

# Debian Linux 10 Installation

Lenovo ThinkStation P620

Lenovo



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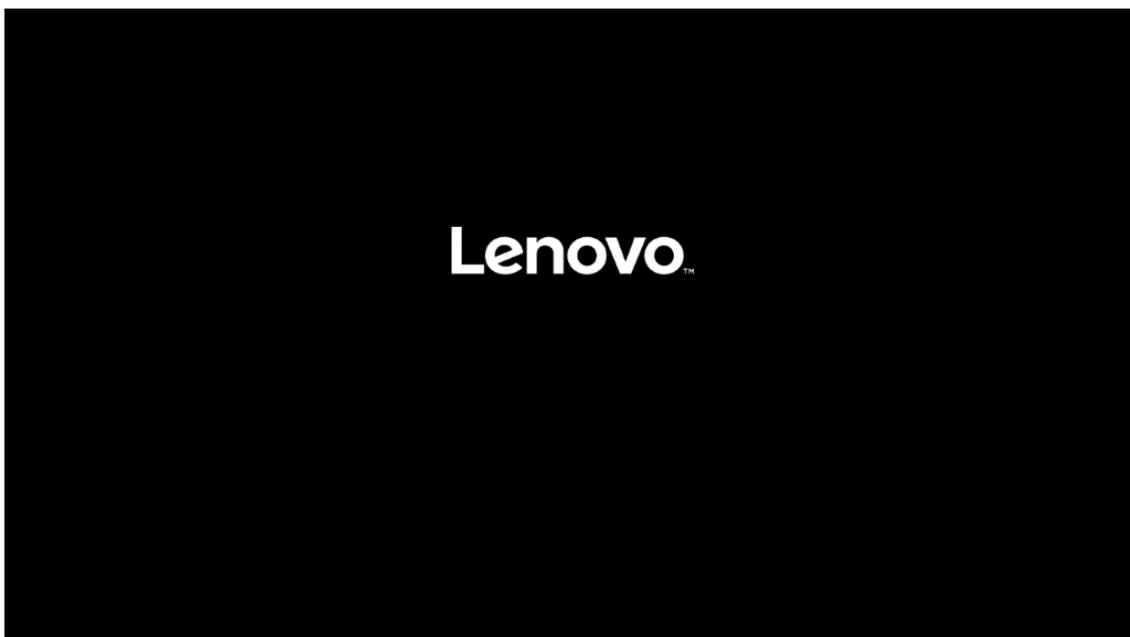
SECTION 6 – INSTALLING THE NVIDIA GRAPHICS DRIVER

SECTION 7 – REVISION HISTORY

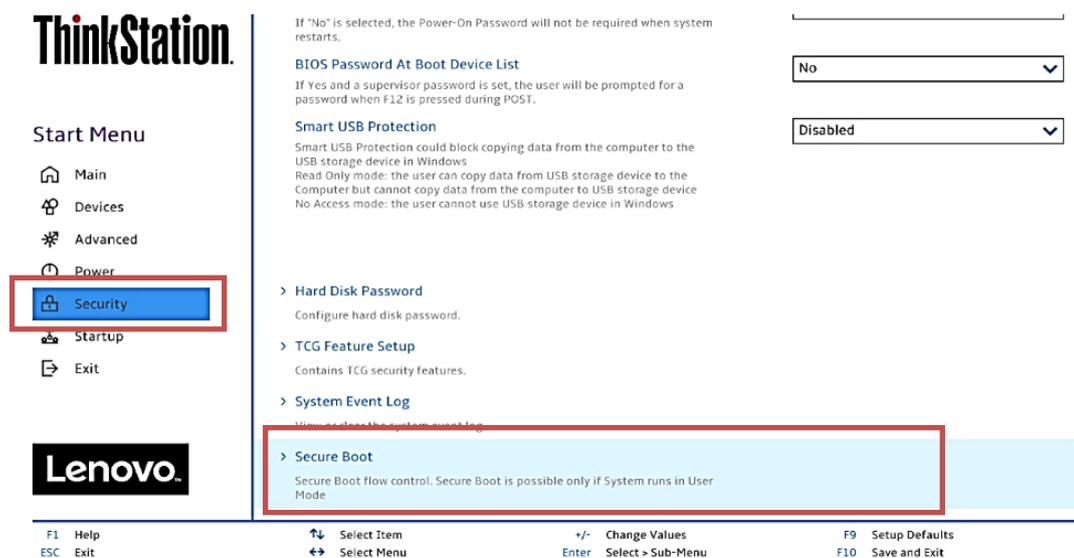
## Section 1– BIOS Setup & Pre-Installation Steps

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

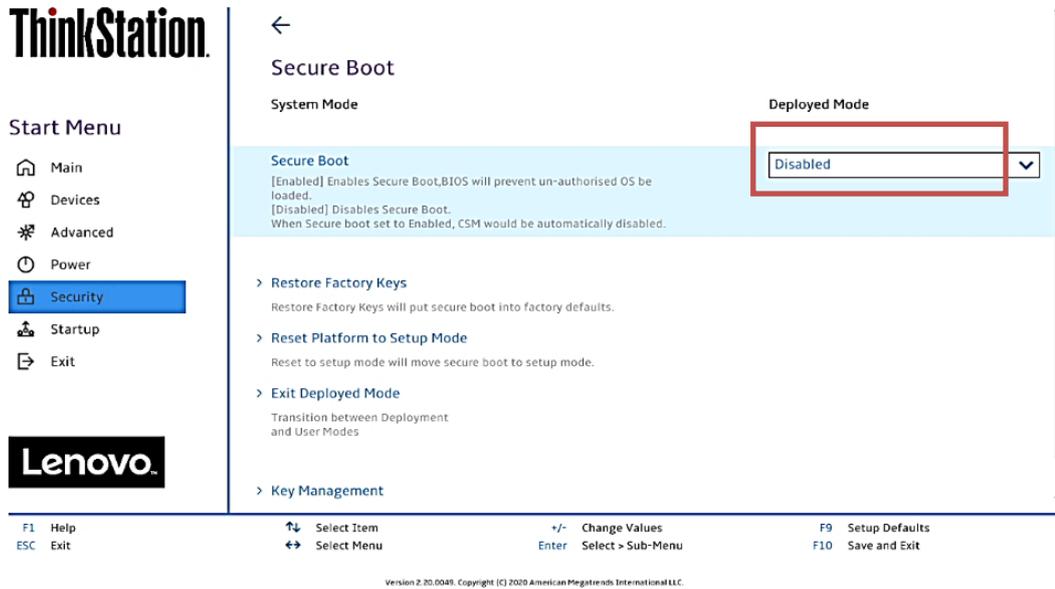
- Boot into BIOS by pressing the function F1 key at the “Lenovo” splash screen.



