Debian 11 Linux Setup Guide

For ThinkStation P360 Tower, Tiny, Ultra

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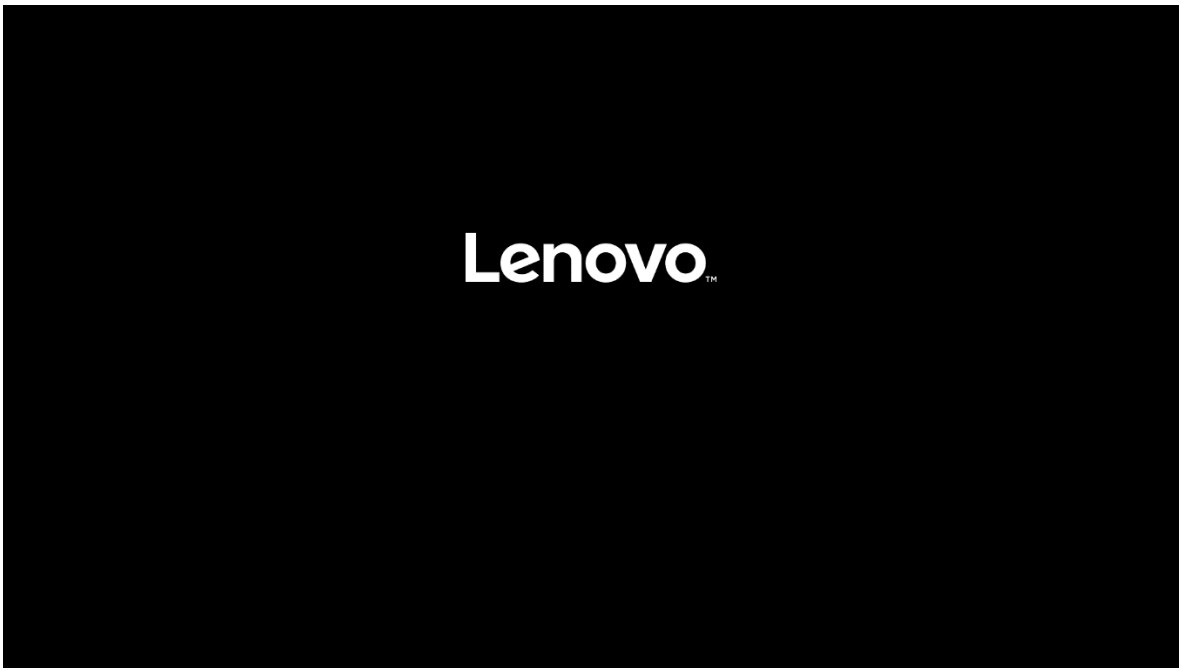
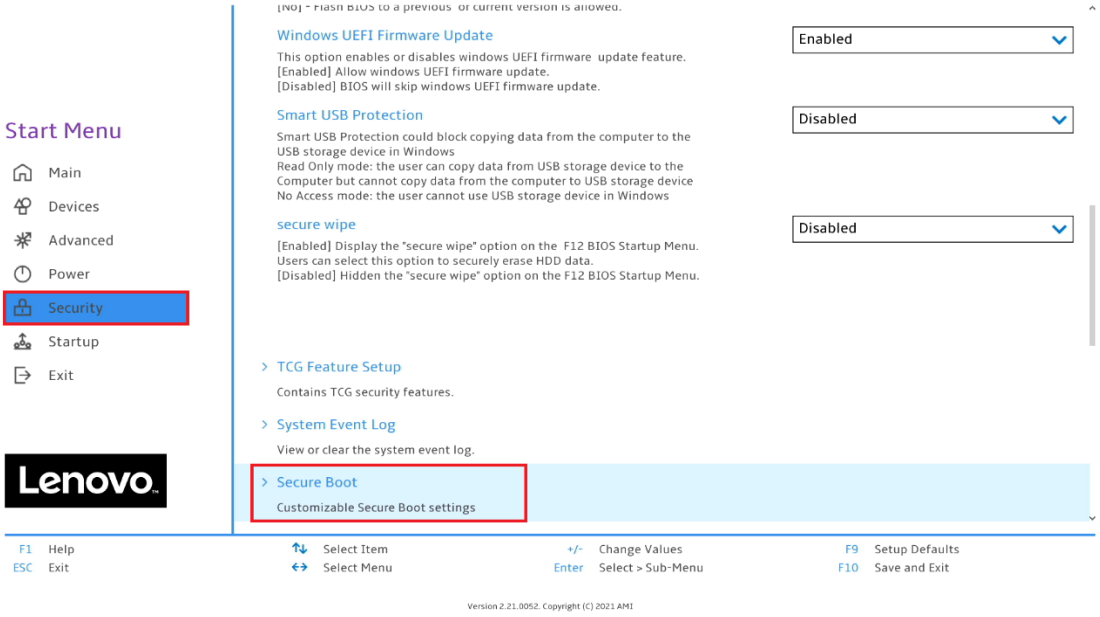
Section 1 – BIOS Configuration

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

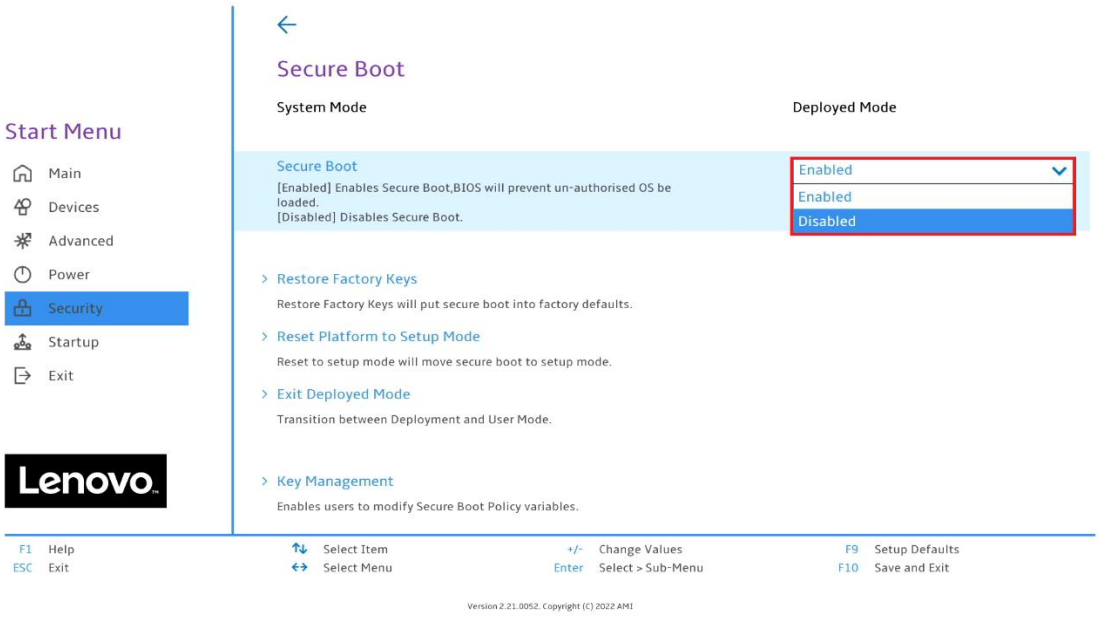
- Boot into BIOS by pressing the function F1 key at the “Lenovo” splash screen.



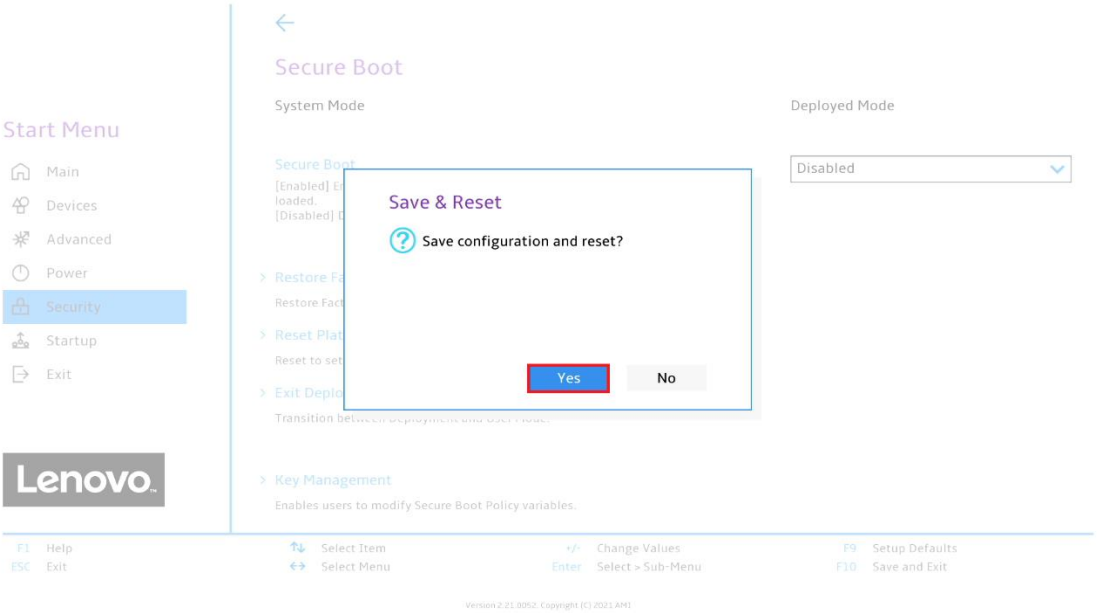
- On the “Security” menu tab, scroll down and select the “Secure Boot” option.



-
- Check whether Secure Boot is disabled. If found enabled, disable it.



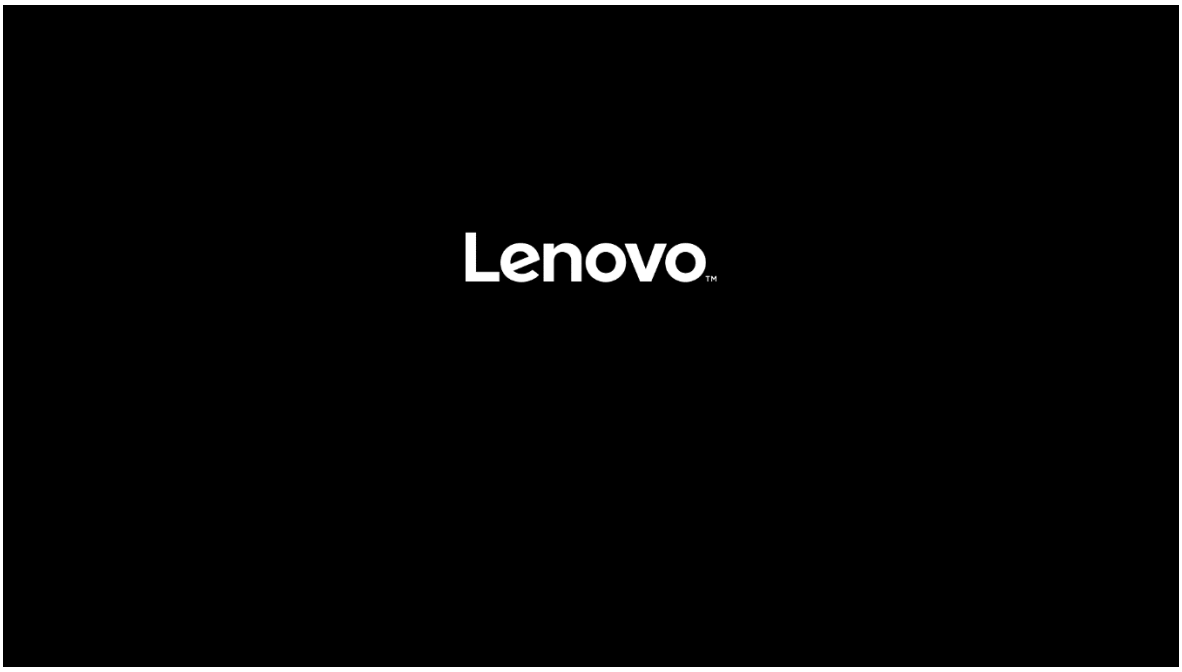
- Save changes by pressing F10 function key.



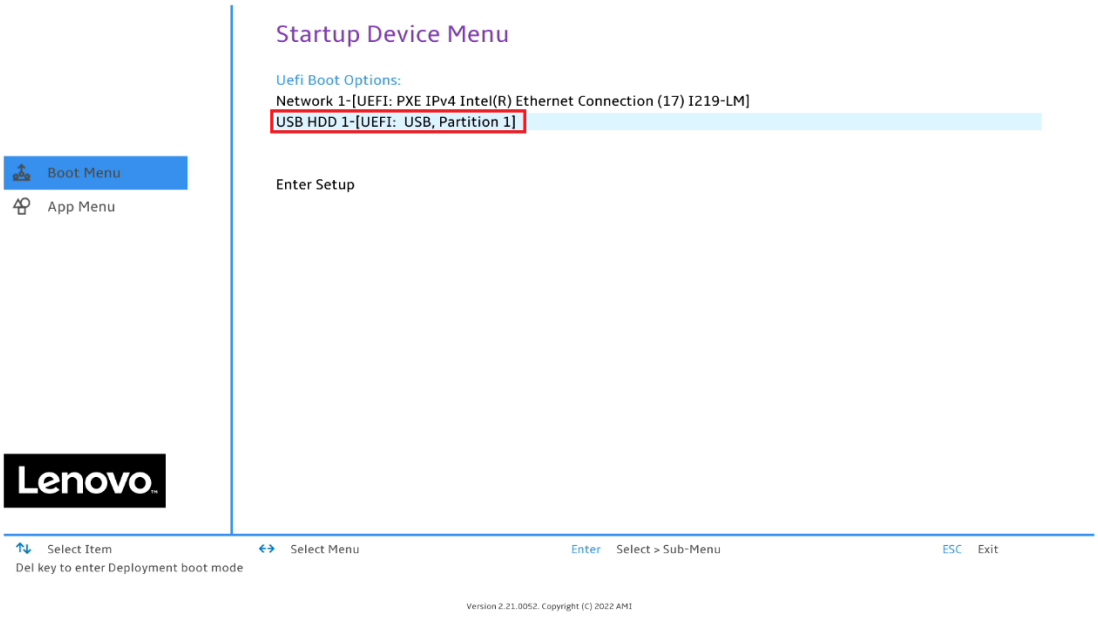
Section 2 – Installing Debian 11

Please refer to the following instructions and screenshots on how to install Debian 11 on the Lenovo ThinkStation P360.

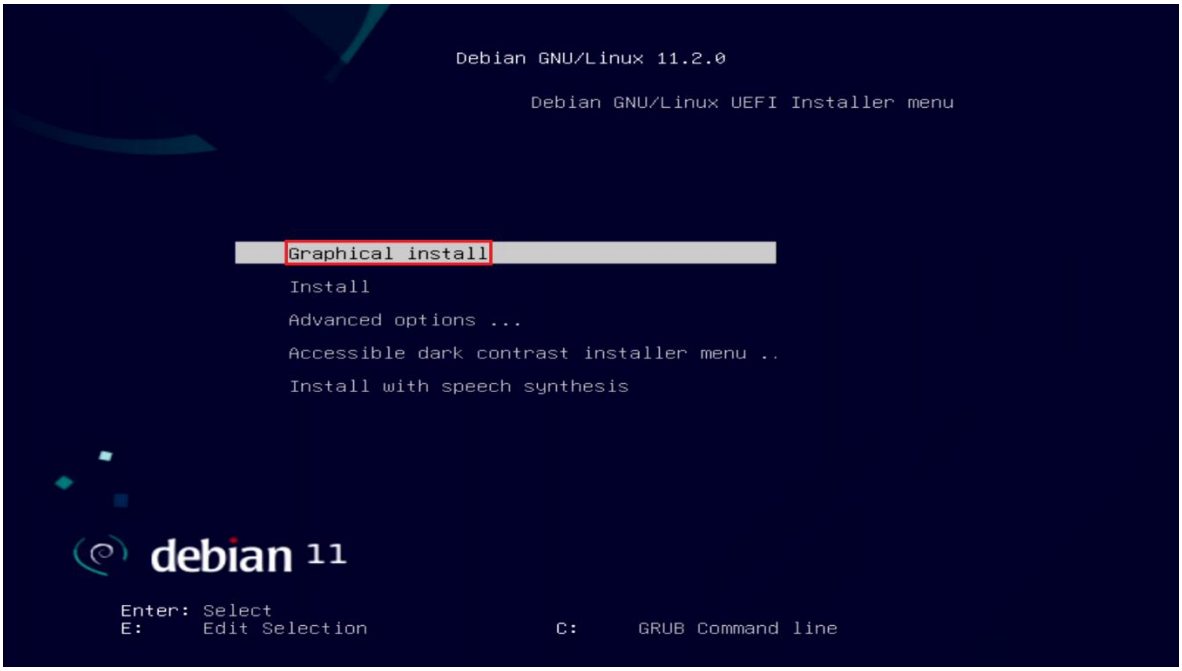
- Insert the Debian 11 installation media (either through USB or CD/DVD).
- Power on the system and press the F12 function key whenever the following Lenovo splash screen appears.



