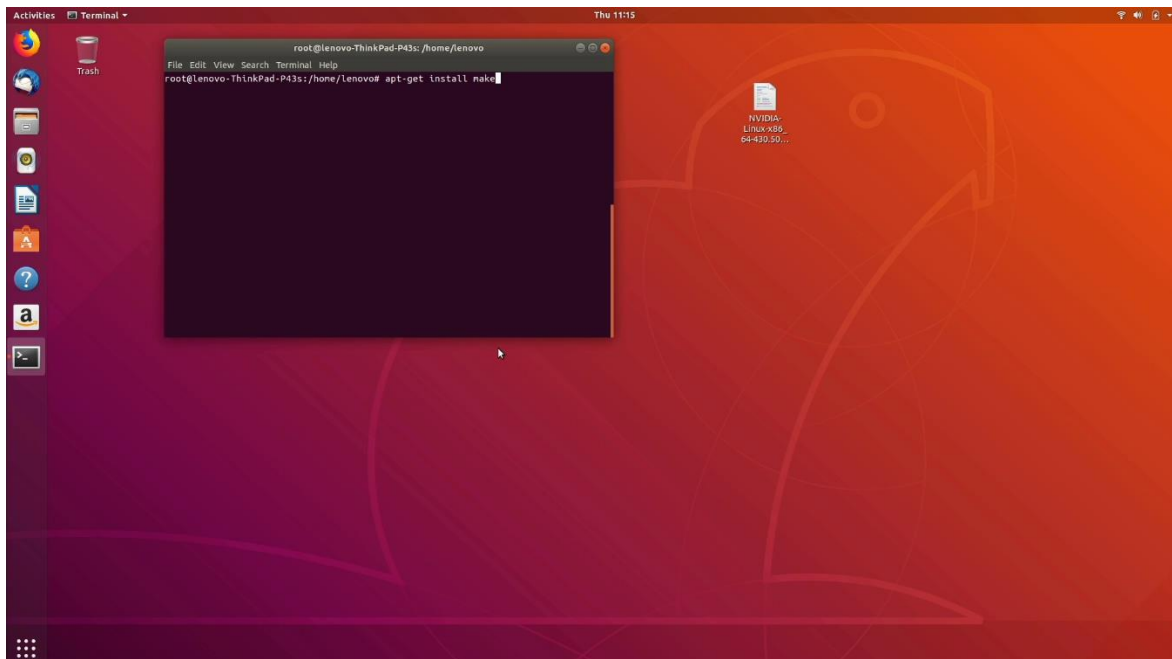
Once your system reboots, open the terminal window and-

- Make sure you are connected to the internet
- Log in as root: sudo su
- Run the command: apt-get update
- Install gcc: apt-get install -y gcc



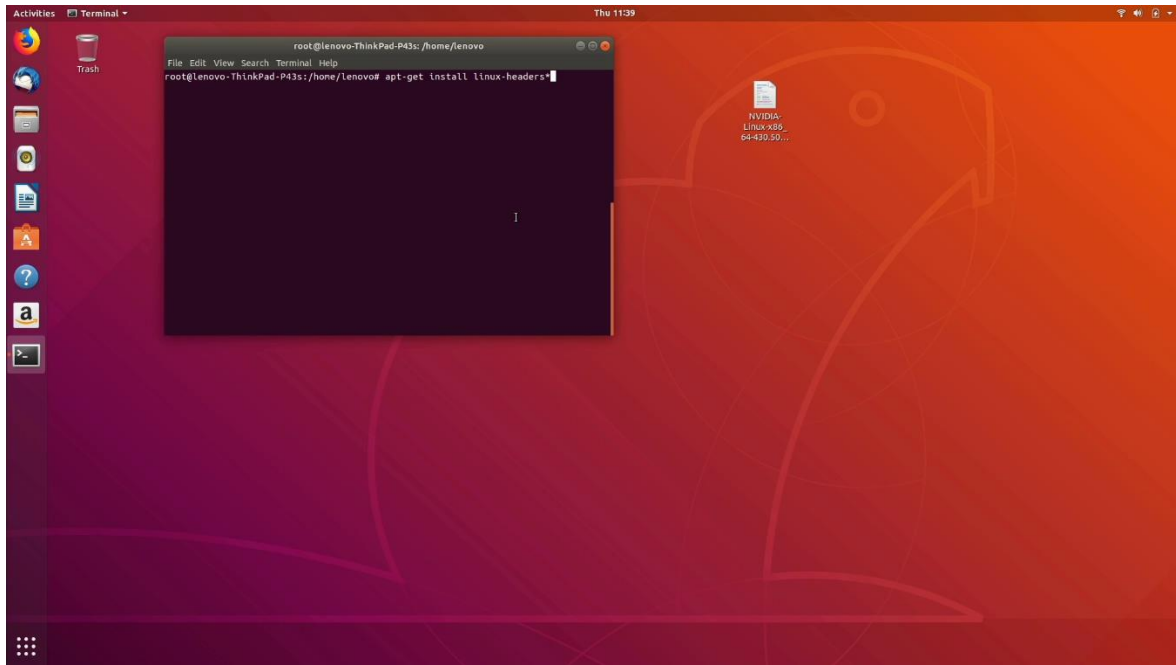
```
root@lenovo-ThinkPad-P43s: /
File Edit View Search Terminal Help
root@lenovo-ThinkPad-P43s:~# apt-get install gcc
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  cpp cpp-7 gcc-7 gcc-7-base gcc-8-base libasan4 libatomic1 libc-dev-bin
  libc-dev libgcc-8 libgcc1 libgomp1 libitm1
  liblsan0 libmpx2 libquadmath0 libstdc++6 libsuitesparse-dev libubsan0 linux-libc-dev
  manpages-dev
Suggested packages:
  cpp-doc gcc-7-locale gcc-multilib make autoconf automake libtool flex bison
  gcc-doc gcc-7-multilib gcc-7-doc libgcc1-dbg libgomp1-dbg libitm1-dbg
  libatomic1-dbg libasan4-dbg liblsan0-dbg libubsan0-dbg