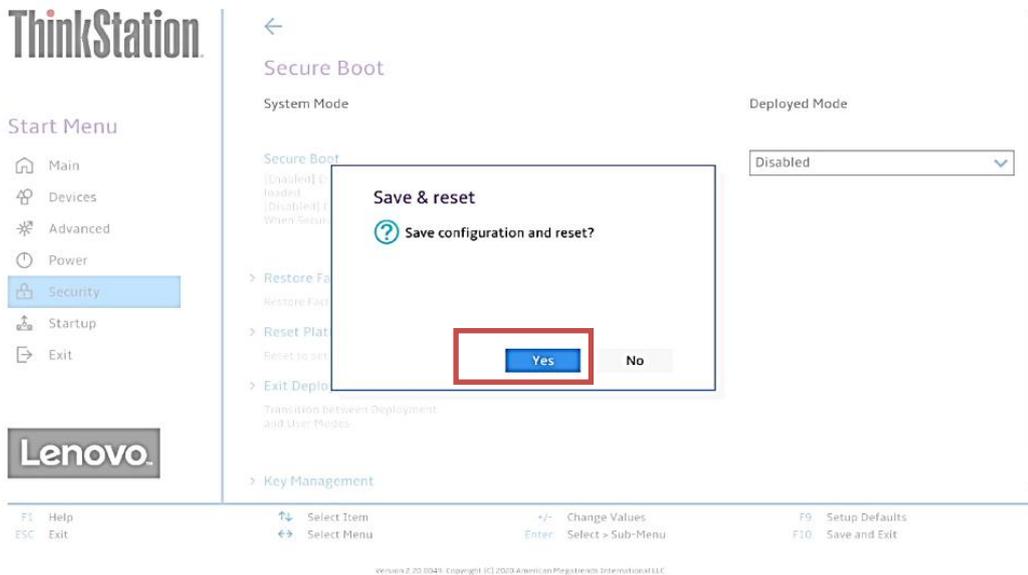
- On the “Security” menu tab, scroll down and select the “Secure Boot” option.



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



- Save changes by pressing F10 function key.

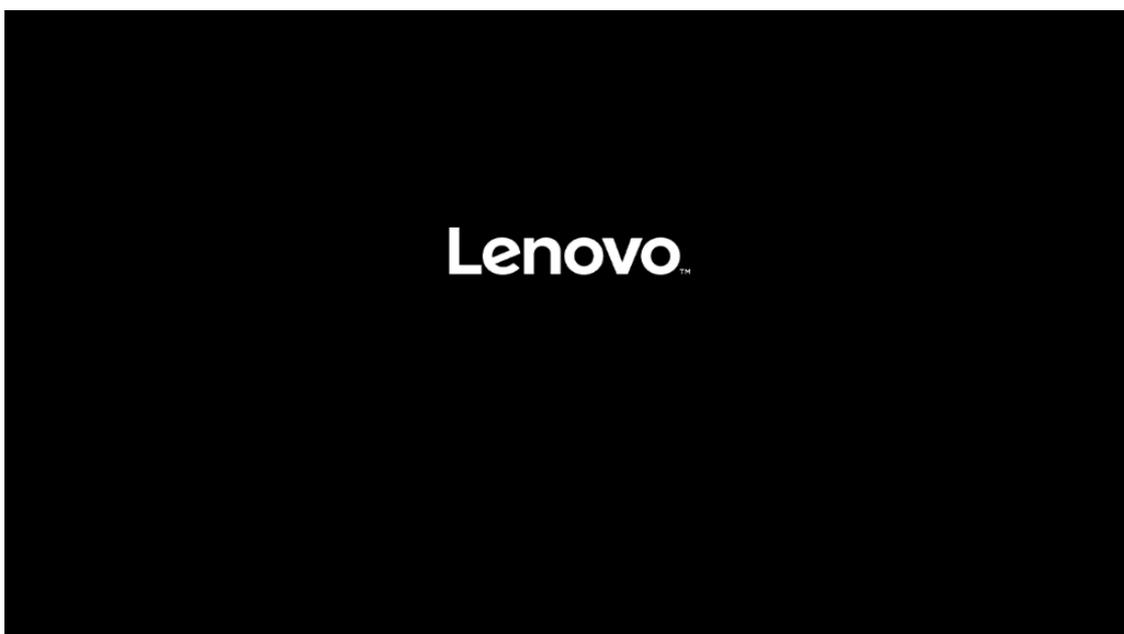


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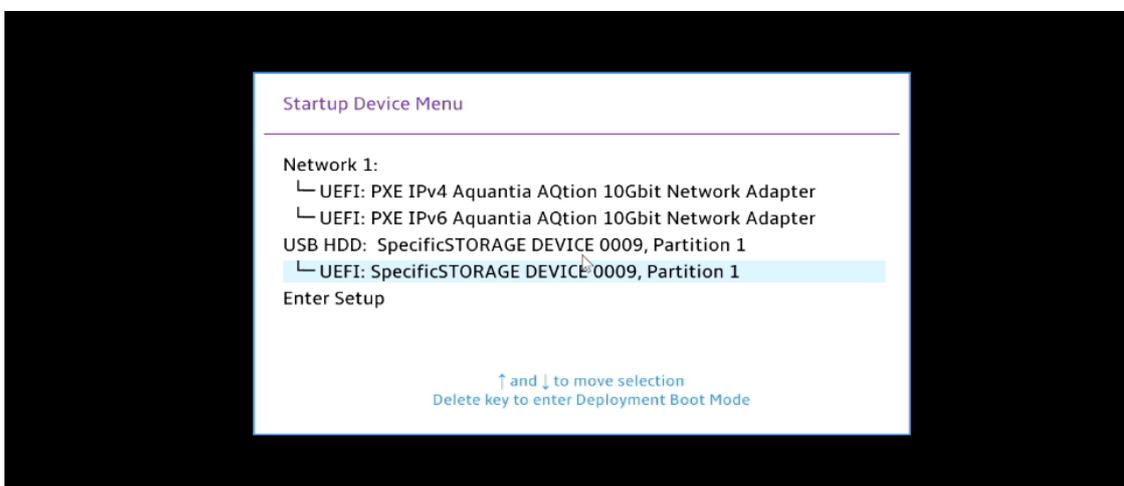
## Section 2 – Installing Debian 10.03

Please refer to the following instructions and screenshots on how to install Debian 10.03 on the Lenovo ThinkStation P620.