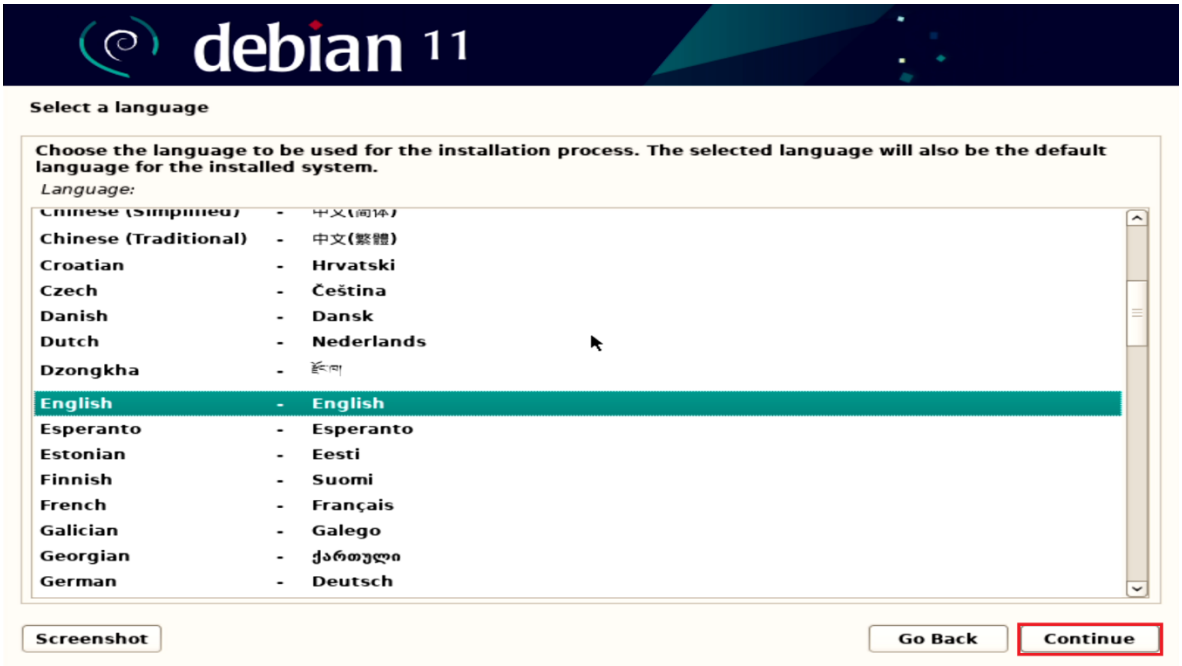
- Select the Linux bootable installation media from the F12 boot menu list.



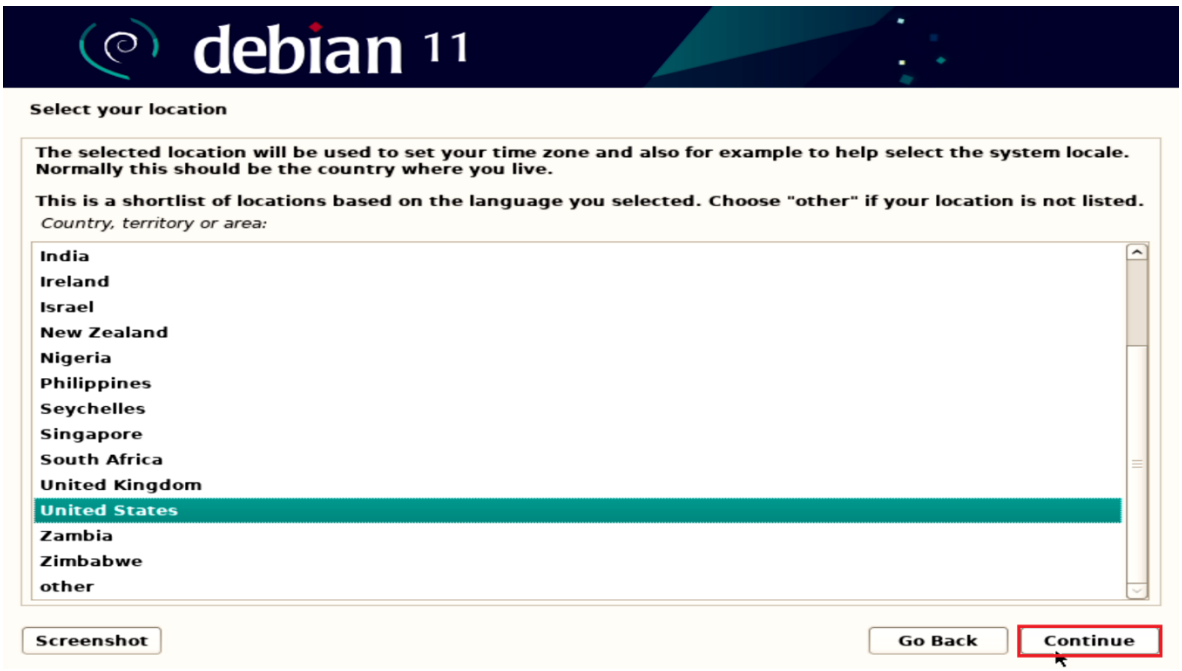
- Select “Graphical install” from the GRUB boot menu and press enter.



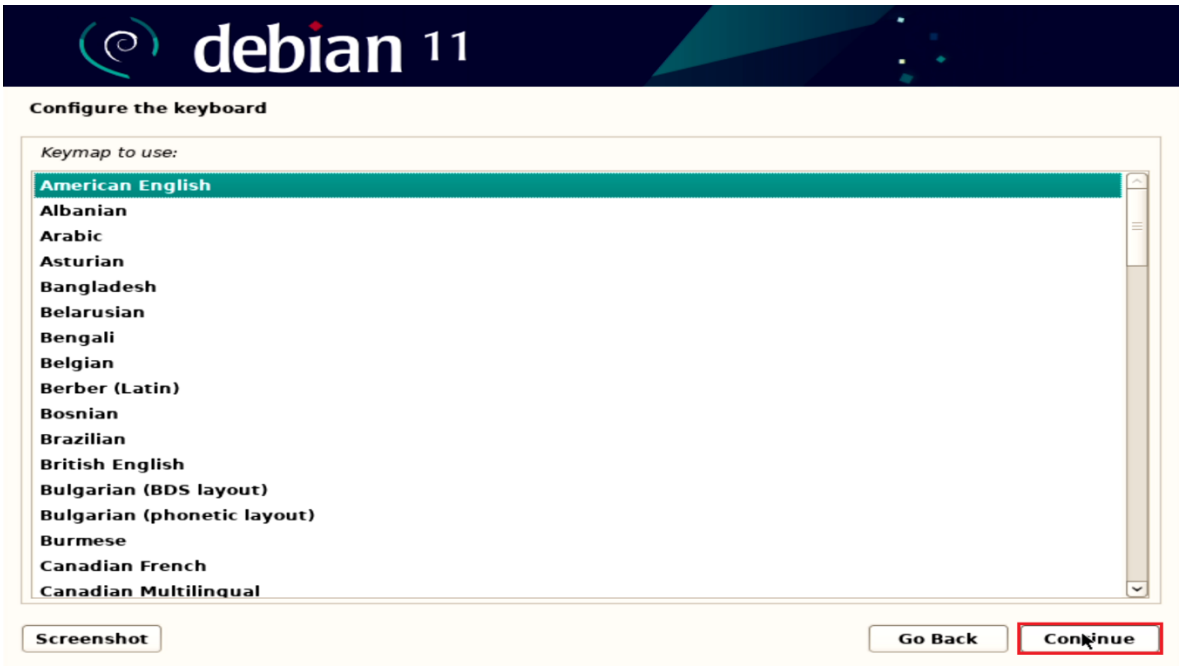
- Select the appropriate language and press Continue.



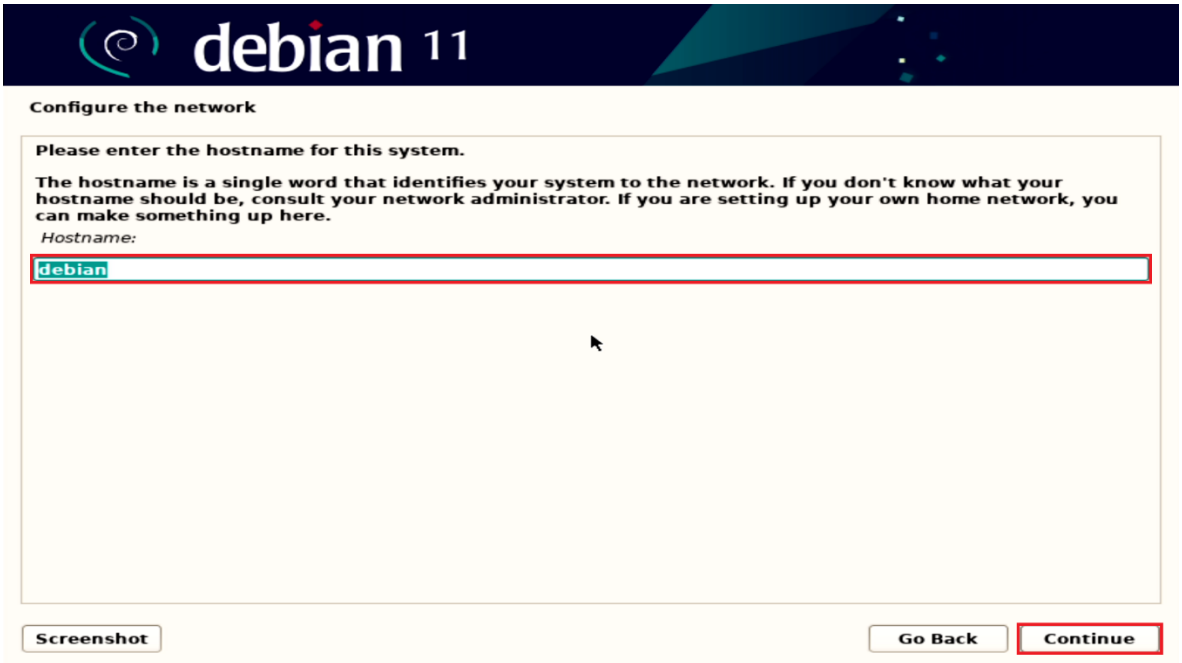
- Select the user location and press Continue.



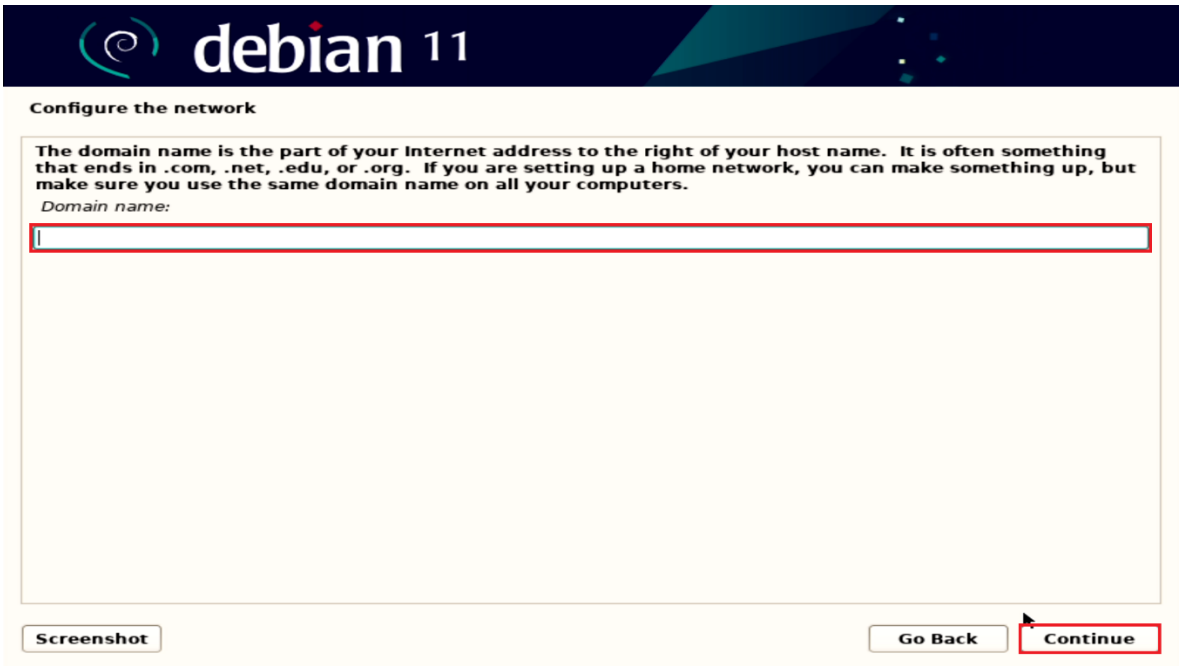
- Configure the keyboard by choosing the appropriate keyboard language and press Continue.



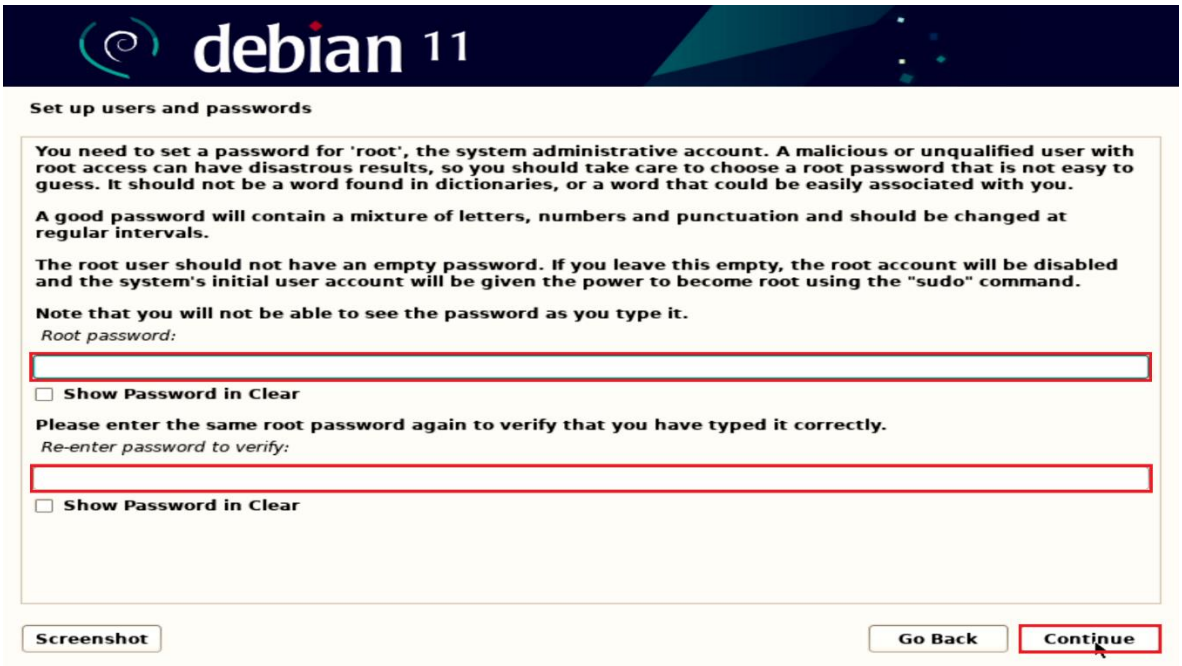
- Enter a hostname for the system and select Continue.