  libstdc++6-dbg libmpx2-dbg libquadmath0-dbg glibc-doc
The following NEW packages will be installed:
  gcc gcc-7 libasan4 libatomic1 libc-dev-bin libc-dev libgcc1 libgomp1
  libstdc++6 libitm1 liblsan0 libmpx2 libquadmath0 libubsan0
  linux-libc-dev manpages-dev
The following packages will be upgraded:
  cpp cpp-7 gcc-7-base gcc-8-base libgcc1 libgomp1 libstdc++6
  8 upgraded, 16 newly installed, 0 to remove and 649 not upgraded.
Need to get 23.8 MB/24.4 MB of archives.
After this operation, 73.5 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

- Install make: apt-get install make



```
root@lenovo-ThinkPad-P43s: /home/lenovo
File Edit View Search Terminal Help
root@lenovo-ThinkPad-P43s: /home/lenovo# apt-get install make
```


- Install linux-headers: `apt-get install -y linux-headers*`



Step 3: Open a terminal window and stop x-windows by using the following command: `init 3`

(If `init 3` doesn't direct you to x-windows, try `Alt+F1`)

Note: The user will need to enter login and password if not root



Step 4: Log in using your username and password and then become root by using command `sudo su` and password. Once you are logged in as root, change directory to where the driver was downloaded using command: `cd directory`

Step 5: Make the Nvidia installer an executable by the command: `chmod +x NVIDIA-Linux-x86-64-*`

And run the Nvidia driver by: `./NVIDIA-Linux-x86_64-430.50.run`

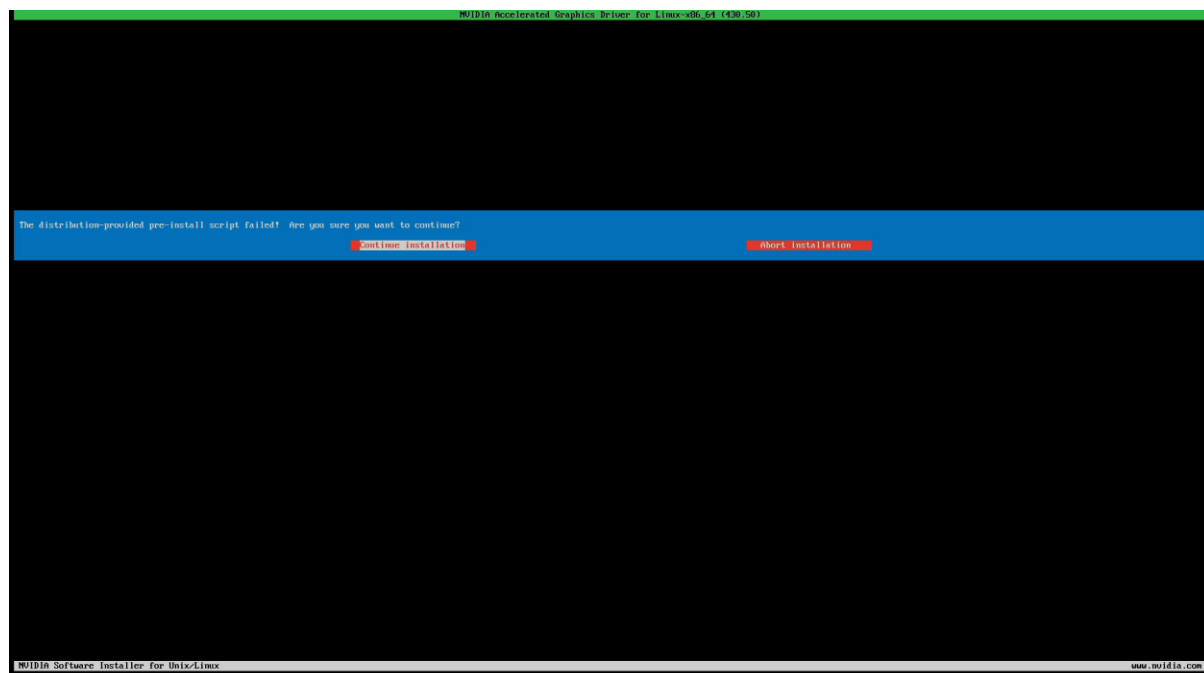
```
ubuntu 18.04 LTS lenovo-ThinkPad-P43s tty1
lenovo-ThinkPad-P43s login: lenovo
Password:
Last login: Tue Oct  8 11:59:00 EDT 2019 on tty1
Welcome to Ubuntu 18.04 LTS (GNU/Linux 4.15.0-65-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:   https://landscape.canonical.com
 * Support:       https://ubuntu.com/adsupport

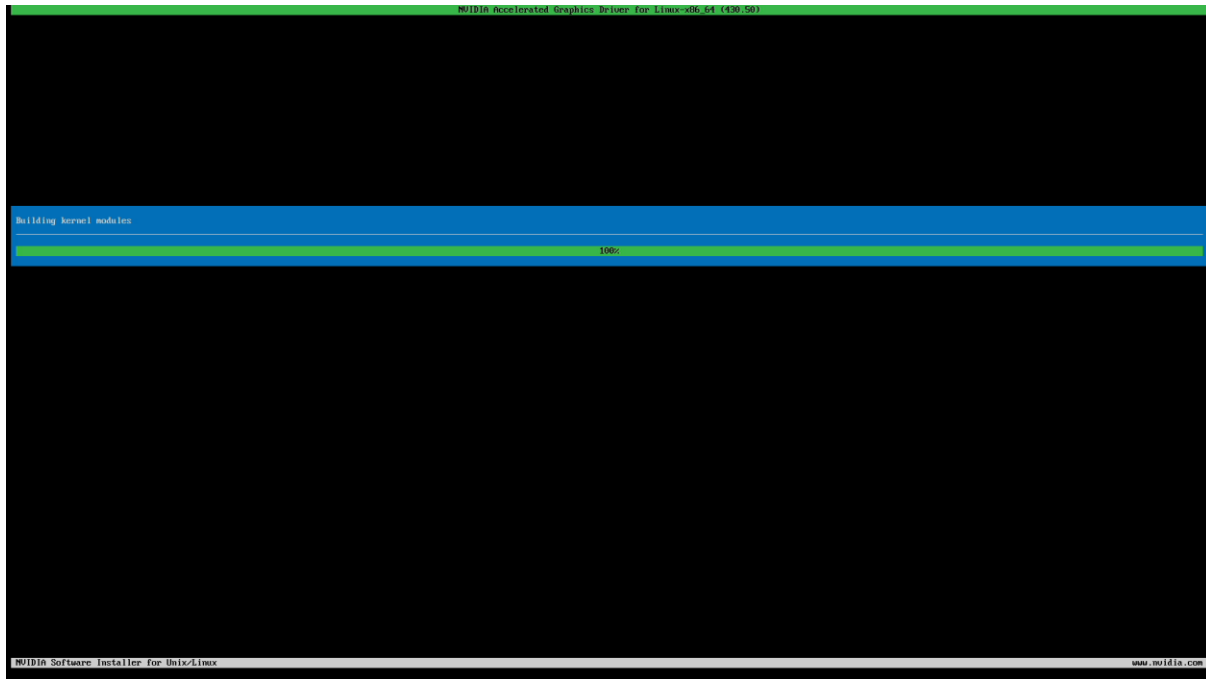
 * Canonical Livepatch is available for installation.