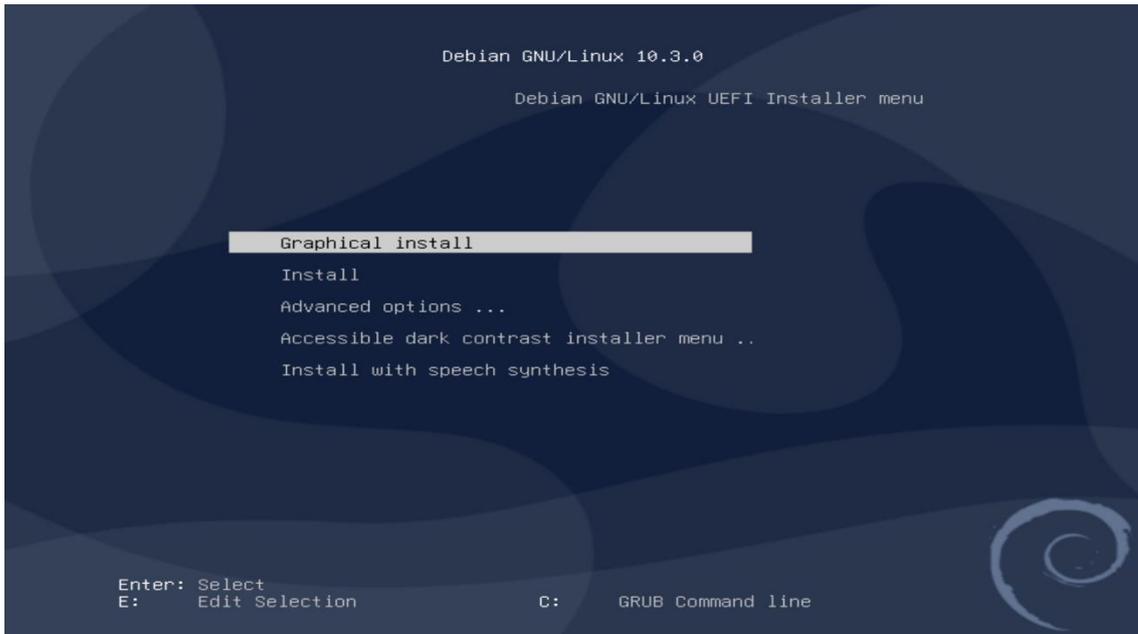
- Insert the Debian 10.03 installation media (either through USB or CD/DVD).
- Power on the system and press the F12 function key whenever the following Lenovo splash screen appears.



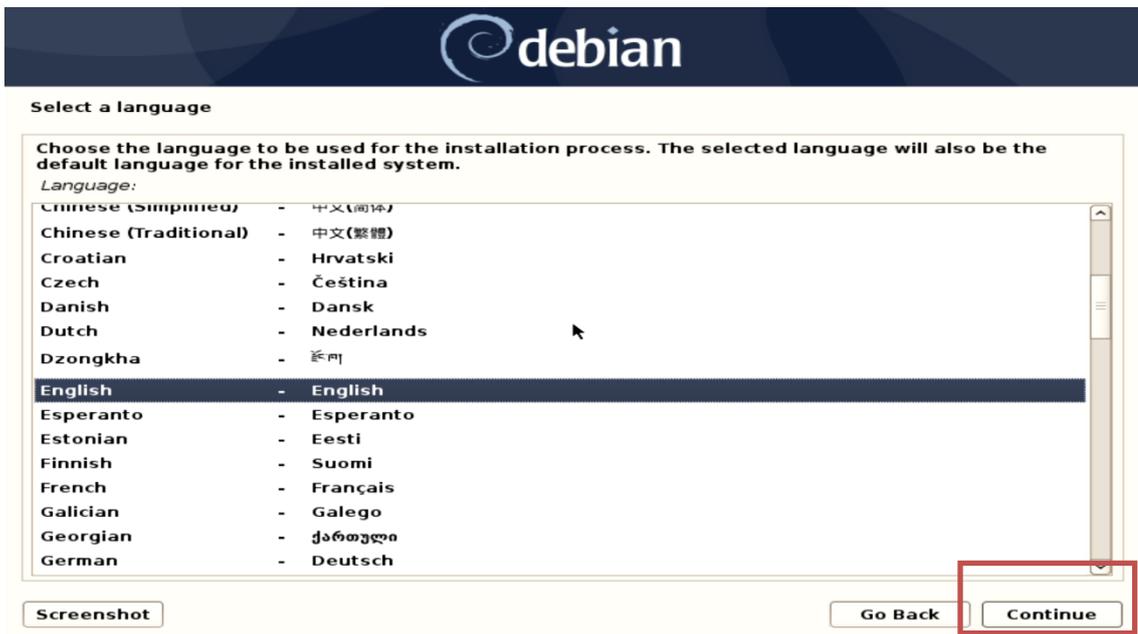
- Select the Linux bootable installation media from the F12 boot menu list.



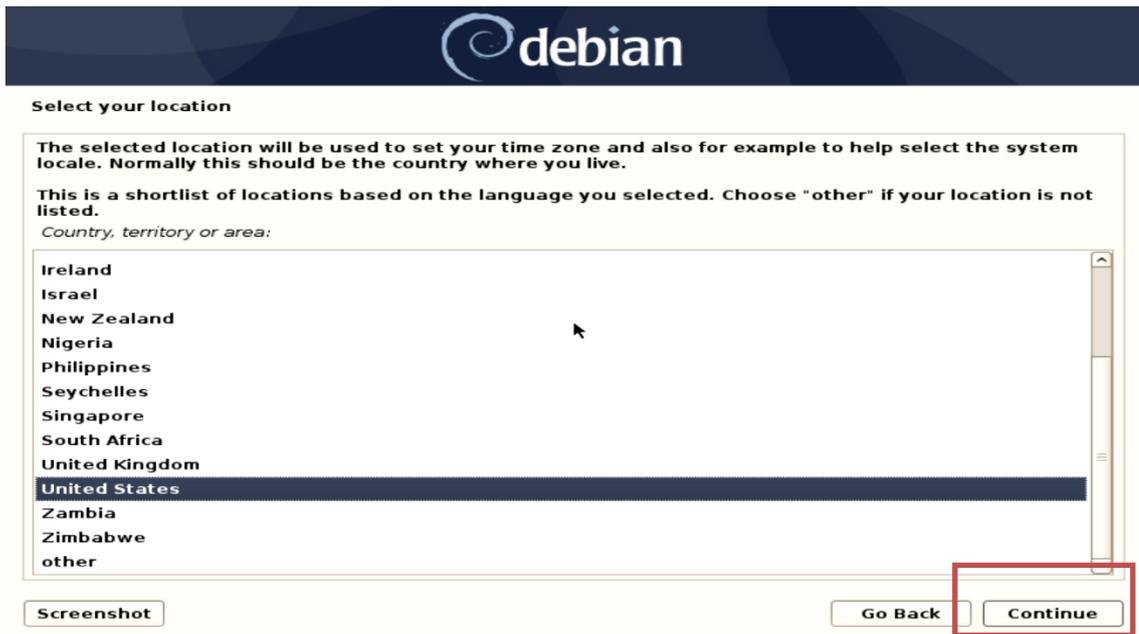
- Highlight Install Ubuntu from the GRUB boot menu and hit enter.