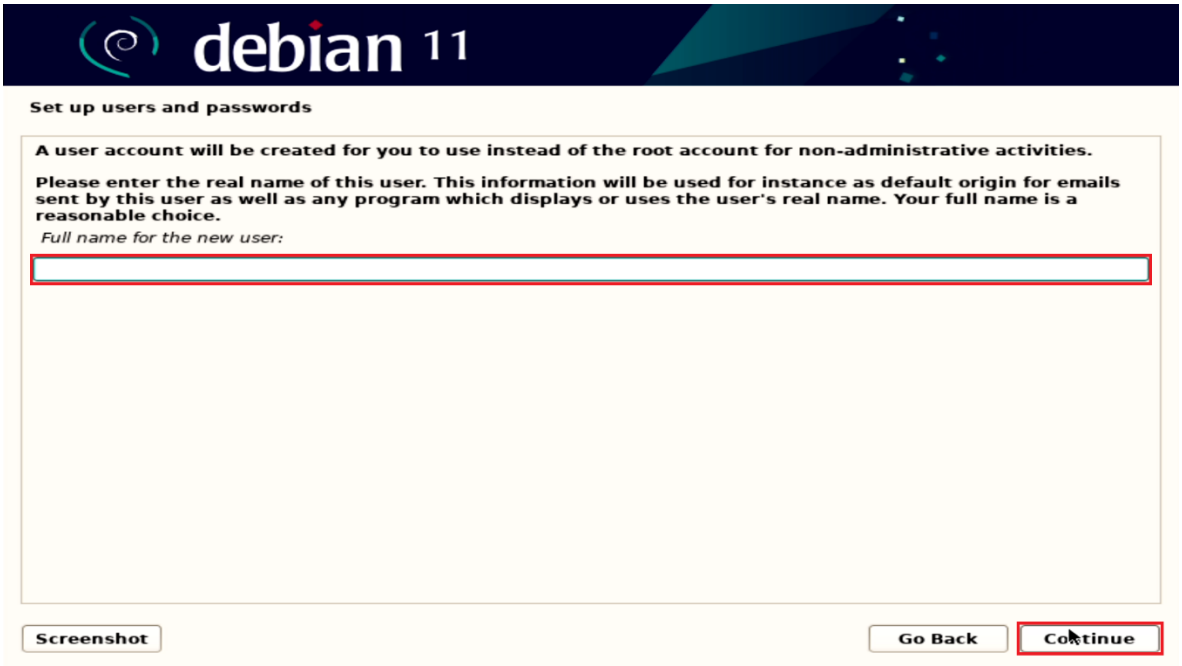
- Enter a domain name and select Continue. If there is no domain in the environment just leave it blank.



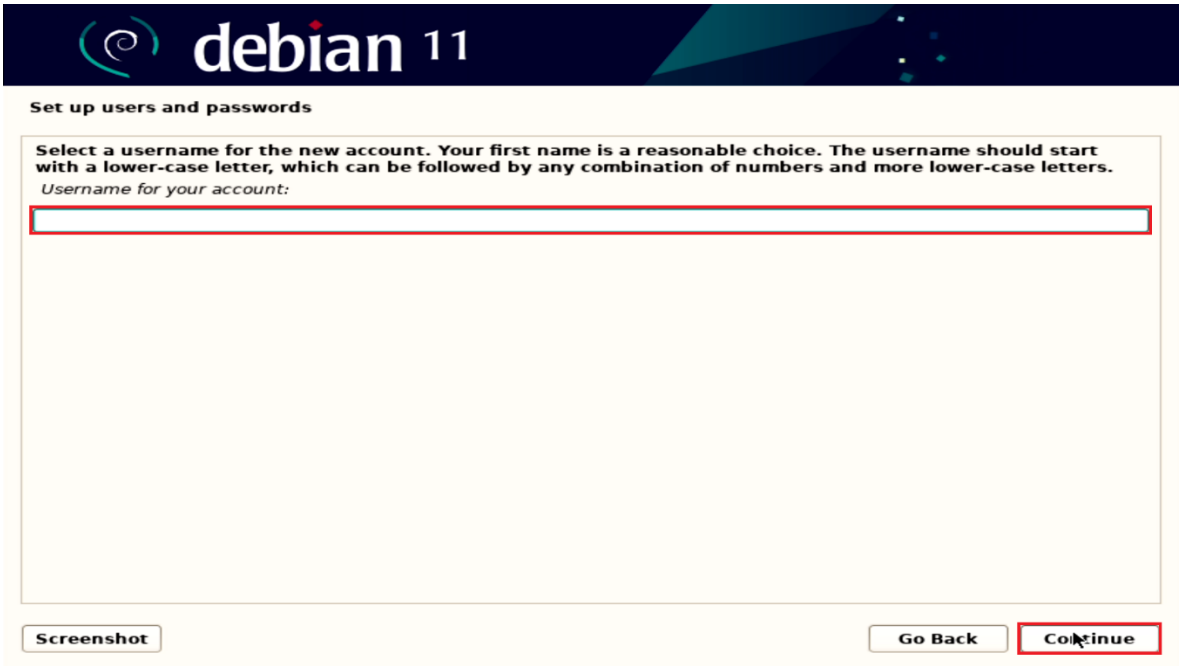
- Set a root password and select Continue.



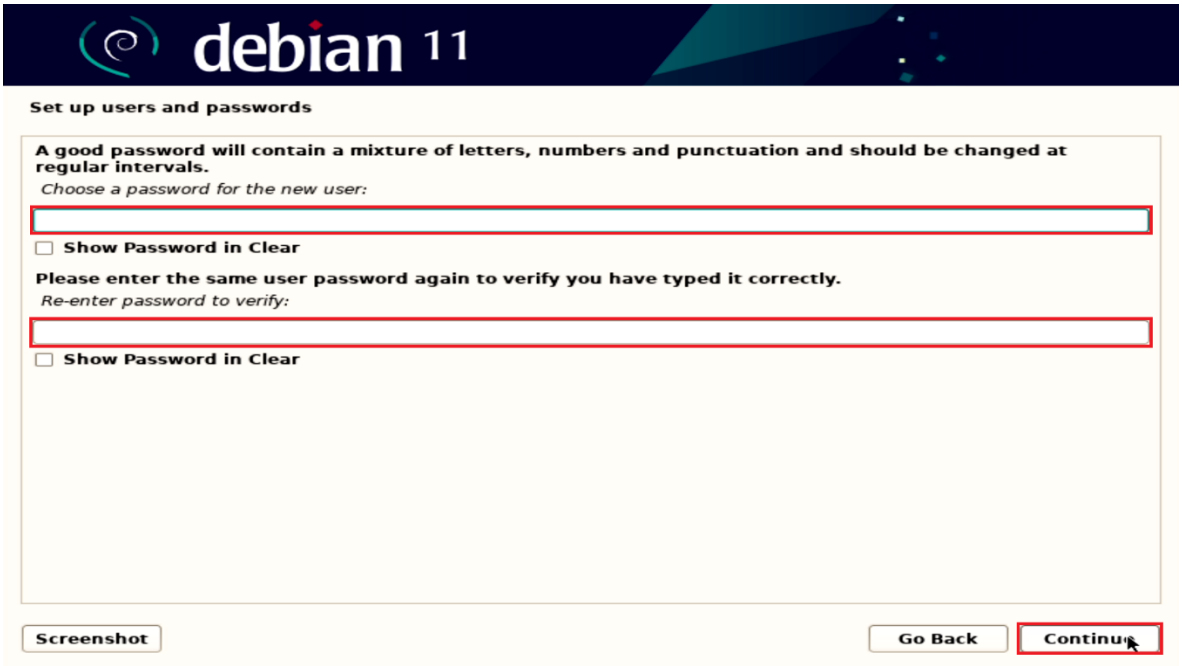
- Enter a full name for the user and select Continue.



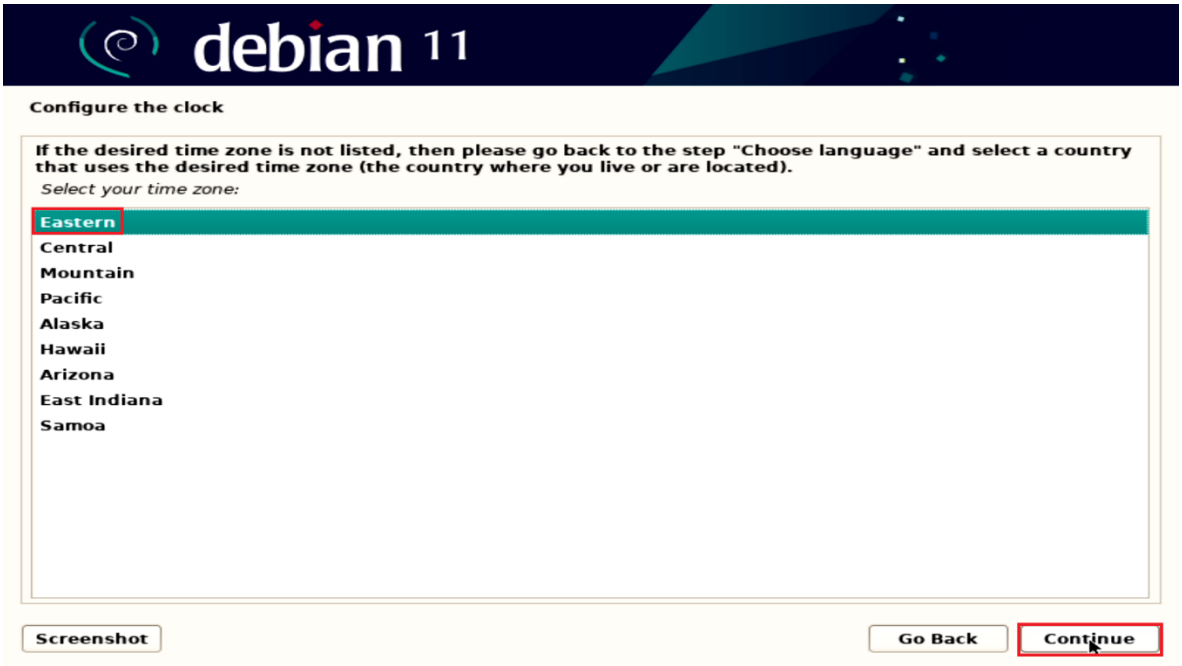
- Enter a username to create a user and press Continue.



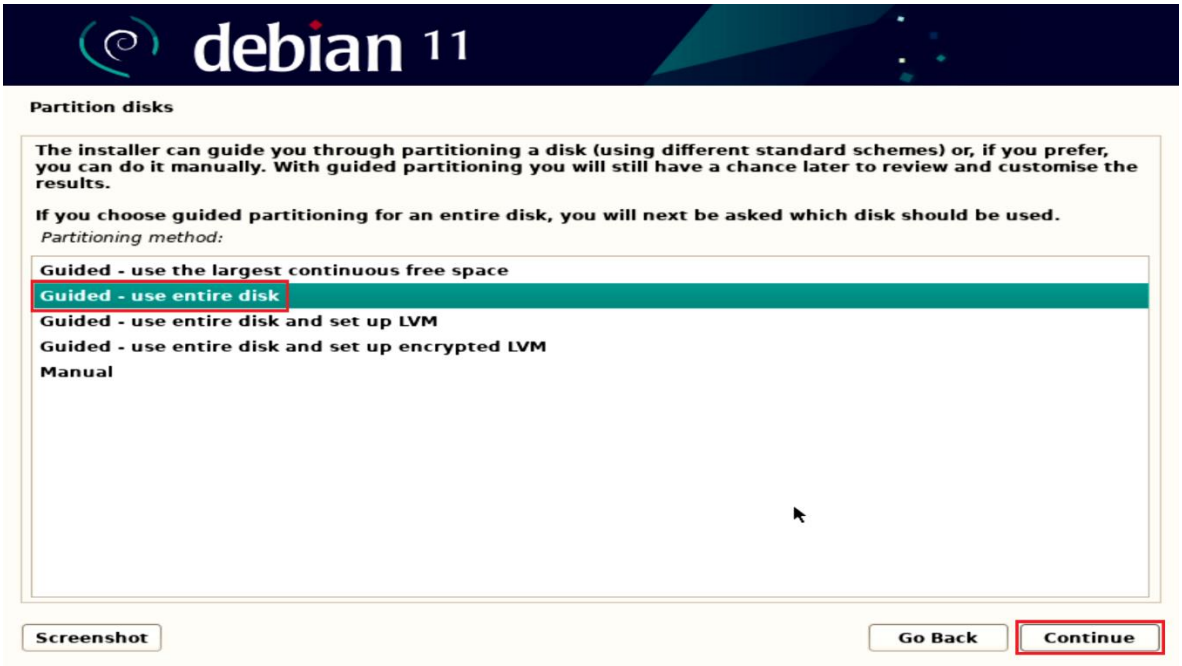
- Create a strong password for the newly created user and press Continue.



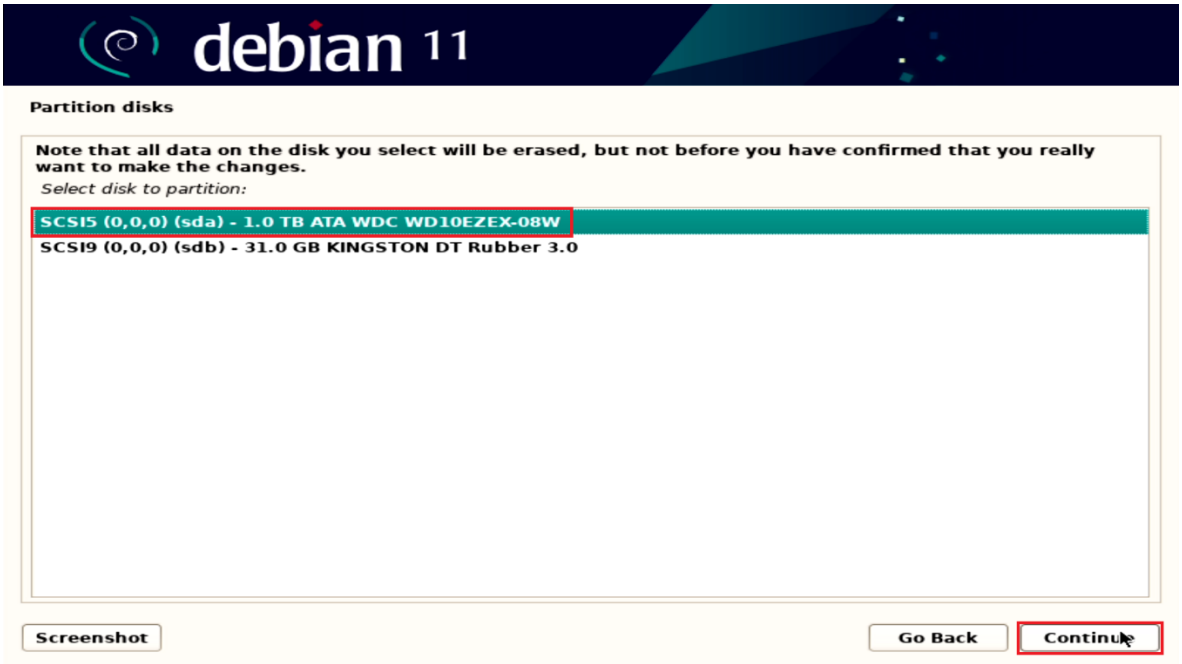
- Select an appropriate time zone to configure the clock and press Continue.