   - Reduce system reboots and improve kernel security. Activate at:
     https://ubuntu.com/livepatch

406 packages can be updated.
77 updates are security updates.
lenovo@lenovo-ThinkPad-P43s:~$ sudo su
(lenovo) password:
root@lenovo-ThinkPad-P43s:~/home/lenovo# ls
examples.desktop  Pictures  Public  Templates  Videos
root@lenovo-ThinkPad-P43s:~/home/lenovo# cd Desktop/
root@lenovo-ThinkPad-P43s:~/home/lenovo/Desktop# ls
NVIDIA-Linux-x86_64-430.50.run
root@lenovo-ThinkPad-P43s:~/home/lenovo/Desktop# ./NVIDIA-Linux-x86_64-430.50.run
```

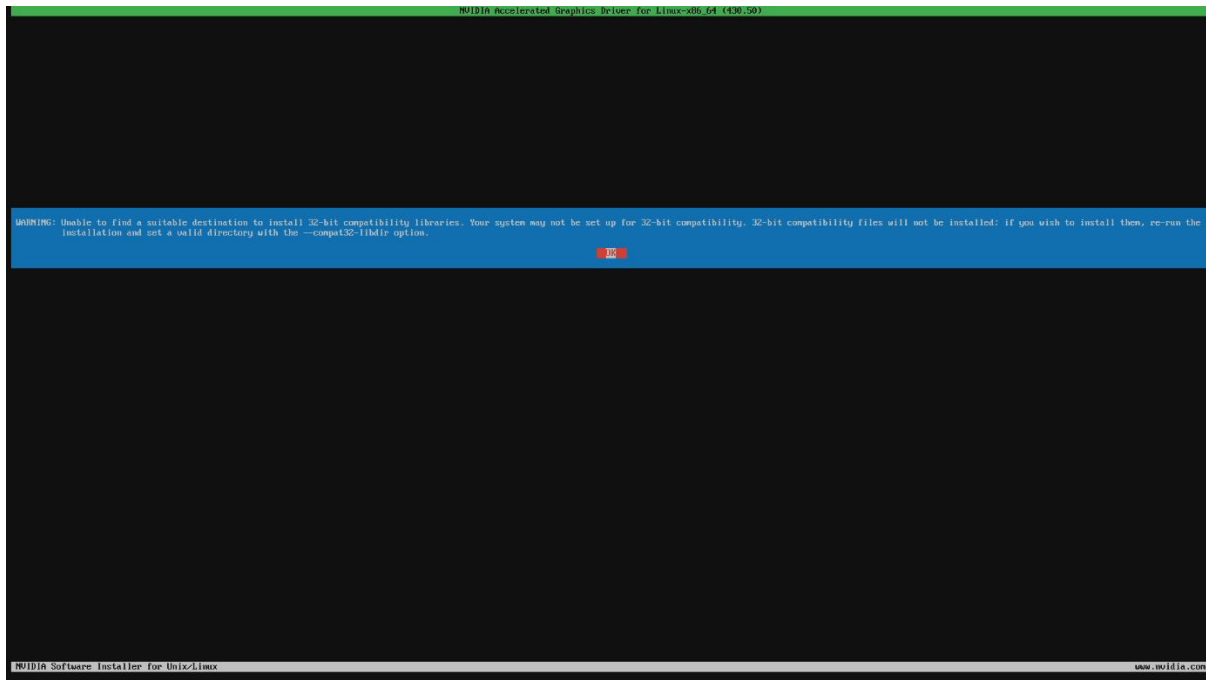
Step 6: Select “Continue installation”.