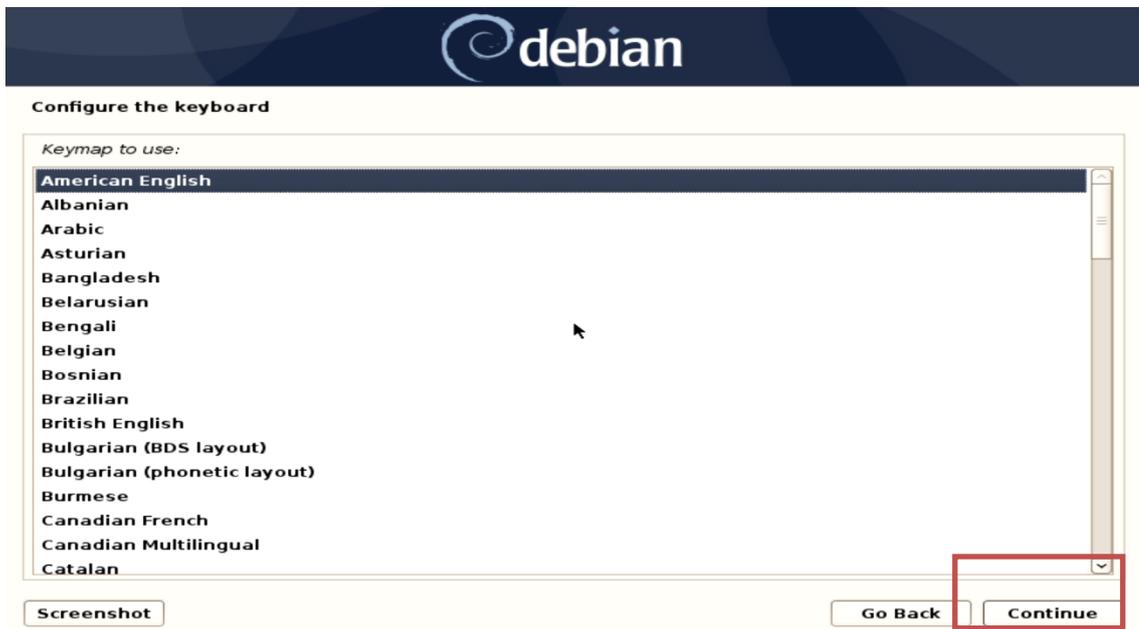
- Select the appropriate language and press Continue.



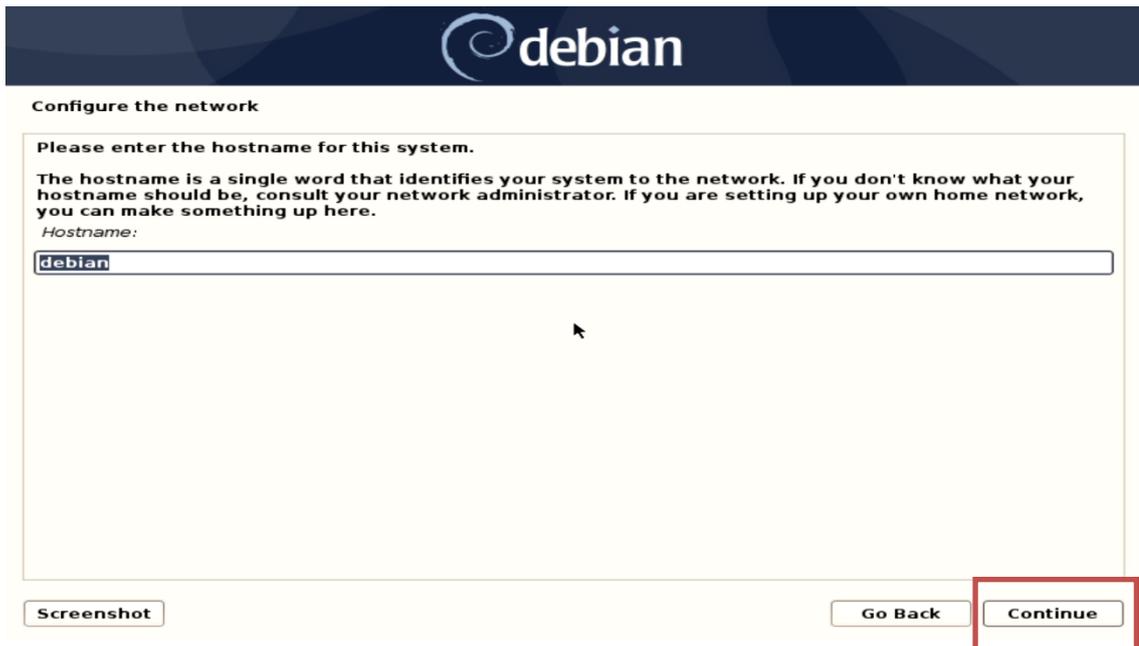
- Select the user location and press Continue.



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



- Enter a hostname for the system and select Continue.



**debian**

**Configure the network**

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

Screenshot Go Back Continue

- Enter a domain name and select Continue.



**debian**

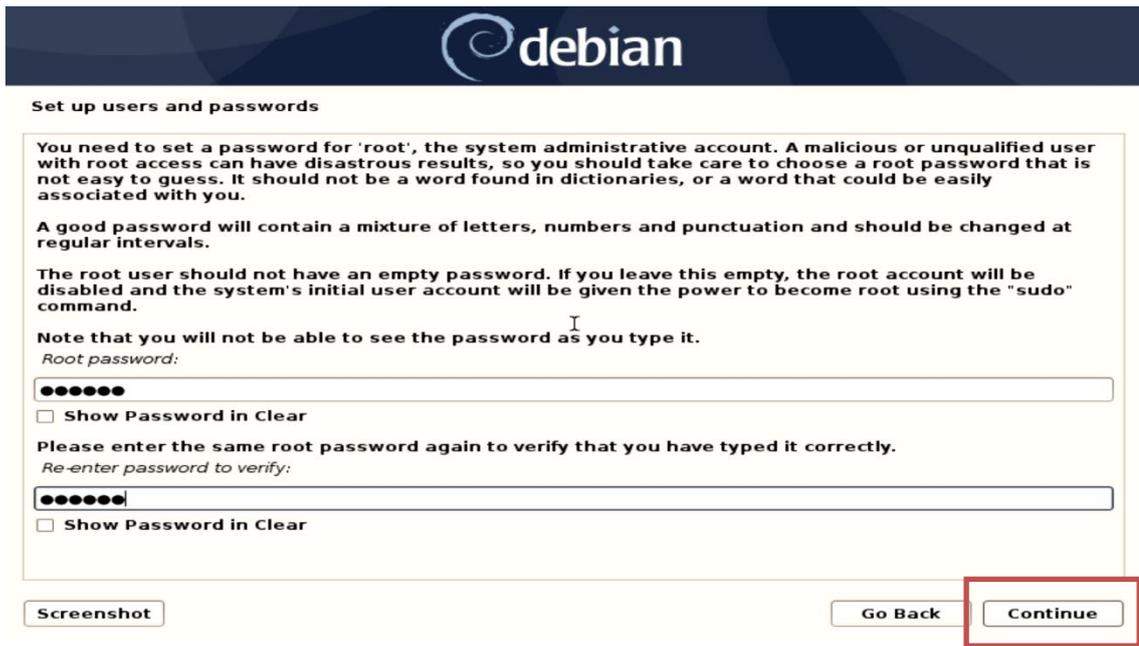
**Configure the network**

The domain name is the part of your Internet address to the right of your host name. It is often something that ends in .com, .net, .edu, or .org. If you are setting up a home network, you can make something up, but make sure you use the same domain name on all your computers.