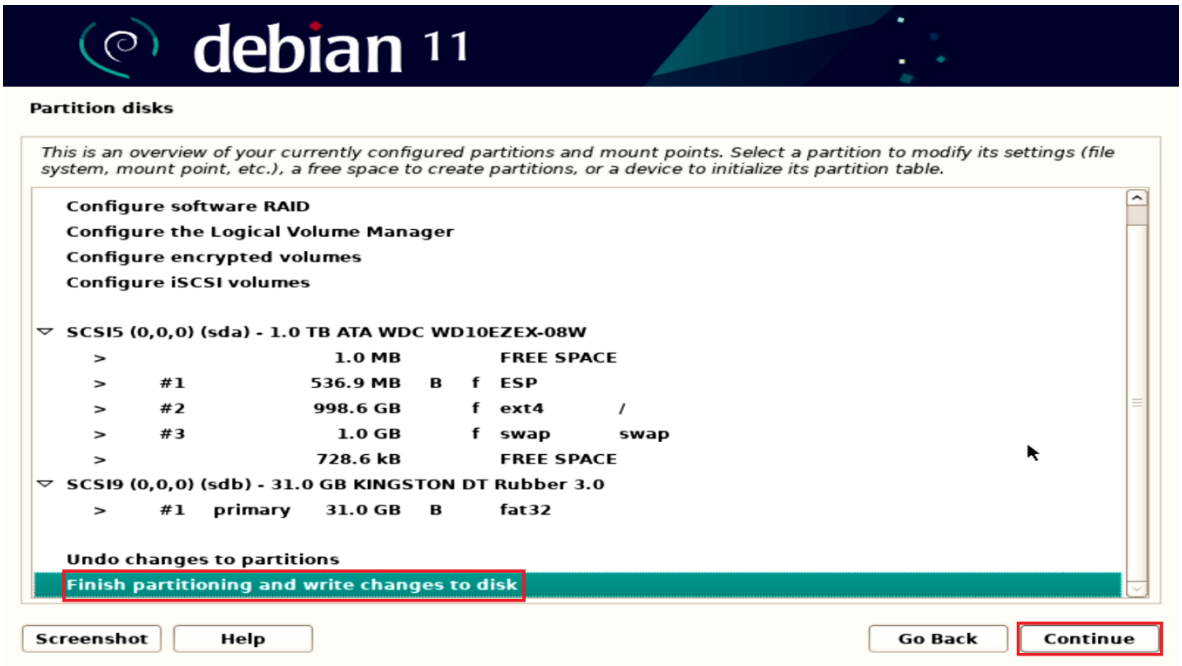
- Choose an appropriate option for partitioning the disk. If the user selects “Guided – use entire disk”, Debian will erase the content and use the entire disk for OS installation.



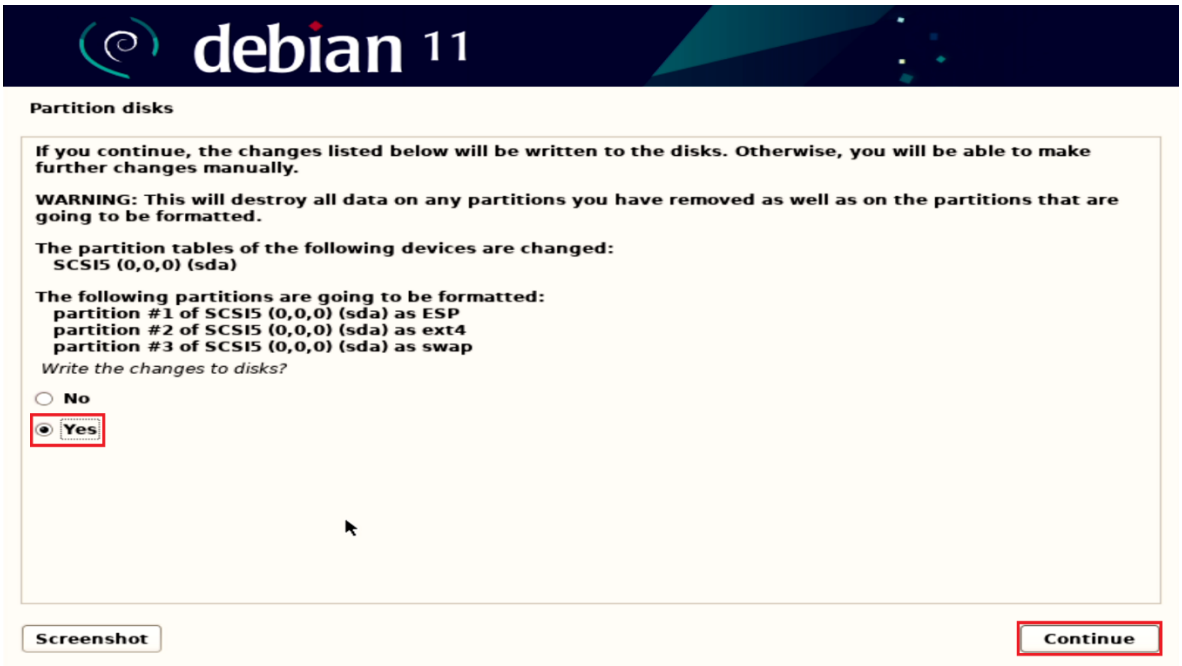
- Select disk to partition and press Continue.



- Select “Finish partitioning and write changes to disk” option after confirming the partitions and press Continue.

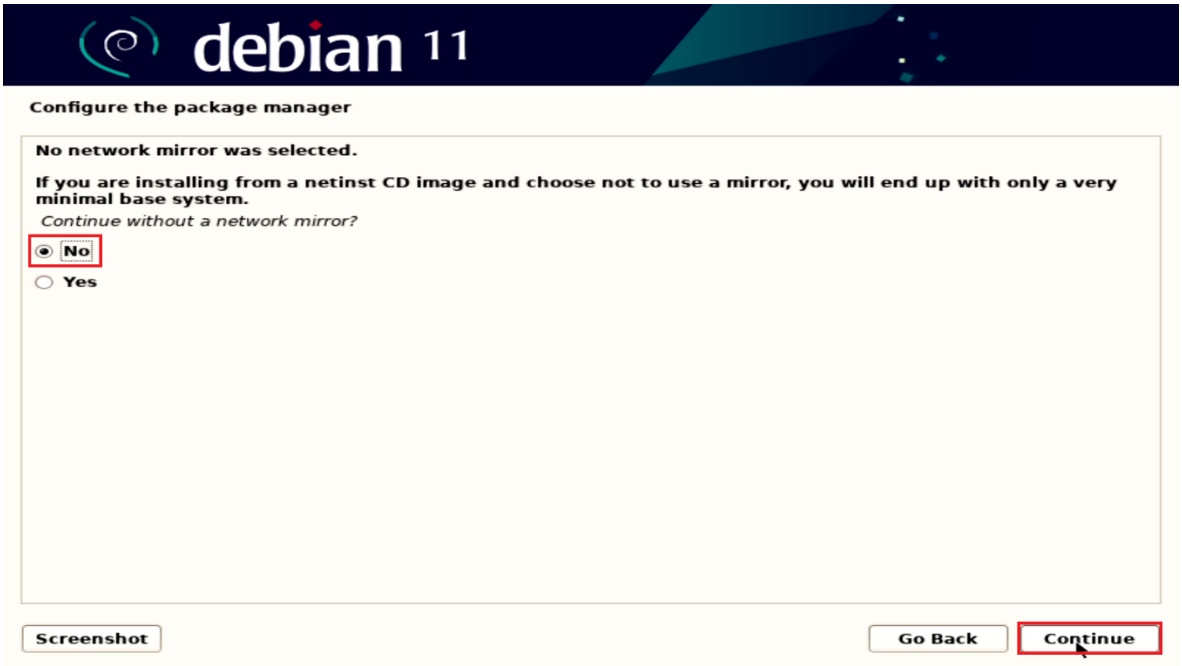


- Select “Yes” to write changes to the disk and press Continue.

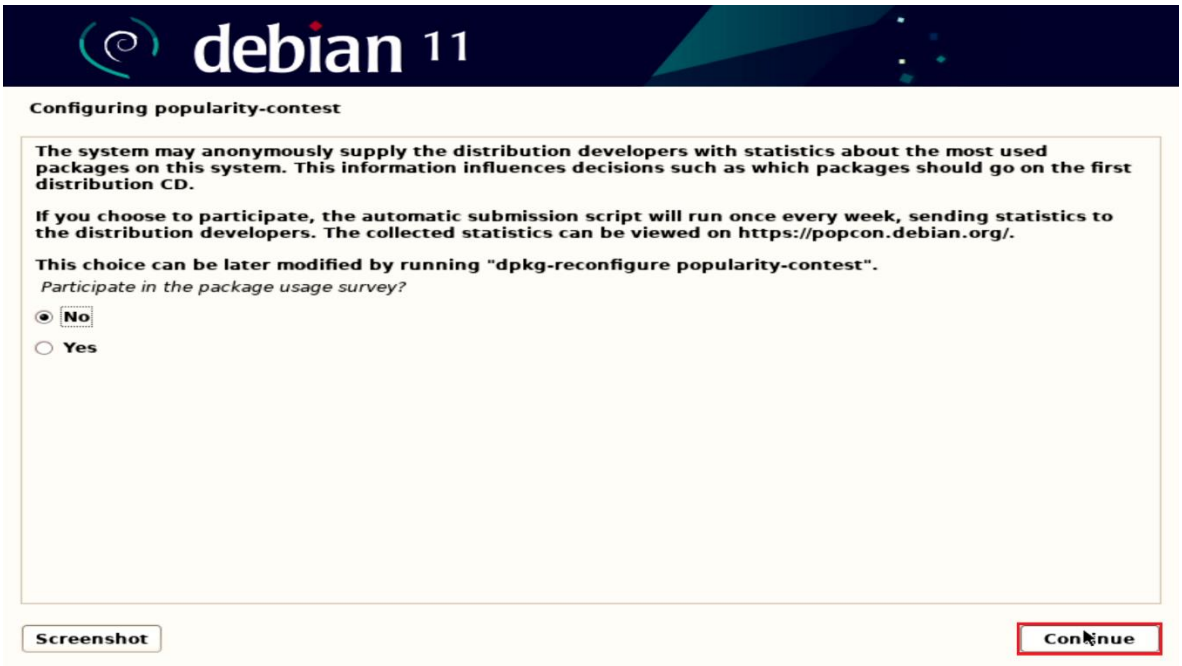


- Select “No” for network mirror and select Continue.

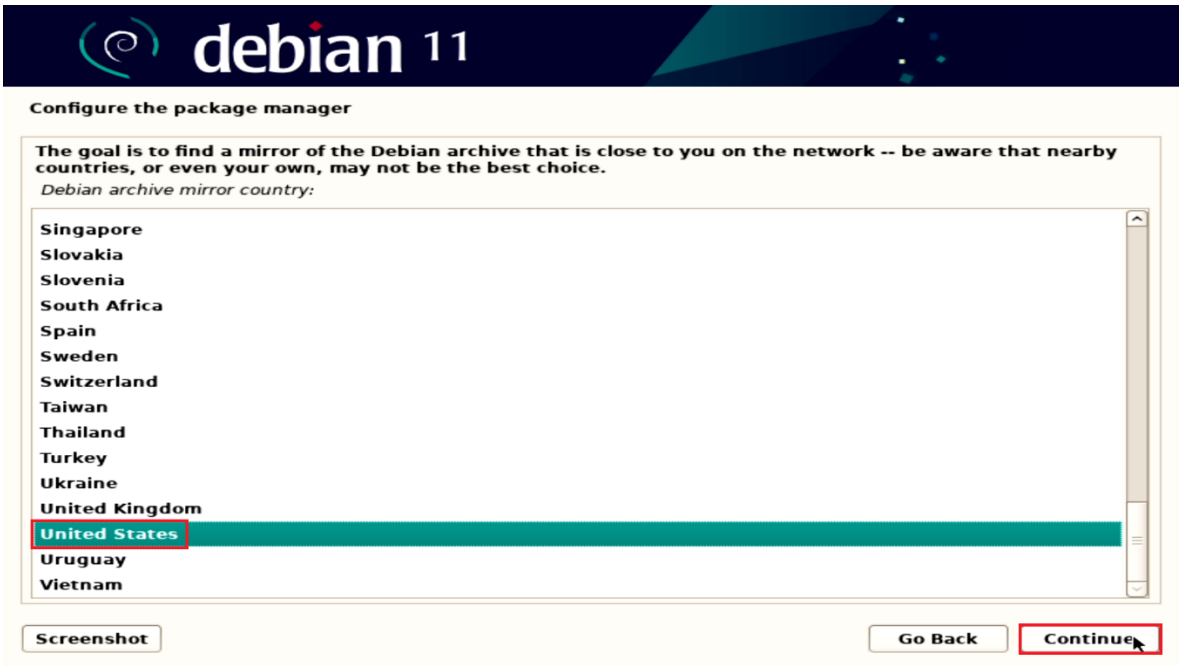
Note: Debian can be installed with a Graphical User Interface (GUI) or a Command Line Interface (CLI). To install Debian 11 with a GUI, connect the system to the internet and select “No” to continue without a network mirror. If "Yes" is selected, the system will be installed as a CLI only.



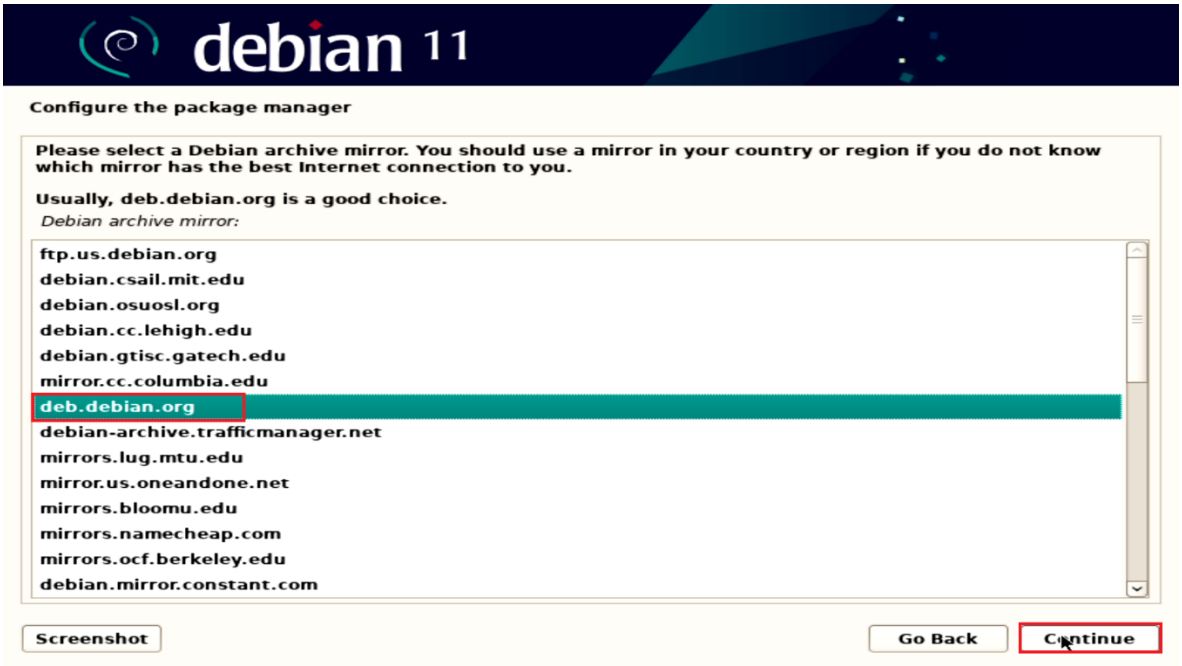
- Choose to participate or not in the package usage survey and press Continue.