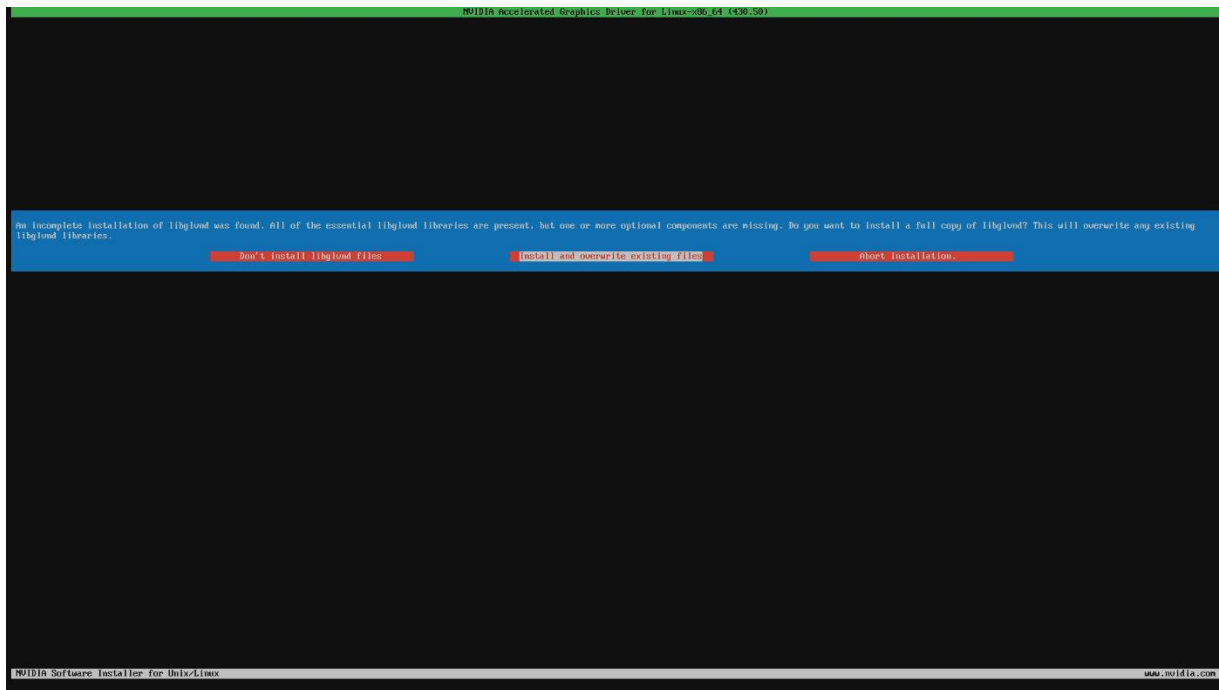
Step 7: Wait for the kernel modules to complete building.



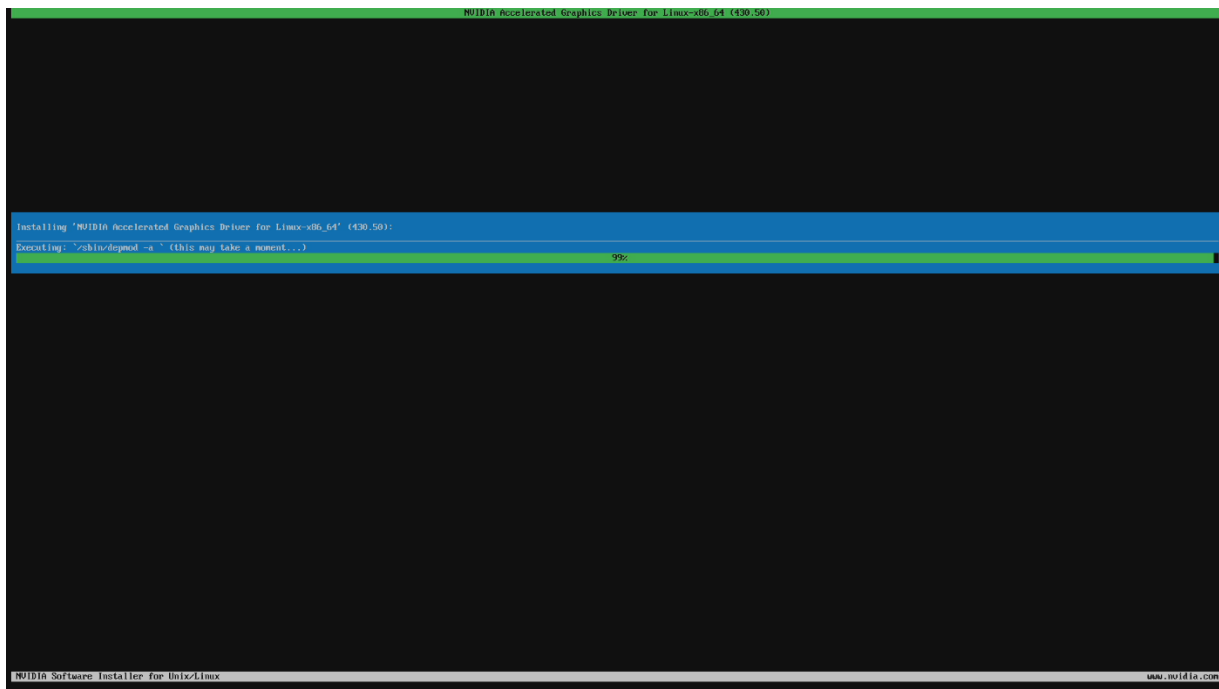
Step 8: Hit "OK" to install 32-bit compatibility libraries.