Domain name:

Screenshot Go Back Continue

- Set a root password and select Continue.



**debian**

**Set up users and passwords**

You need to set a password for 'root', the system administrative account. A malicious or unqualified user with root access can have disastrous results, so you should take care to choose a root password that is not easy to guess. It should not be a word found in dictionaries, or a word that could be easily associated with you.

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.

The root user should not have an empty password. If you leave this empty, the root account will be disabled and the system's initial user account will be given the power to become root using the "sudo" command.

Note that you will not be able to see the password as you type it.

Root password:

●●●●●●

Show Password in Clear

Please enter the same root password again to verify that you have typed it correctly.

Re-enter password to verify:

●●●●●●

Show Password in Clear

Screenshot      Go Back      **Continue**

- Enter full name for the user and select Continue.



**debian**

**Set up users and passwords**

A user account will be created for you to use instead of the root account for non-administrative activities.

Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.

Full name for the new user:

lenovo

Screenshot      Go Back      **Continue**

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



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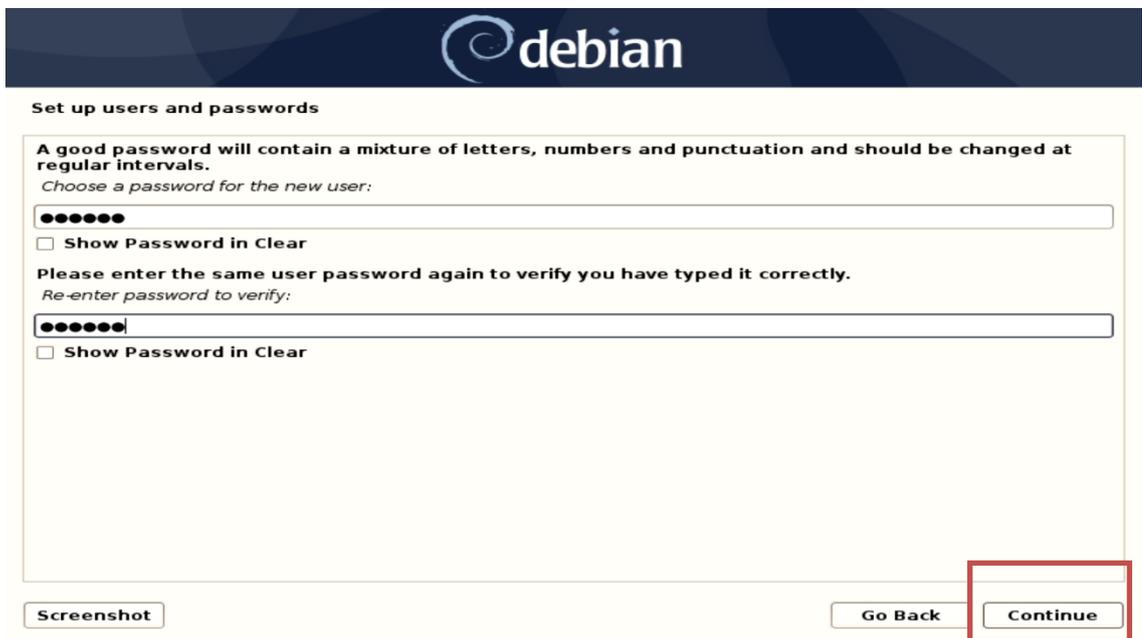
**Set up users and passwords**

Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination of numbers and more lower-case letters.

Username for your account:

Screenshot Go Back Continue

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



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**Set up users and passwords**

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.

Choose a password for the new user:

  
 Show Password in Clear

Please enter the same user password again to verify you have typed it correctly.

Re-enter password to verify:

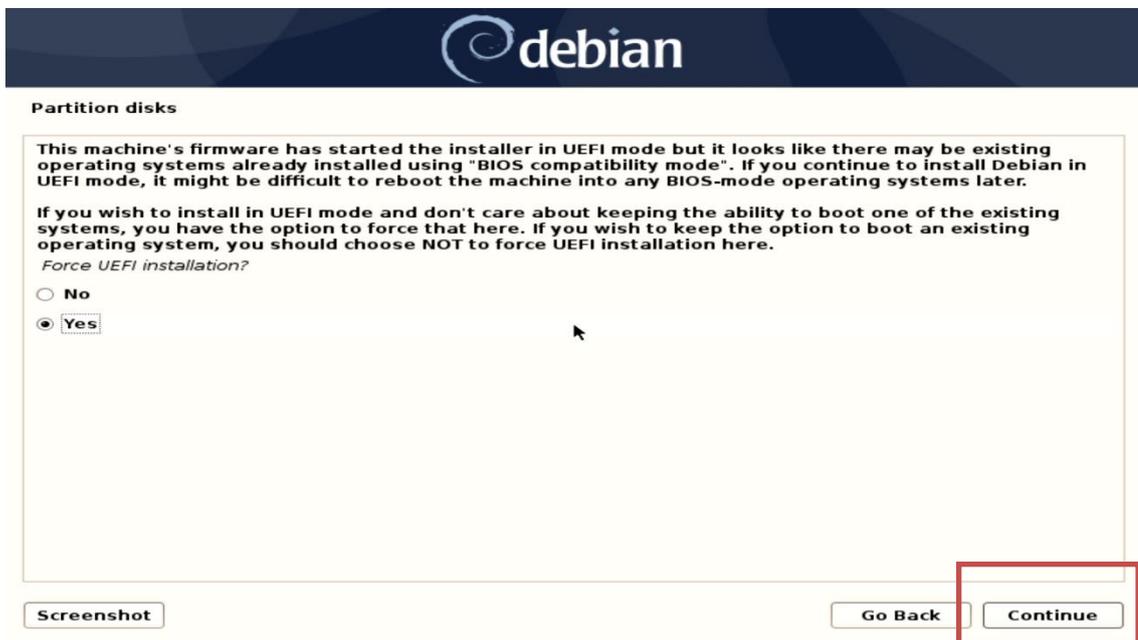
  
 Show Password in Clear

Screenshot Go Back Continue

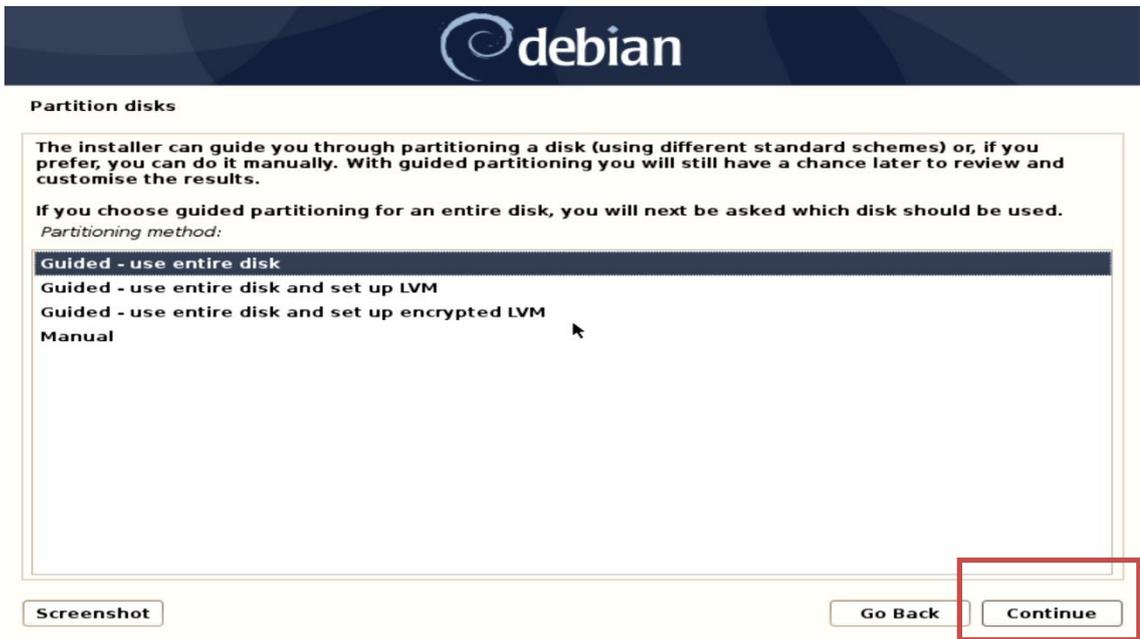
- Select an appropriate time zone to configure the clock and press Continue.



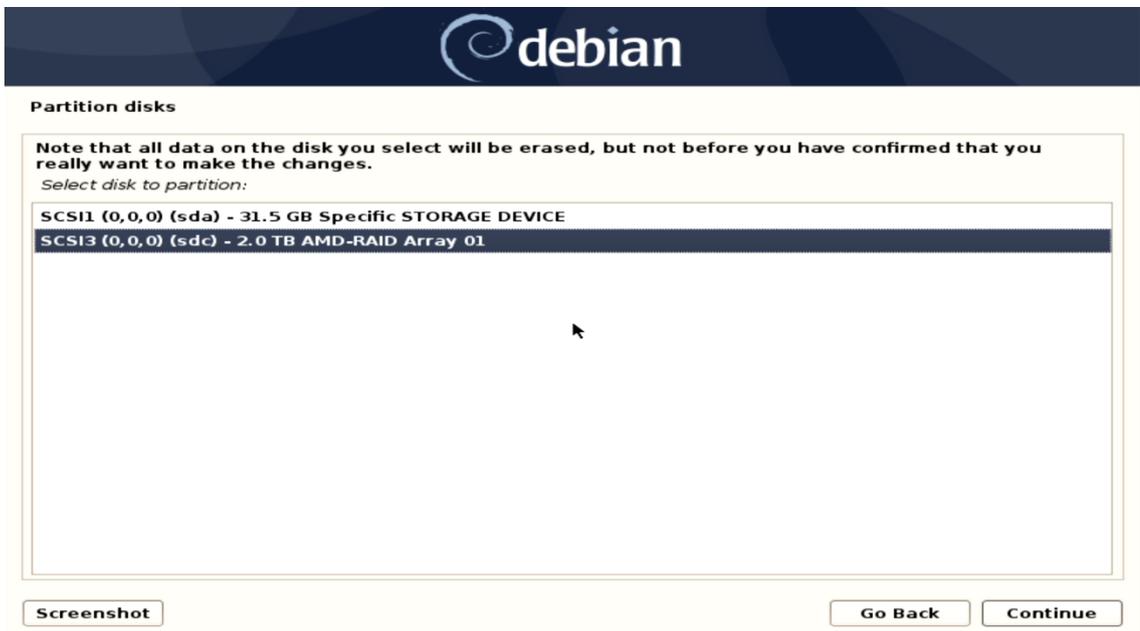
- Select "Yes" for force UEFI installation and select Conitnue.



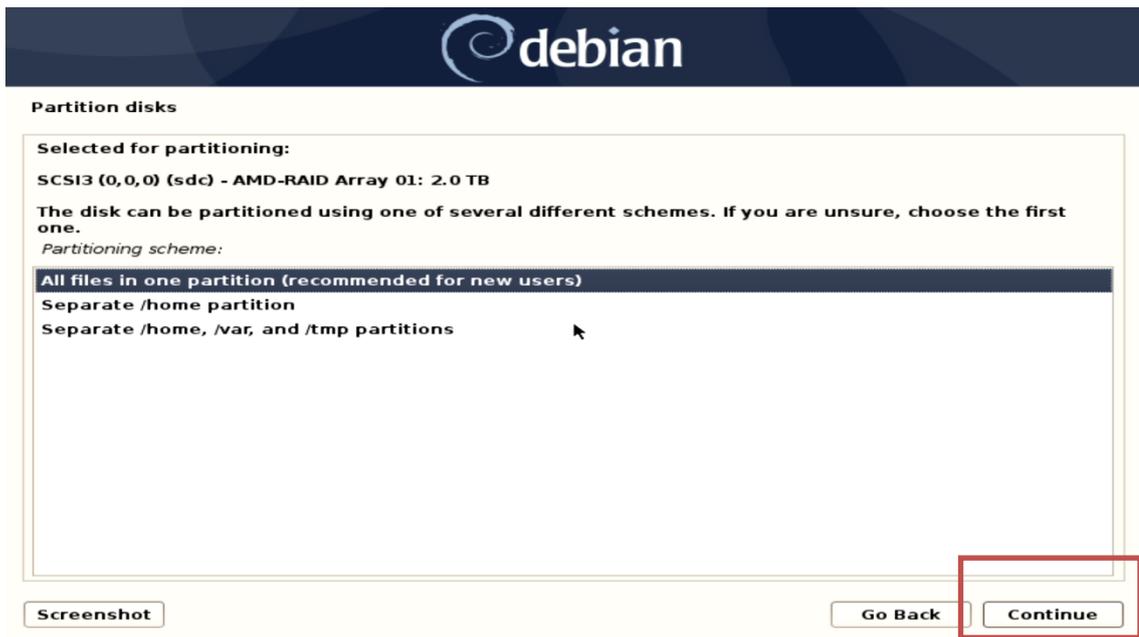
- Choose an appropriate option for partitioning the disk. If the user selects “Guided – use entire disk”, Debian will erase the content and use the entire disk for OS installation.