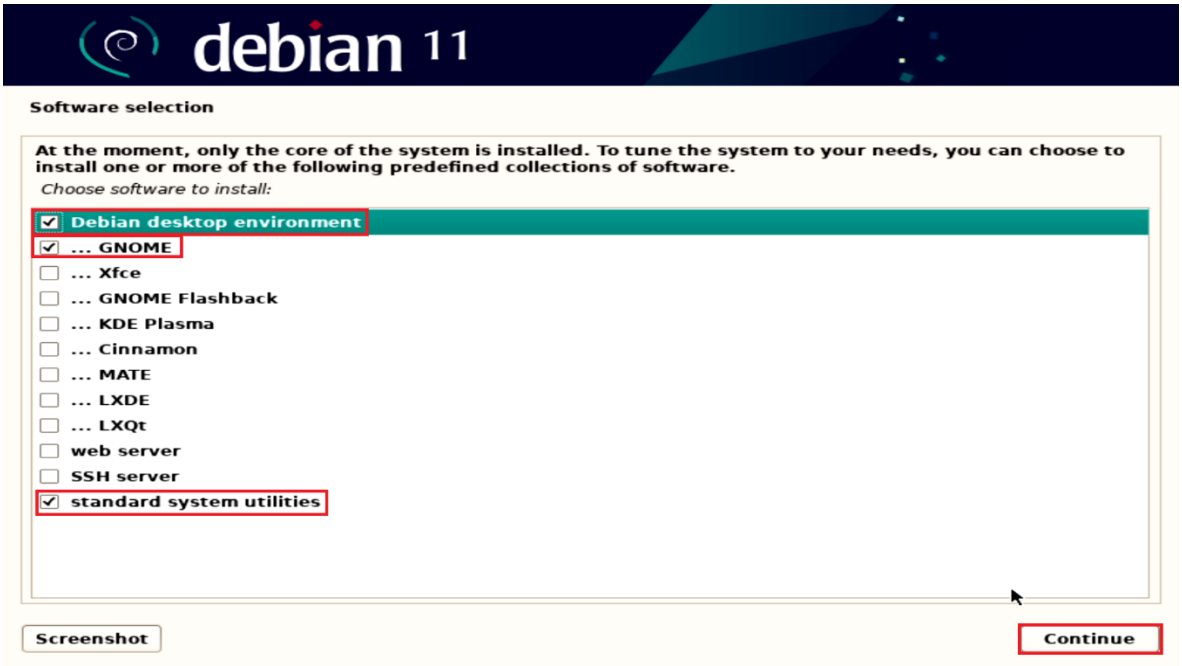
- Select the correct location and press Continue.



- Select the mirror and select Continue.

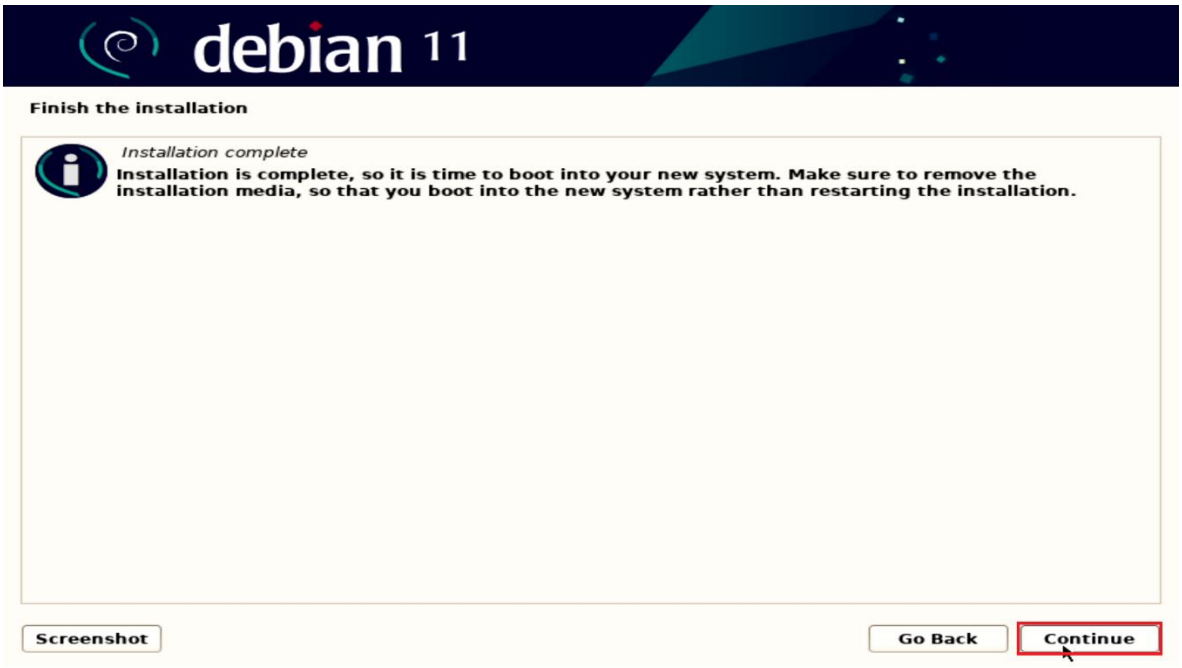


- Choose software to install from the list of software and press Continue.



- Optionally, you can select as many of these settings as you would like, for this installation process will be selected default software.

- Remove the installation media and reboot the system by pressing Continue.



Section 3 – Wireless Connection

Before the next steps ensure you have connected to LAN network.

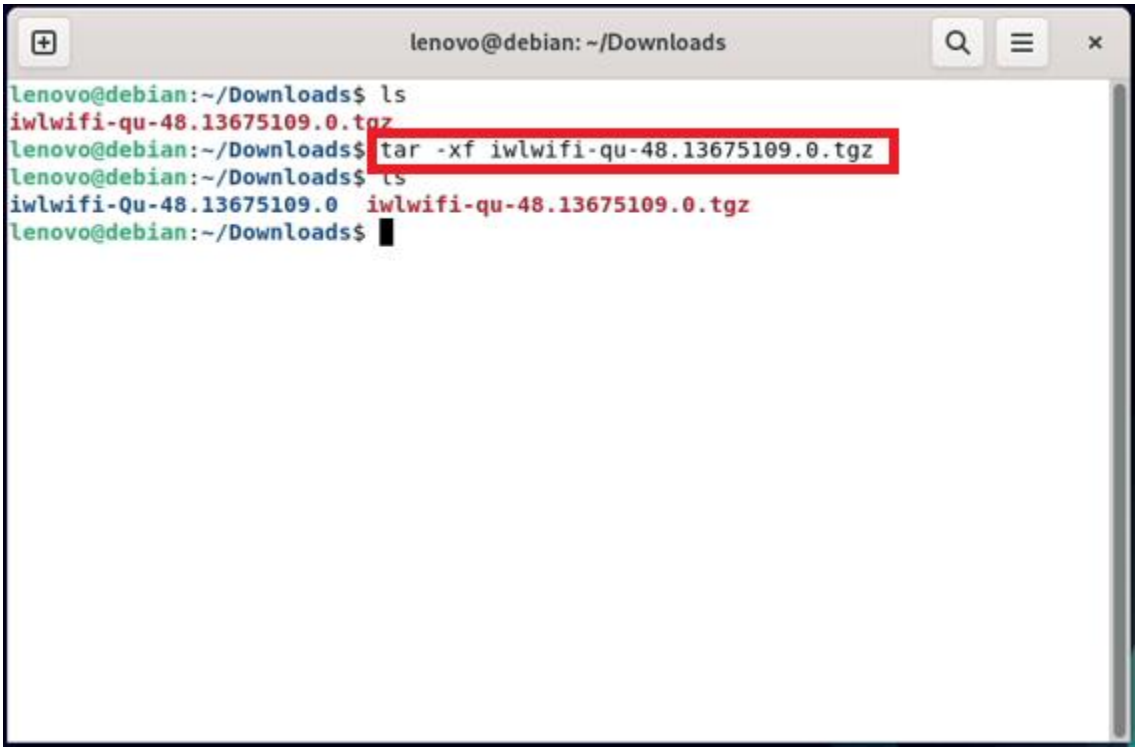
To install the Wifi drivers complete the next steps:

- Download the appropriate driver for your card from https://www.intel.com/content/www/us/en/support/articles/000005511/wireless.html

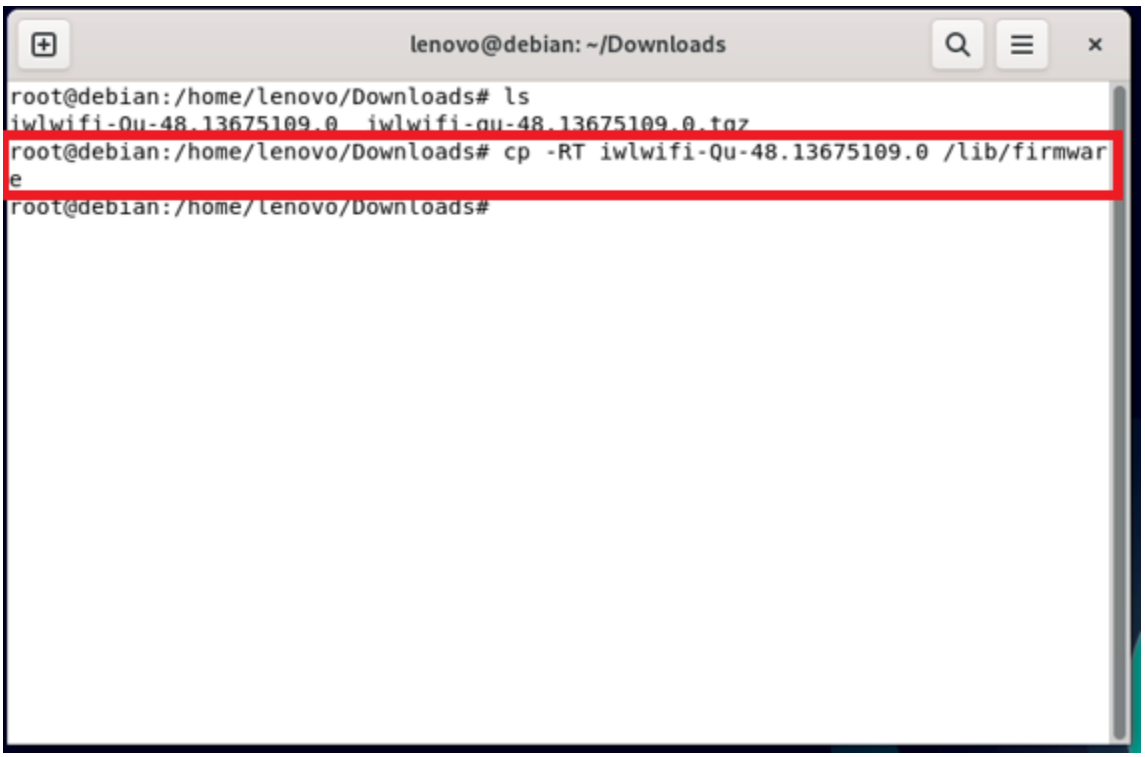
Notes: 1 – For this example, Intel® Wi-Fi 6 AX201 has been used.
2 - In some cases, GitHub clone* may be needed to find all necessary files to complete the installation (for Intel AX201 file iwlwifi-so-a0-hr-b0-68.ucode need to be added to /lib/firmware).

*GitHub clone - https://git.kernel.org/pub/scm/linux/kernel/git/firmware/linux-firmware.git/tree/

- Extract the files from download file

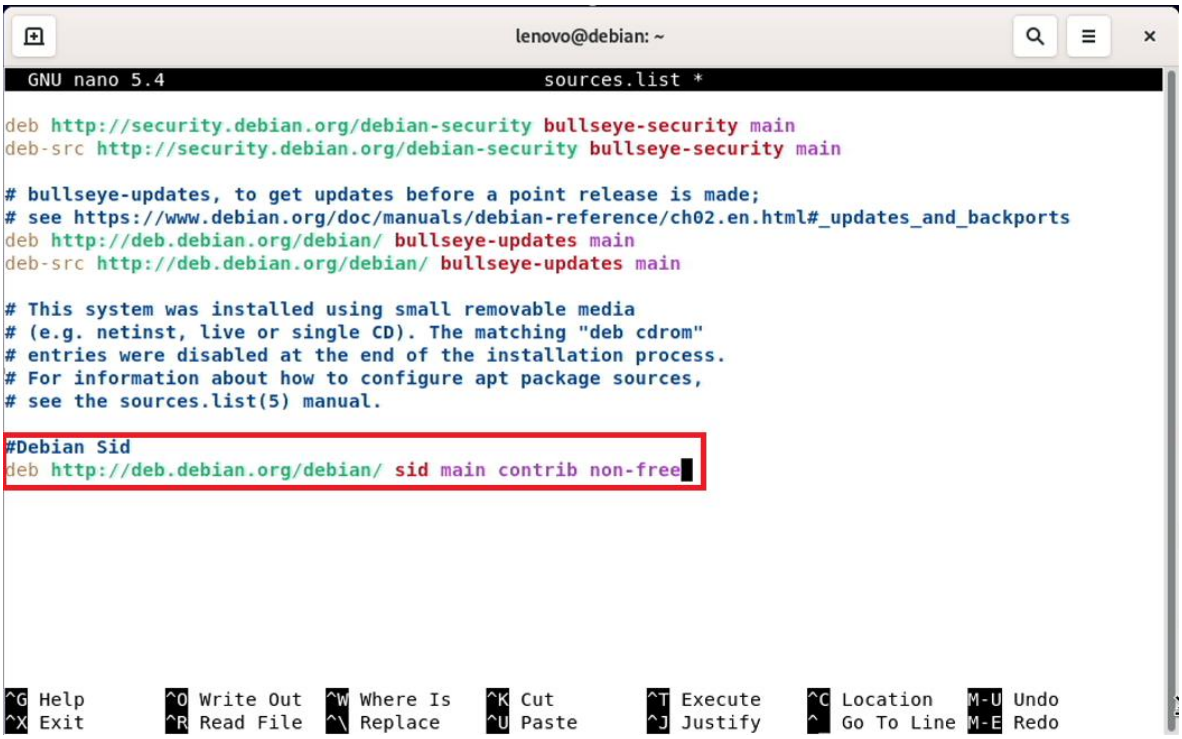


- Copy extracted files to /lib/firmware

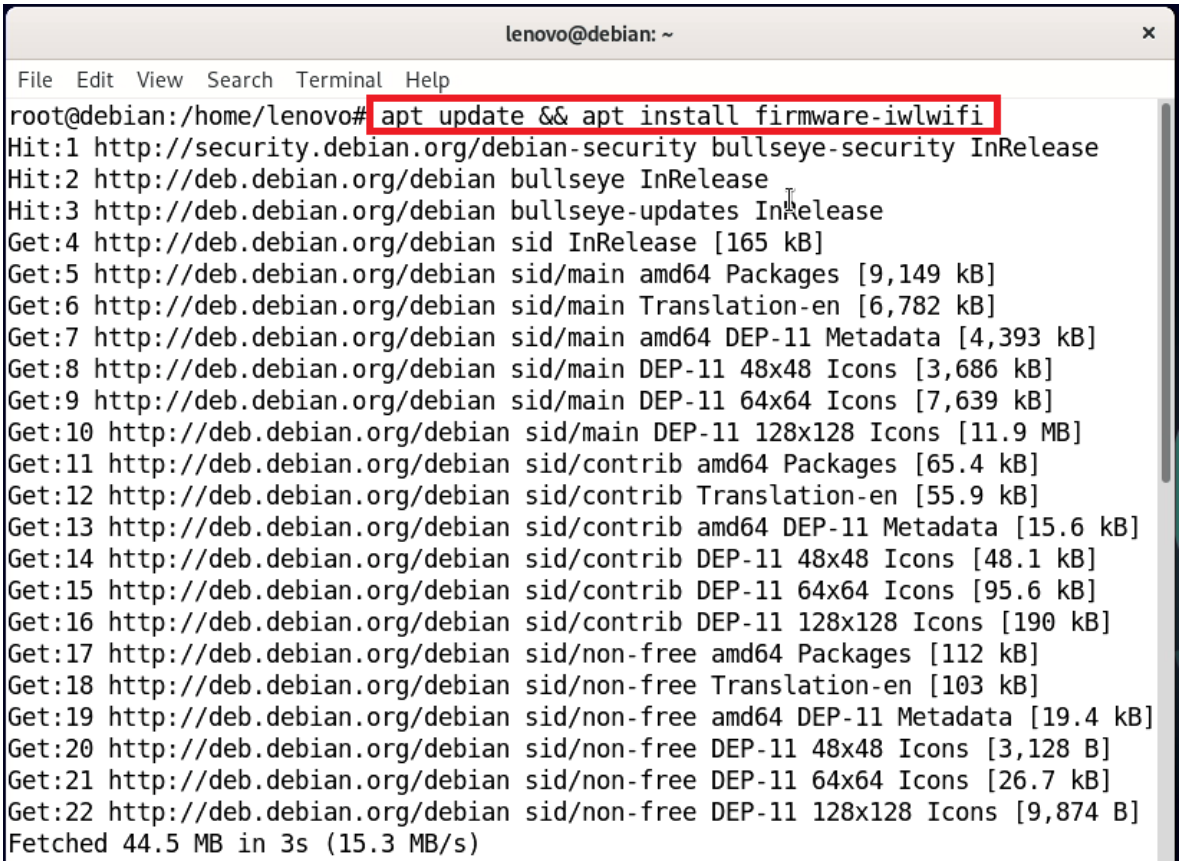


- Add "contrib" and "non-free" components to /etc/apt/sources.list.