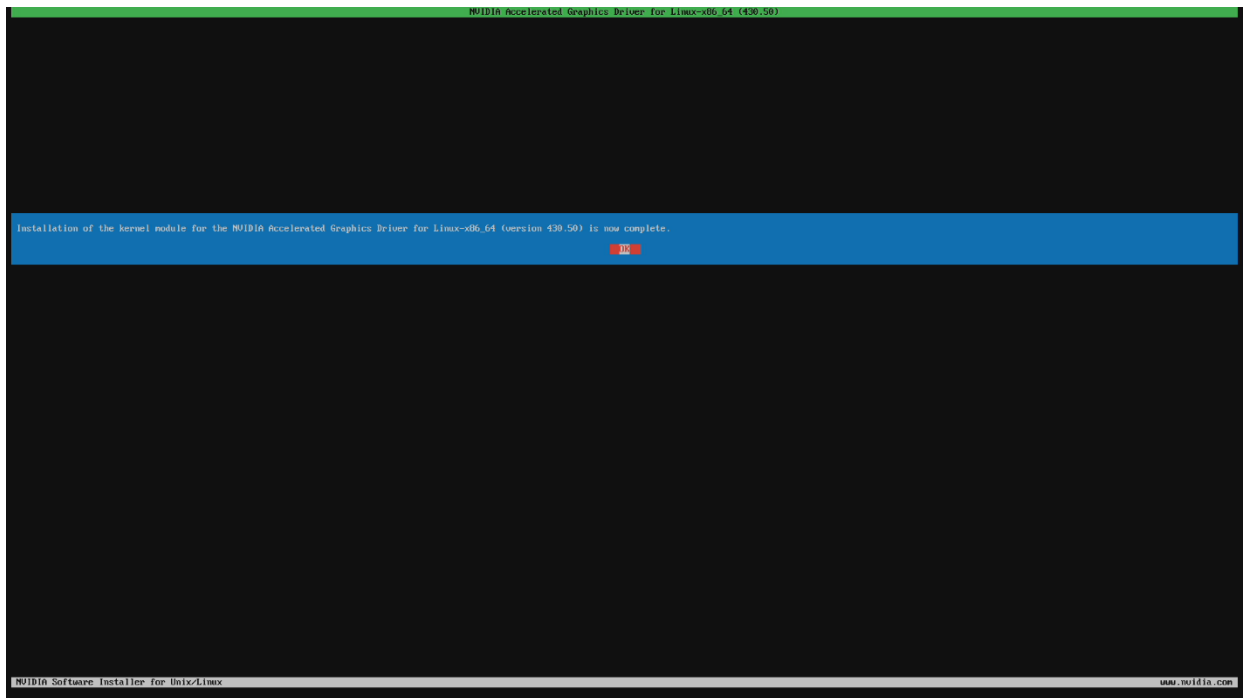
Step 9: Select "Install and overwrite existing files" and hit enter.



Step 10: Wait for the Nvidia driver to get completely installed.



Step 11: Select “OK”.



Step 12: Execute the following command to verify the Nvidia driver is loaded: nvidia-smi