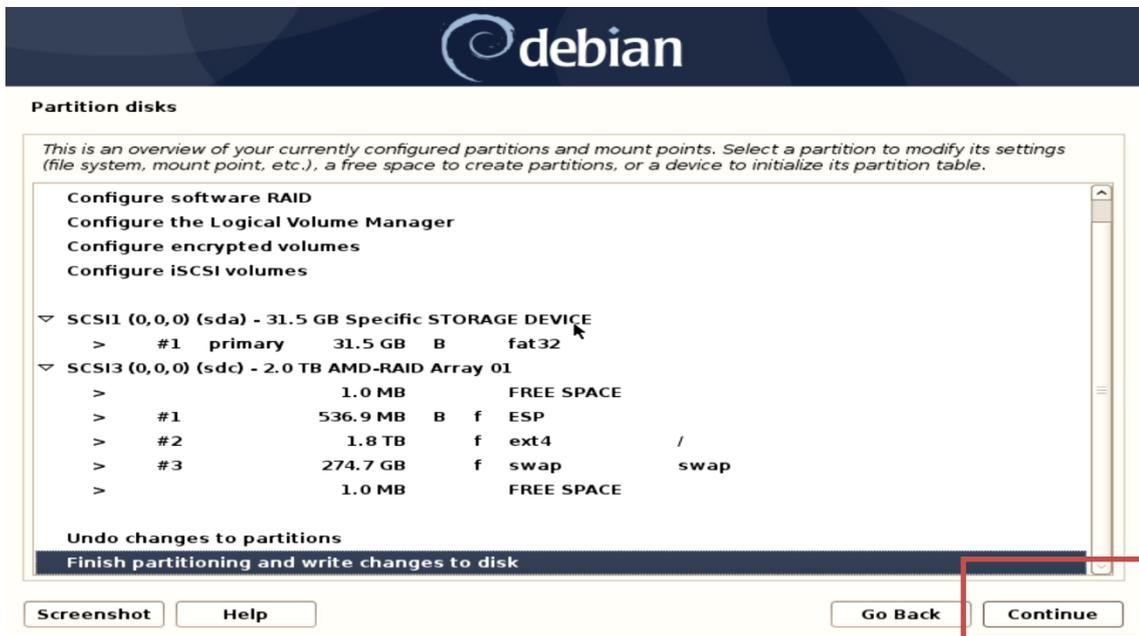
- Select disk to partition and press Continue.



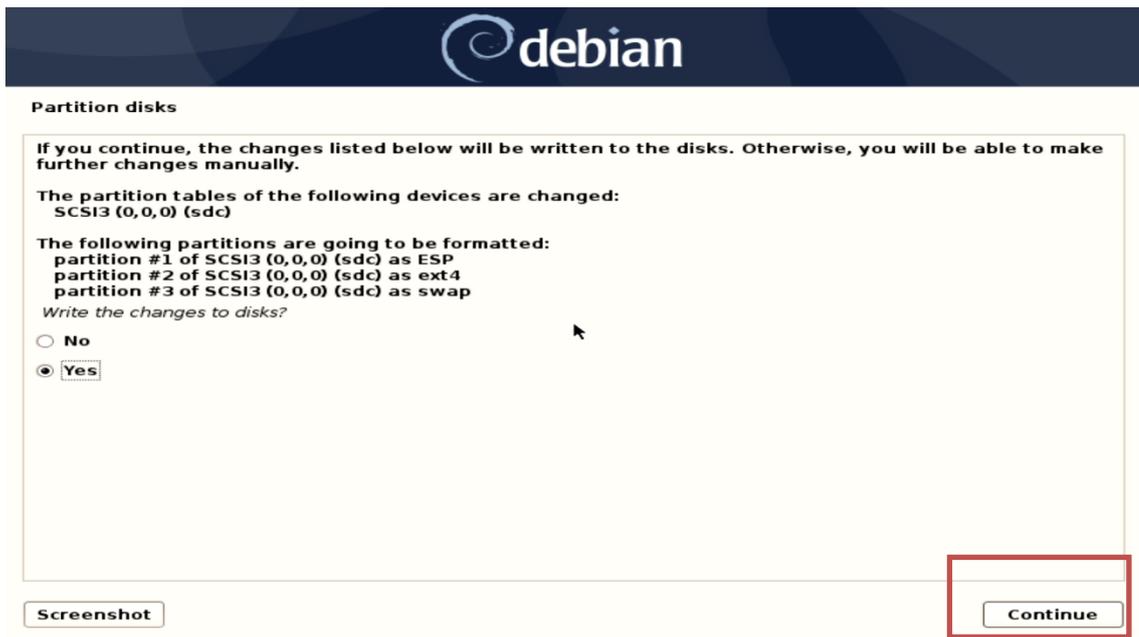
- Select “All files in one partition” and press Continue.



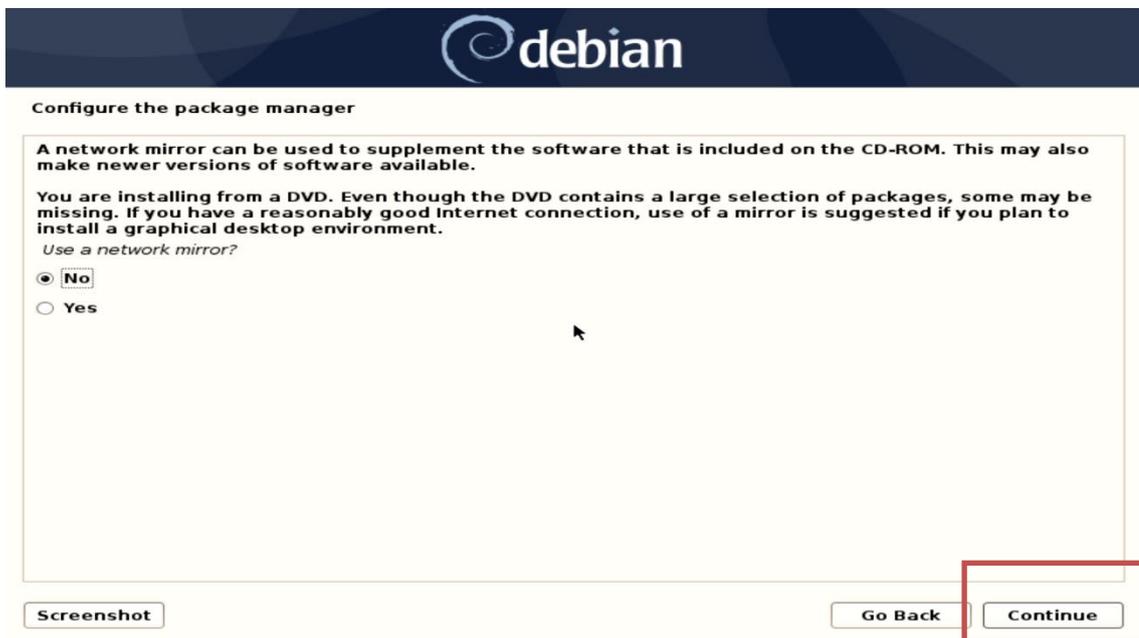
- Select “Finish partitioning and write changes to disk” option after confirming the partitions and press Continue.