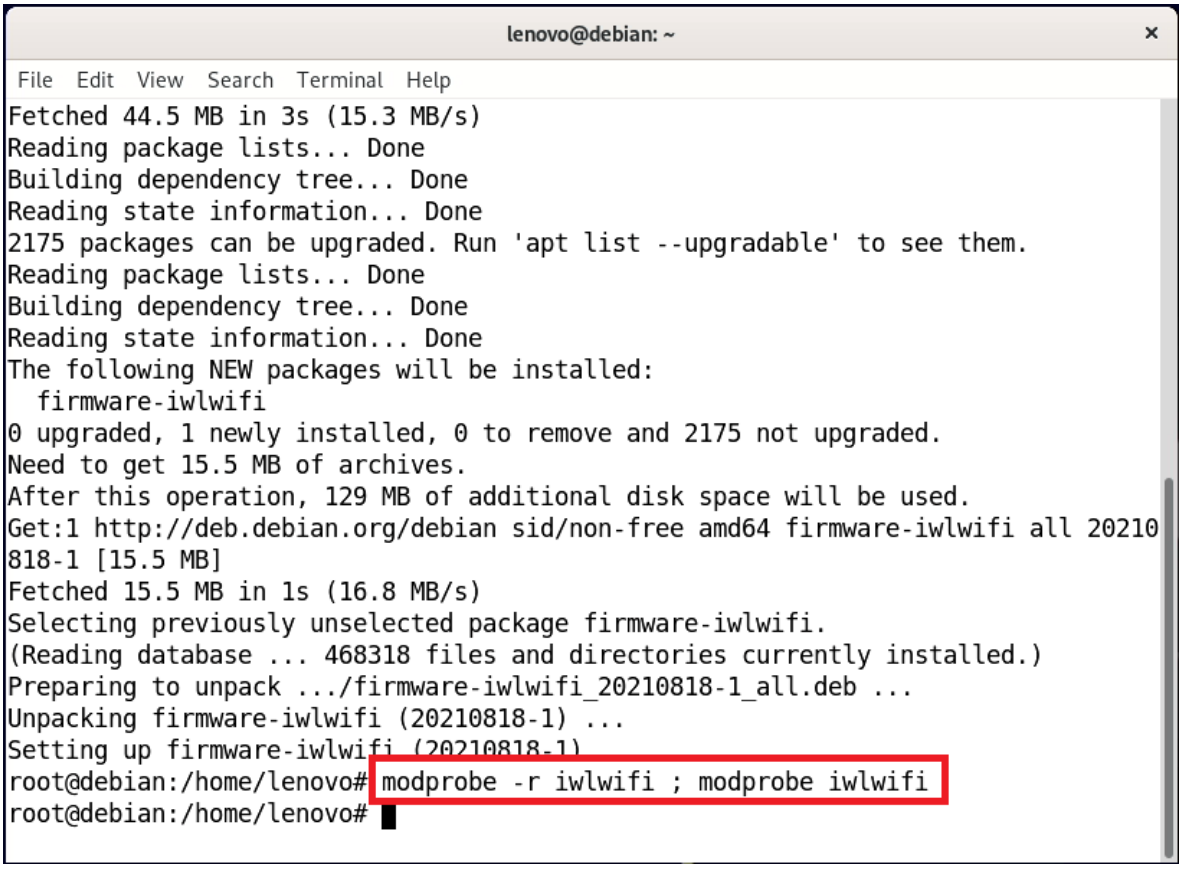
  #Debian Sid
  deb http://deb.debian.org/debian/ sid main contrib non-free



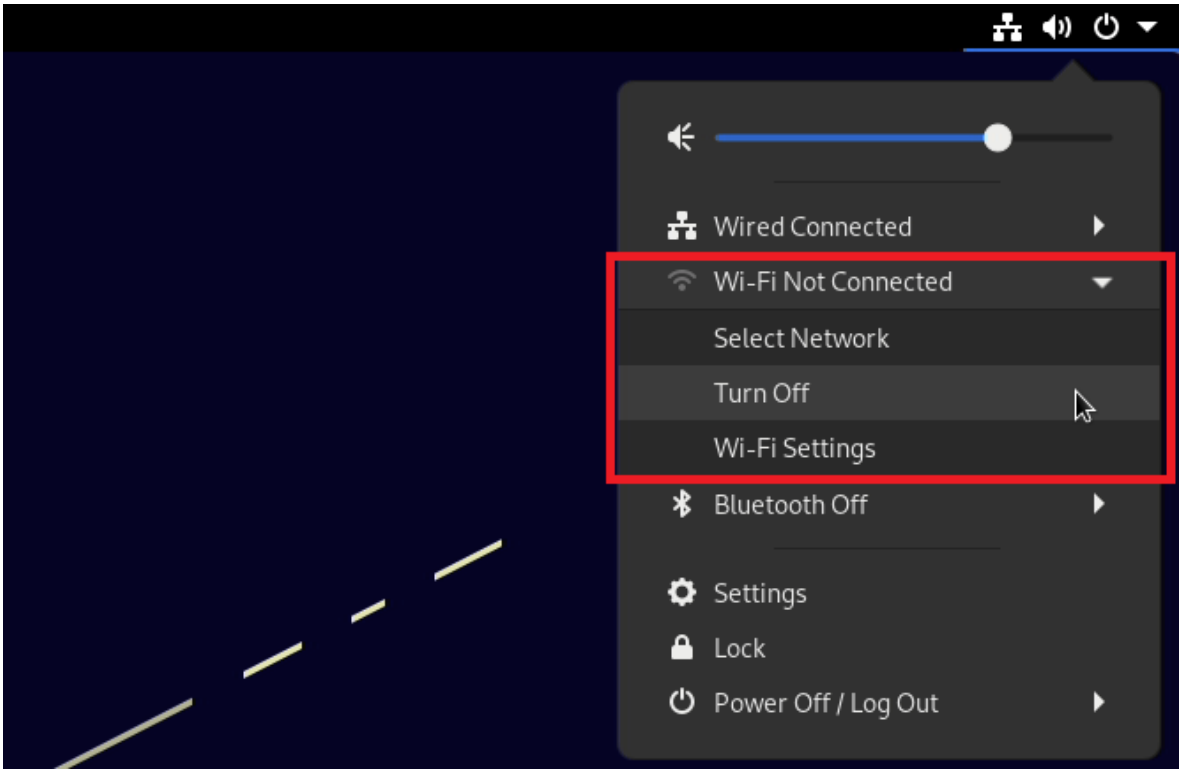
- Update the list of available packages and install the firmware-iwlwifi package:
  # apt update && apt install firmware-iwlwifi



- As the iwlwifi module is automatically loaded for supported devices, reinsert this module to access installed firmware:
  # modprobe -r iwlwifi ; modprobe iwlwifi



- After restart Wifi options should appear in the network manager.



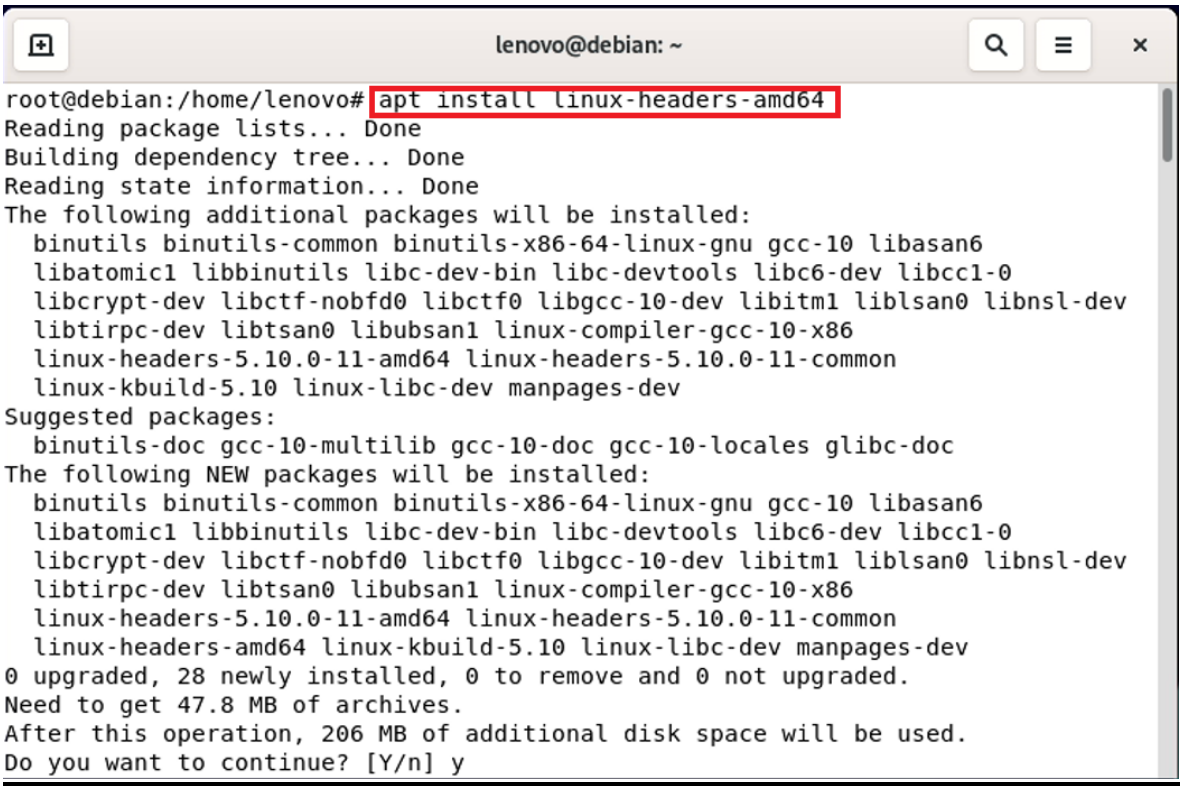
- Configure your wireless interface as appropriate.

Section 4 – Installing the Nvidia Graphics Driver

To get optimal performance out of the Nvidia GPU, it is a good idea to install the Nvidia graphics driver.

Note: Before installing the drivers, you **must** obtain the proper kernel headers for the NVIDIA driver to build with.

- Run this command, you can simply run
  #apt install linux-headers-amd64



Note: If you're using the kernel from Debian Backports:

Add bullseye-backports as an additional new line to your /etc/apt/sources.list, for example:

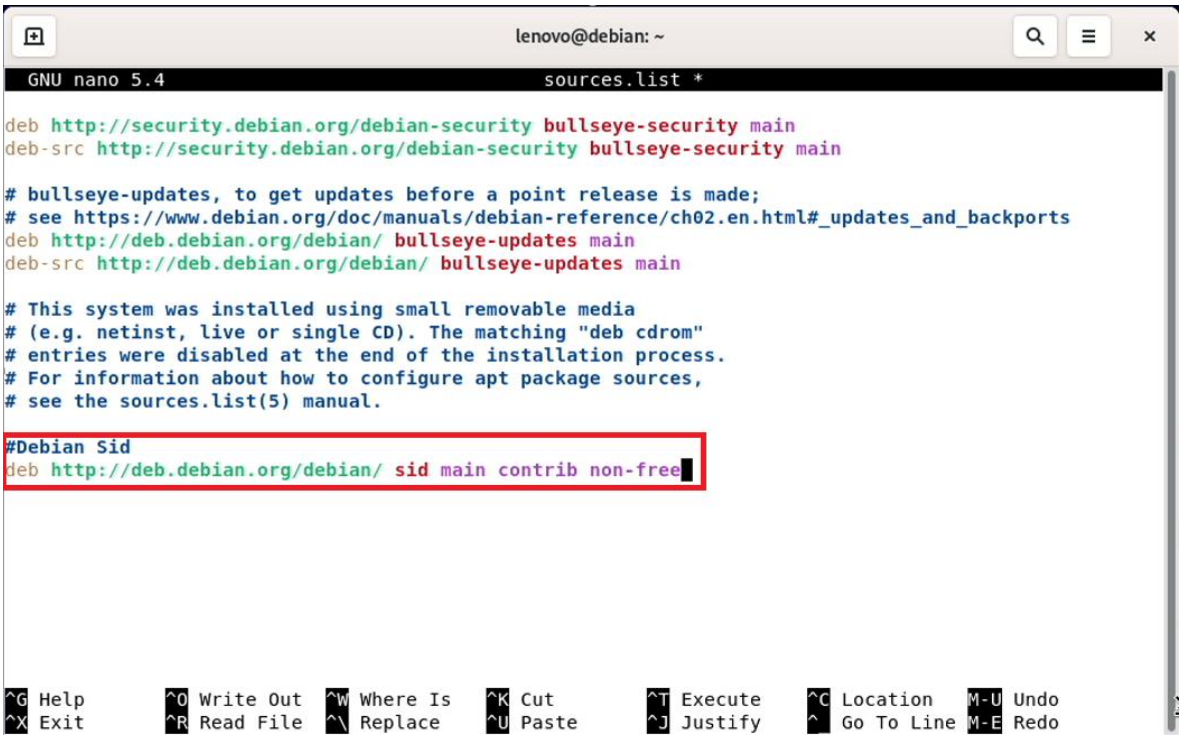
bullseye-backports

deb http://deb.debian.org/debian bullseye-backports main contrib non-free

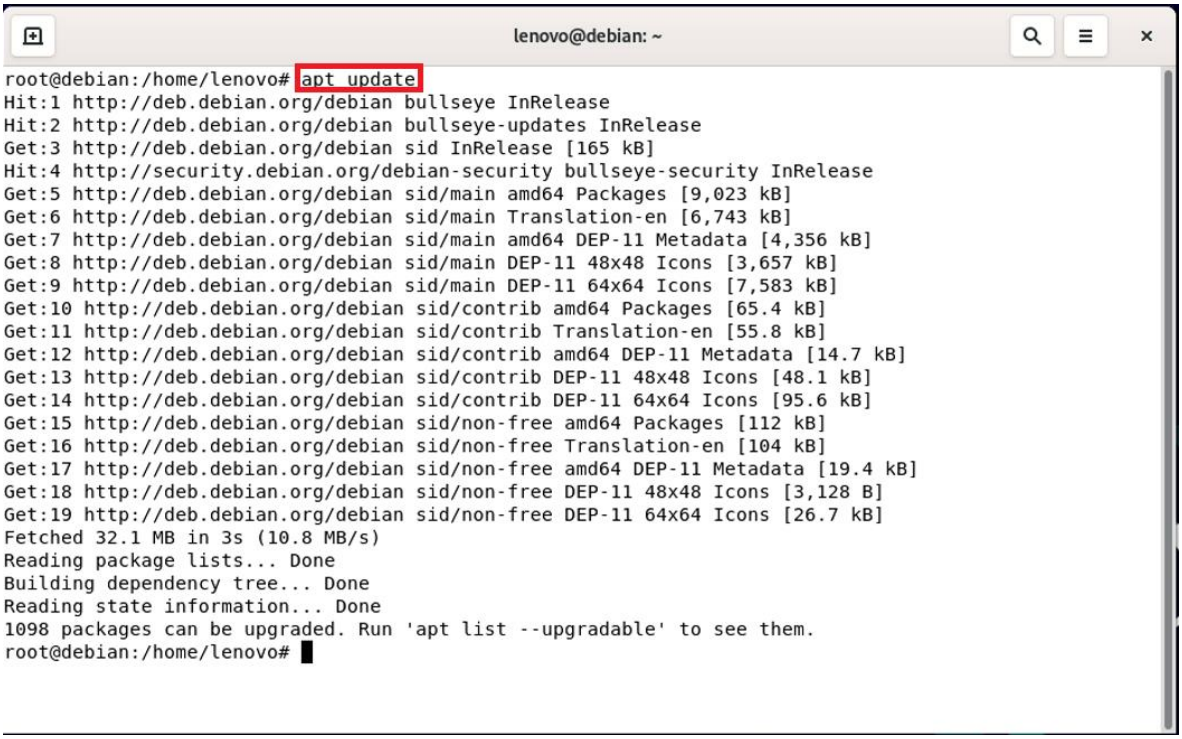
And run the same command but with the -t flag followed by bullseye-backports.

- Add "contrib" and "non-free" components to /etc/apt/sources.list.

  #Debian Sid
  deb http://deb.debian.org/debian/ sid main contrib non-free

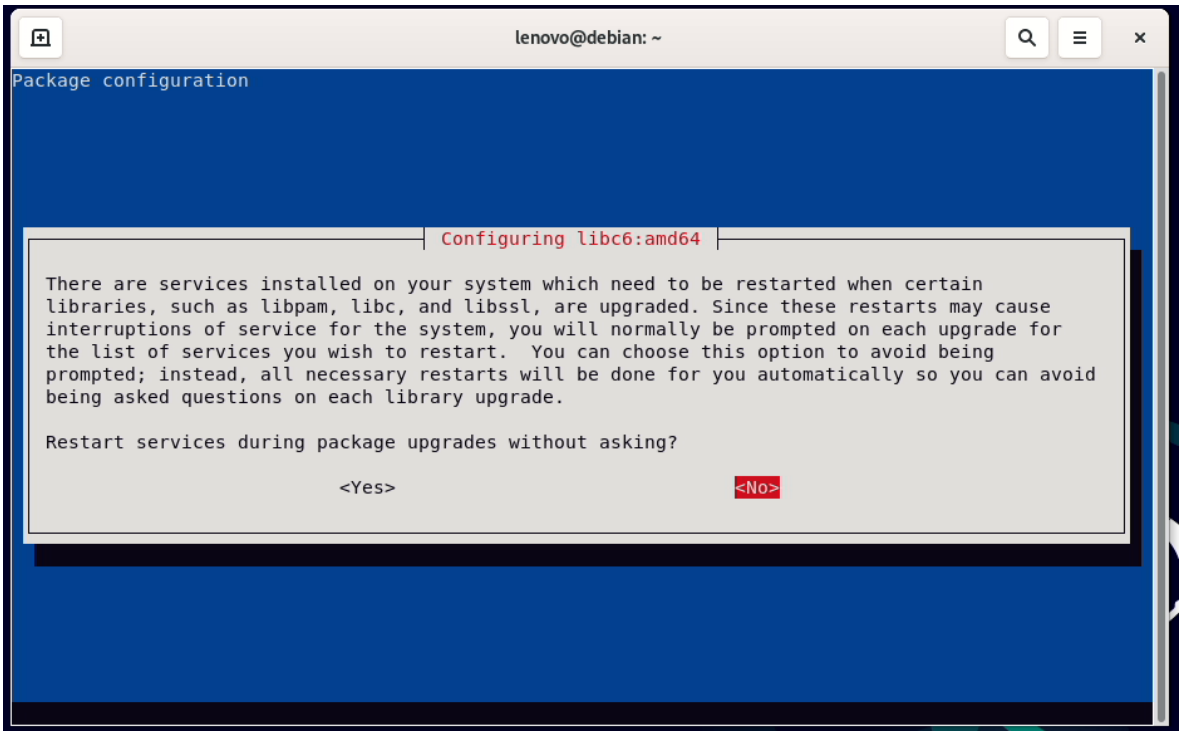


- Update the list of available packages #apt update

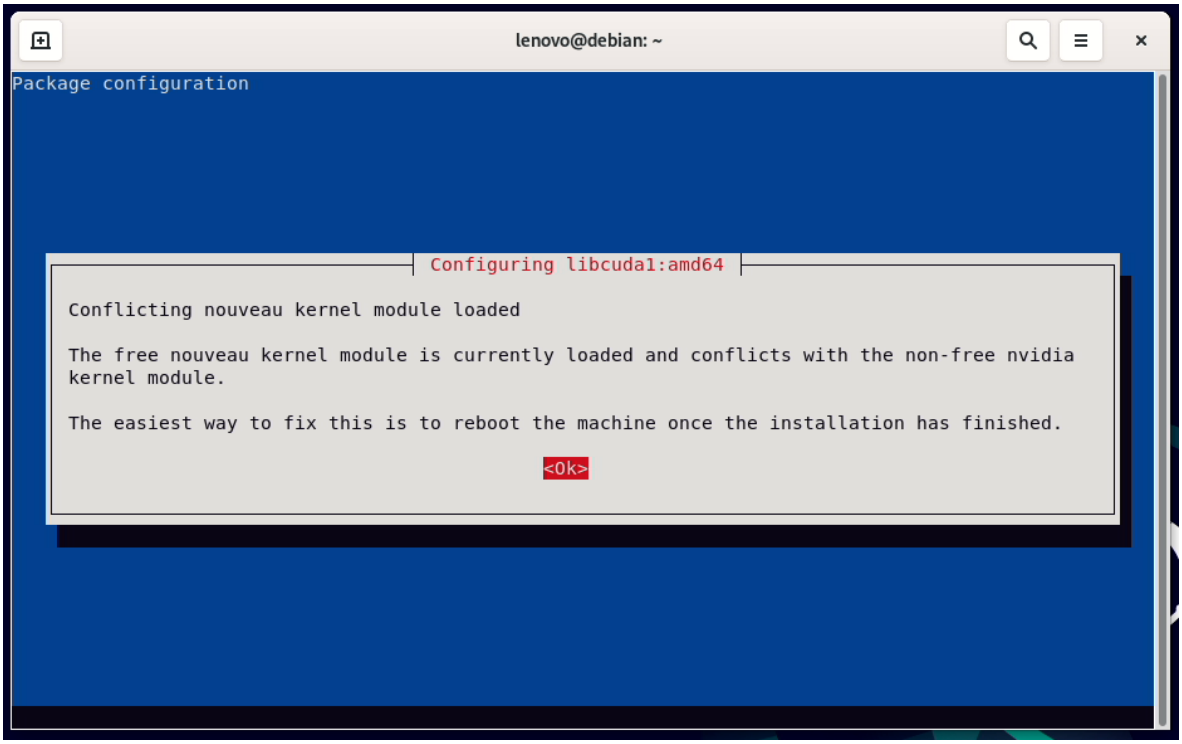


- Install Nvidia drivers #apt install nvidia-driver firmware-misc-nonfree

- During configuration select “Yes” to restart services during package upgrades without asking



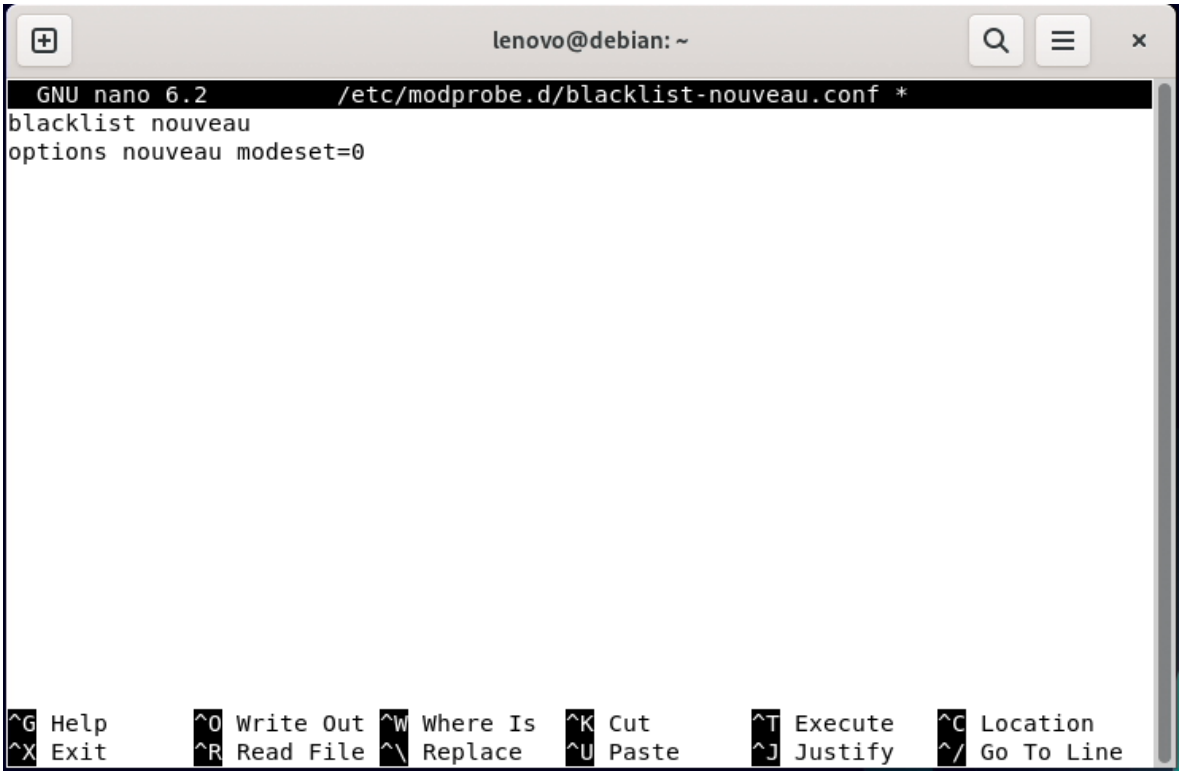
- Then click “OK”



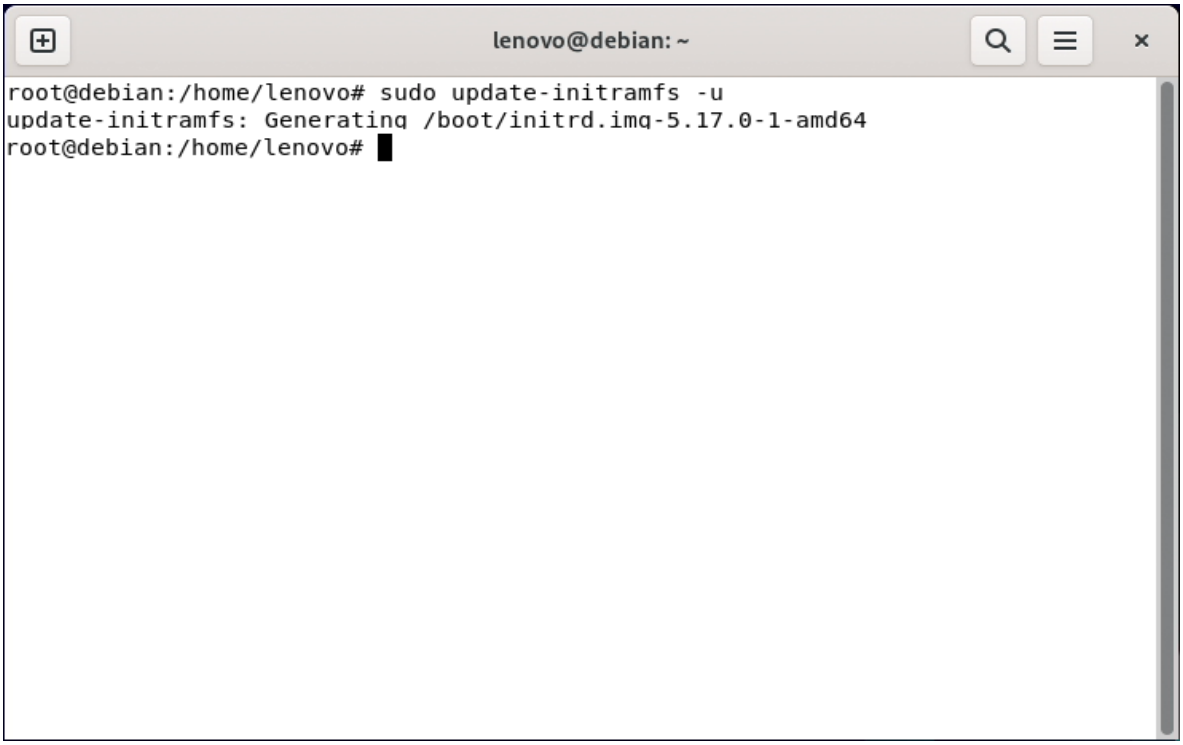
- Restart your system to load the new driver.

In case you desire to install a specific Nvidia driver please follow the next steps:

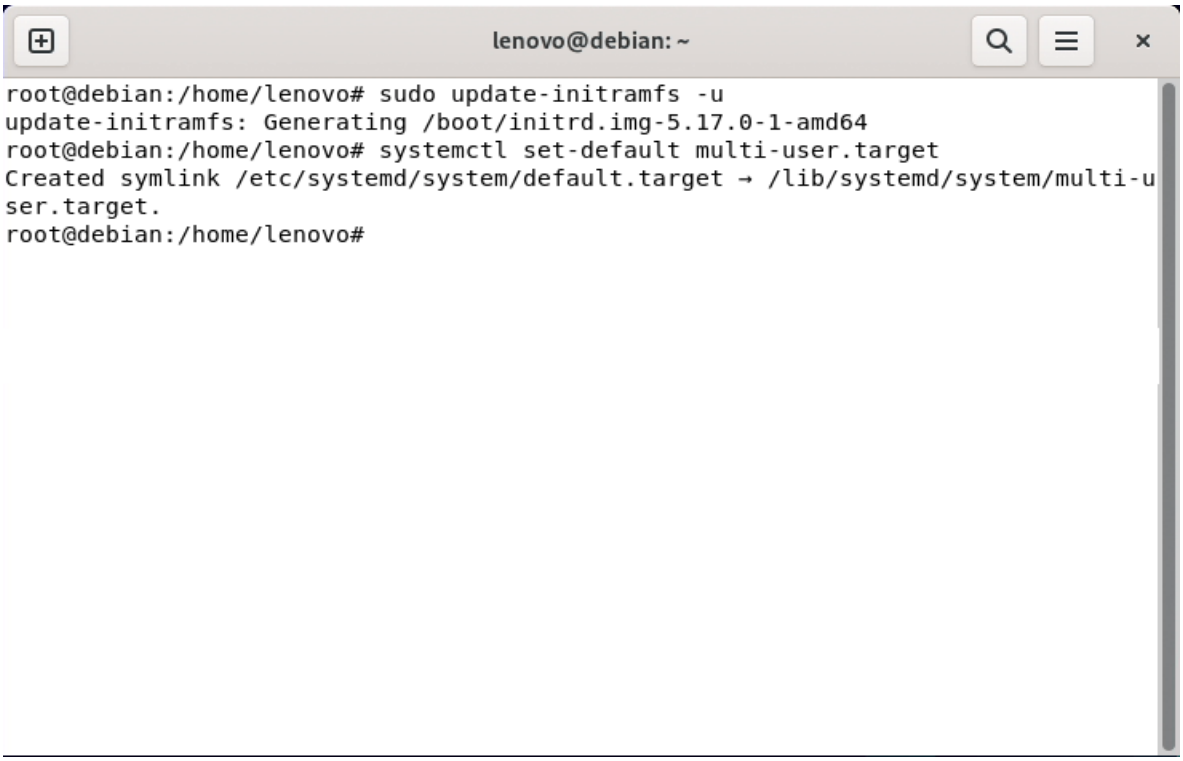
- Download the latest Nvidia graphics driver for the appropriate Nvidia GPU from www.nvidia.com/download
- To get the Nvidia driver running, we will need to blacklist the nouveau driver. Follow the steps below:
    - Log in as root: su
    - Open blacklist.conf file: nano /etc/modprobe.d/blacklist-nouveau.conf
    - Blacklist nouveau driver by writing: blacklist nouveau options nouveau modeset=0



- Run the command: update-initramfs -u



- Stop x-windows by using the command: systemctl set-default multi-user.target



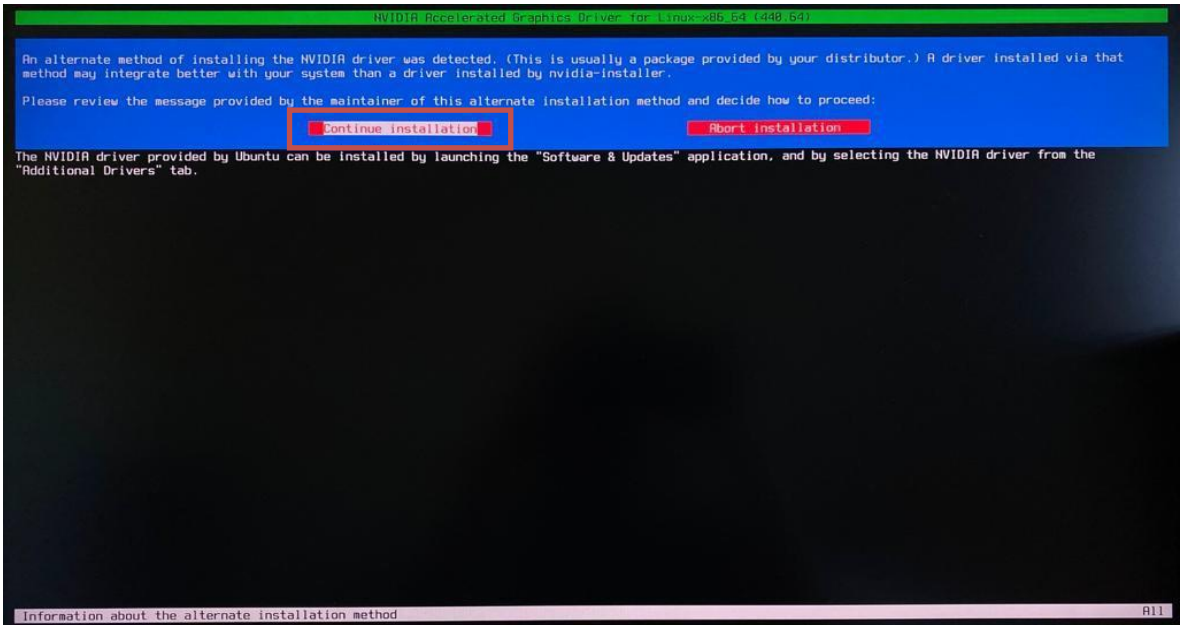
- Then restart restart the system by: systemctl reboot
- Log in as root and redirect to the directory where the Nvidia driver is located.

```
root@debian:/home/lenovo# cd Downloads
root@debian:/home/lenovo/Downloads# ls
NVIDIA-Linux-x86_64-510.73.05.run
root@debian:/home/lenovo/Downloads#
```

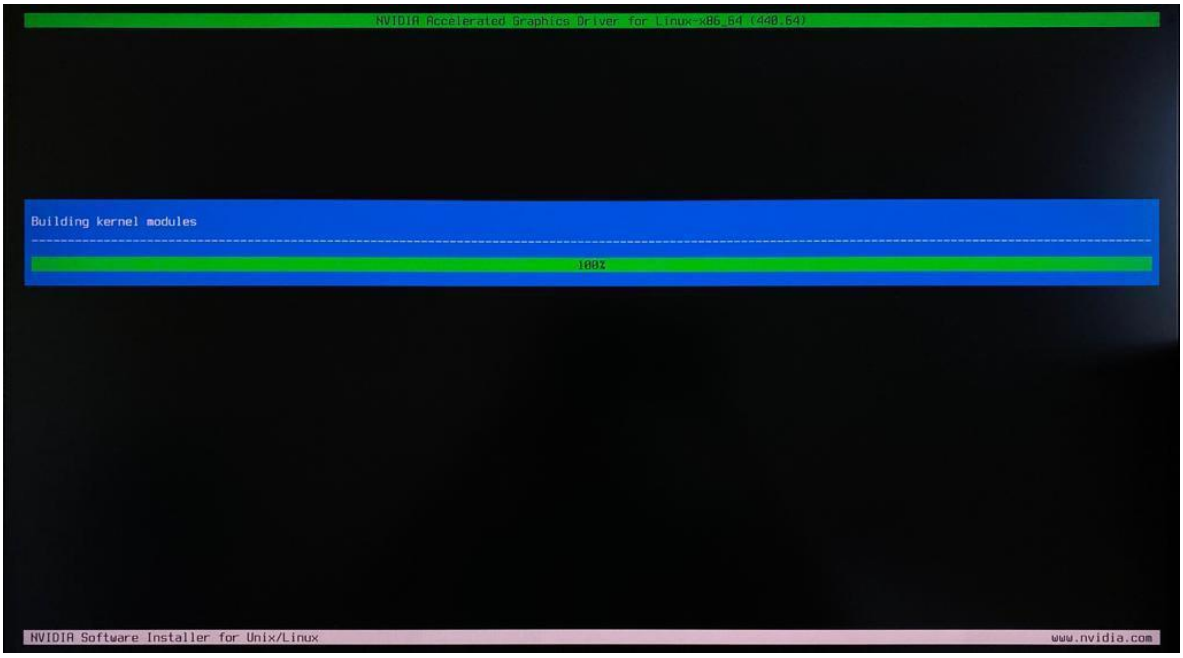
- Run the Nvidia installer by: bash NVIDIA-Linux-x86_64-390.144.run

```
root@debian:/home/lenovo# cd Downloads
root@debian:/home/lenovo/Downloads# ls
NVIDIA-Linux-x86_64-510.73.05.run
root@debian:/home/lenovo/Downloads# bash NVIDIA-Linux-x86_64-510.73.05.run
```

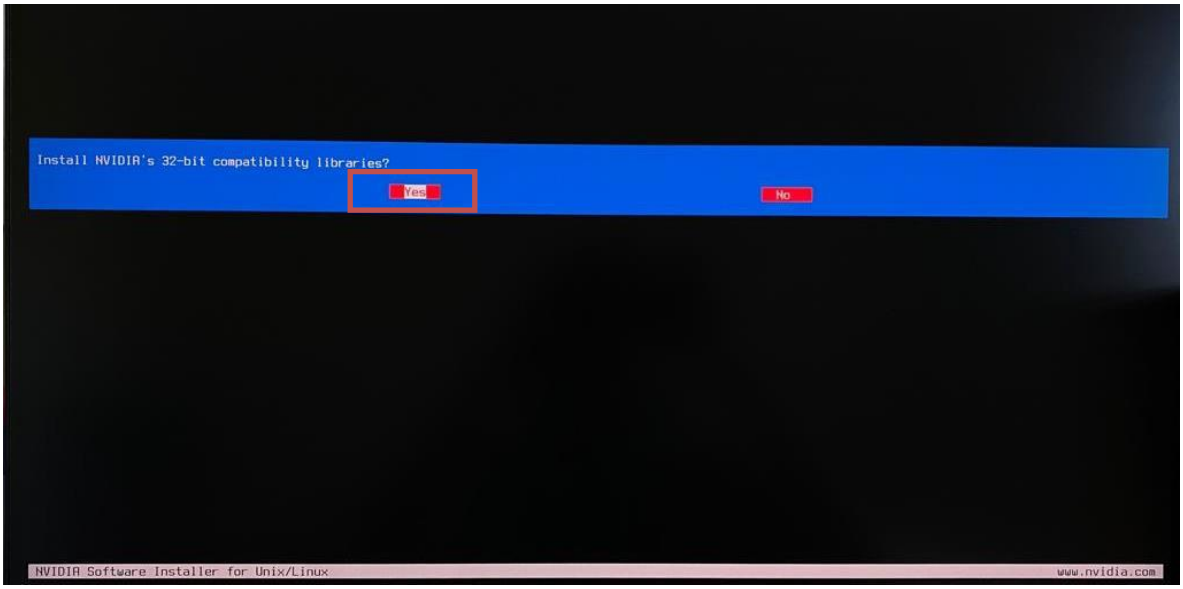
- Select Continue installation.



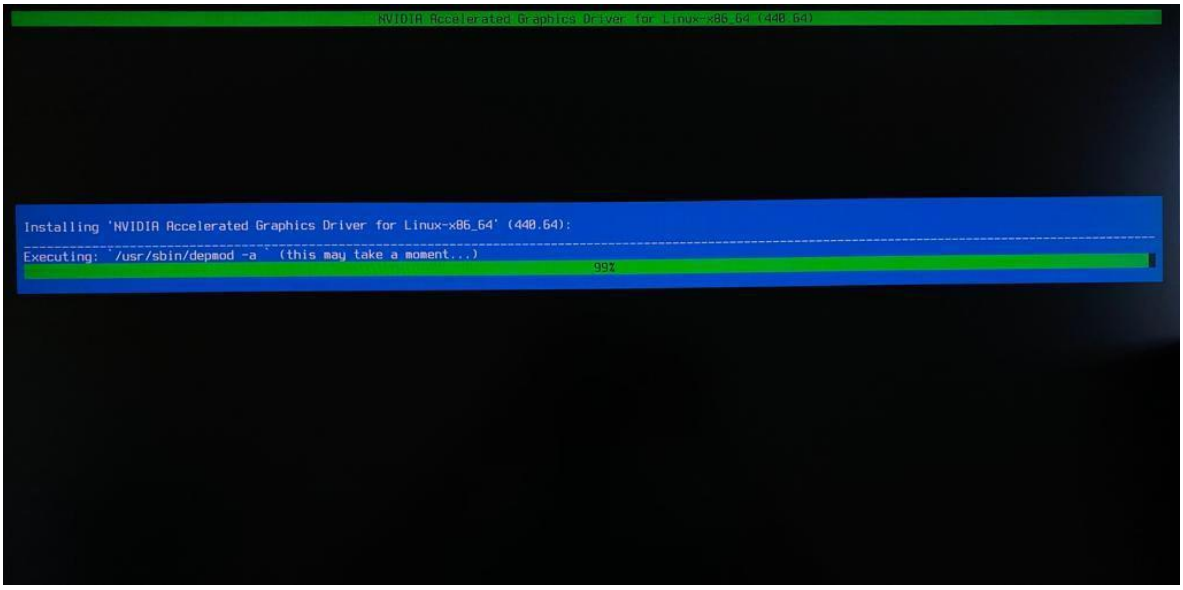
- Wait until the kernel modules are completely built.



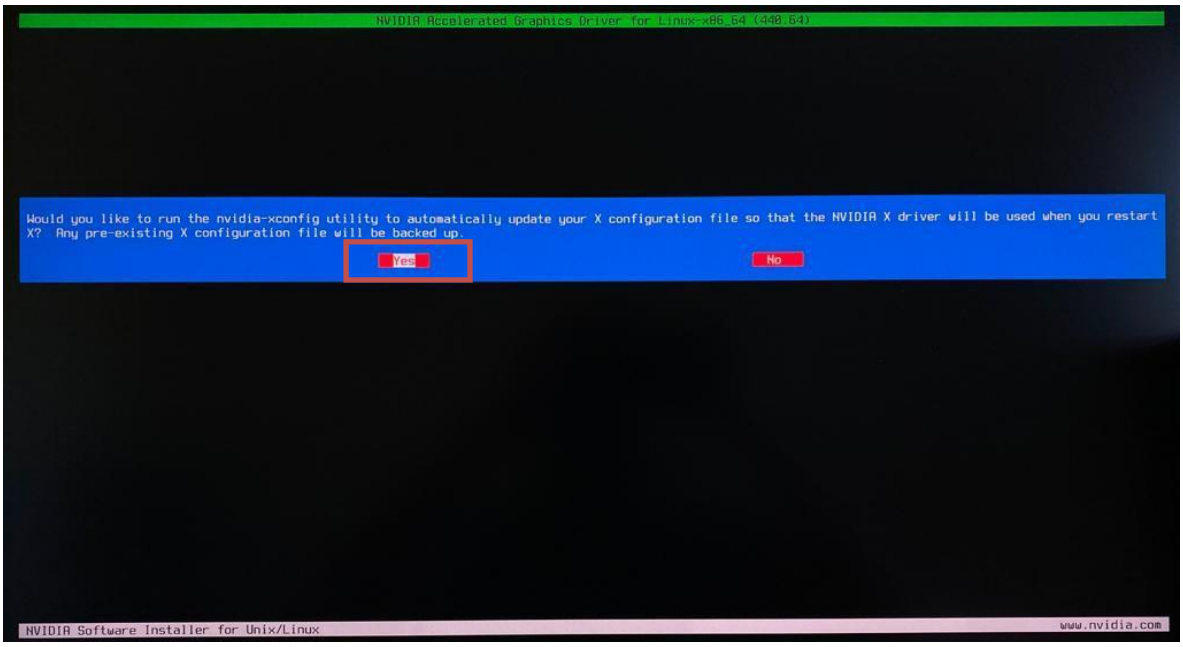
- Select Yes for installing 32-bit compatibility libraries.



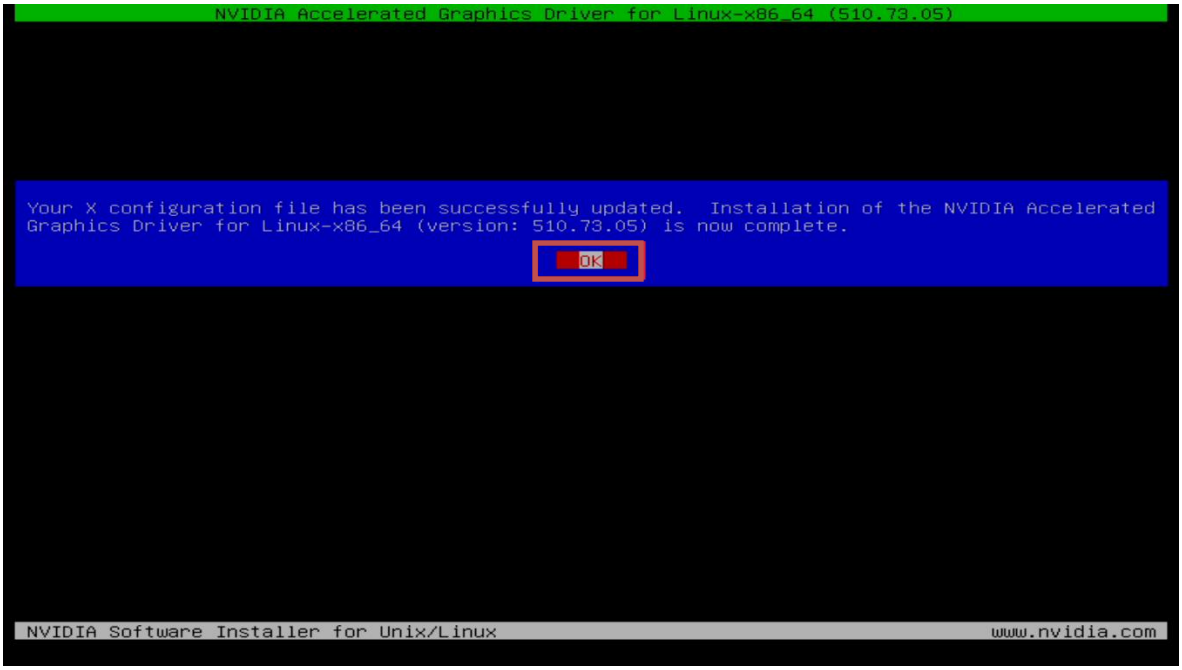
- Wait until the installation is complete.



- Select Yes to run nvidia-xconfig utility to automatically update your X configuration file.



- Select OK once the X configuration file gets updated successfully.



- Enable GUI by: systemctl set-default graphical.target

```
root@debian:/home/lenovo/Downloads# systemctl set-default graphical.target
Removed /etc/systemd/system/default.target.
Created symlink /etc/systemd/system/default.target → /lib/systemd/system/graphical.target.
```

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

```
root@debian:/home/lenovo/Downloads# nvidia-smi
Mon May 16 14:47:55 2022
+-----------------------------------------------------------------------------+
| NVIDIA-SMI 510.73.05    Driver Version: 510.73.05    CUDA Version: 11.6     |
|-------------------------------+----------------------+----------------------+
| GPU  Name        Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf  Pwr:Usage/Cap|         Memory-Usage | GPU-Util  Compute M. |
|                               |                      |               MIG M. |
|===============================+======================+======================|
|   0  NVIDIA T600         Off  | 00000000:01:00.0 Off |                  N/A |
| 43%   46C    P0    N/A /  41W |      0MiB /  4096MiB |      0%      Default |
|                               |                      |                  N/A |
+-------------------------------+----------------------+----------------------+

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

- Reboot the system.

Revision History

Version	Date	Author	Changes/Updates
1.1	7/12/2022	Aleksandr Panteleev	Added support for P360 Ultra
1.0	5/17/2022	Aleksandr Panteleev	Initial release