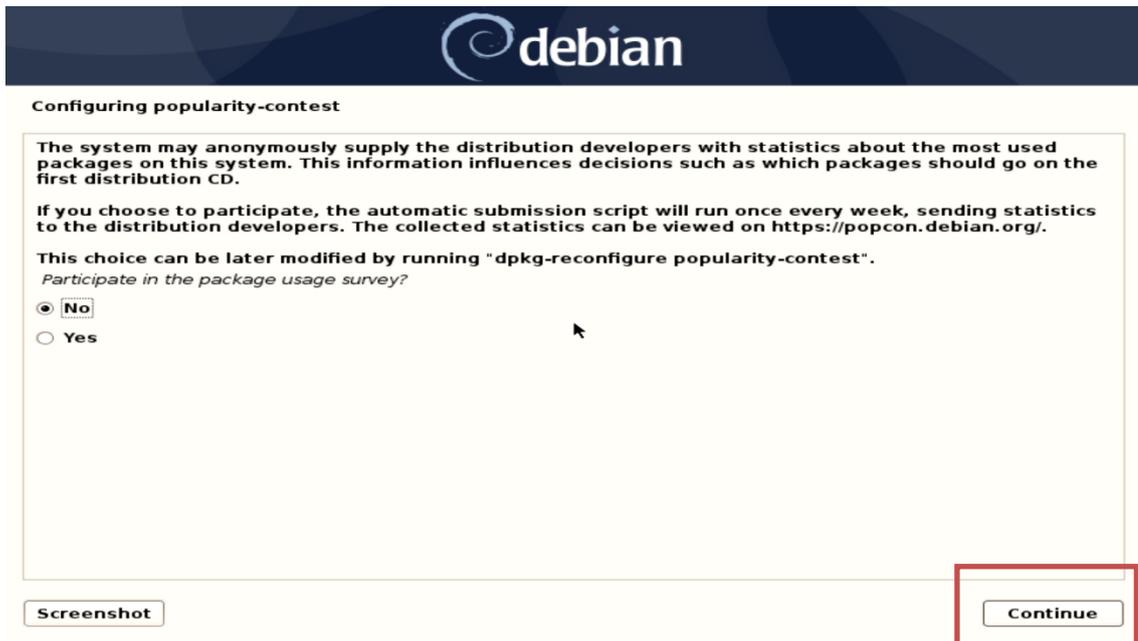
- Select “Yes” to write changes to the disk and press Continue.



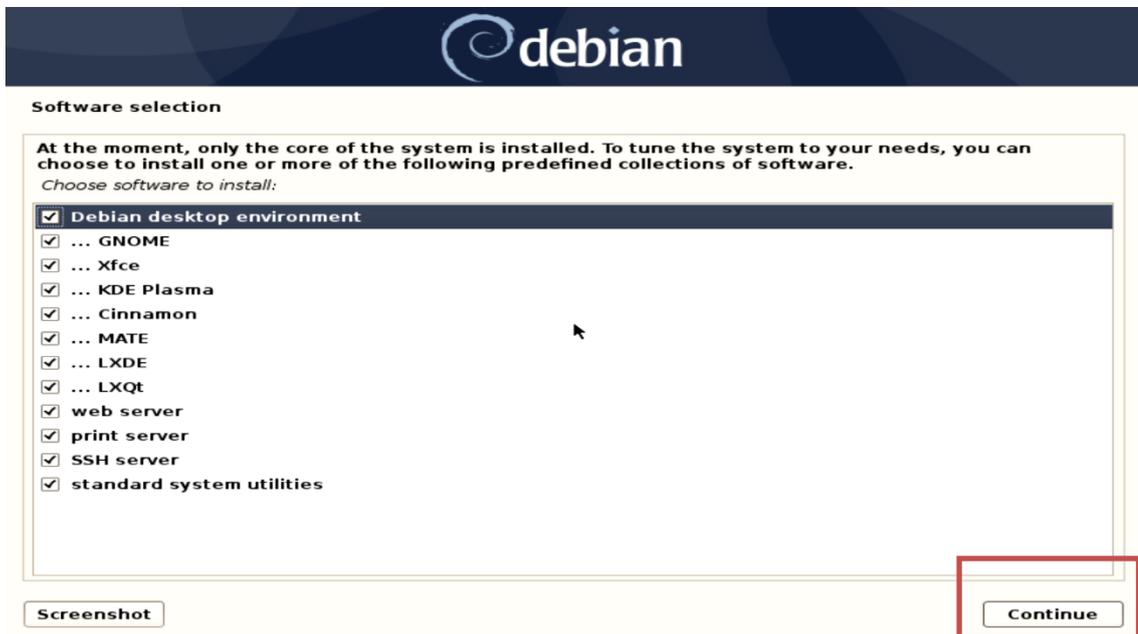
- Select “No” for network mirror and select Continue.



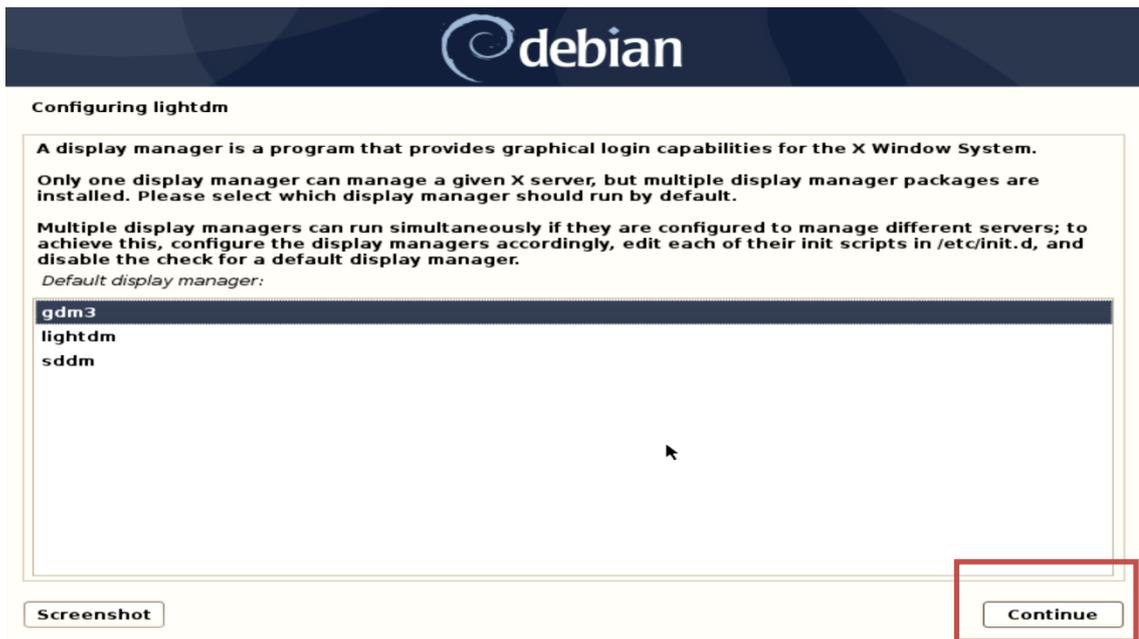
- Choose to participate or not in the package usage survey and press Continue.



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



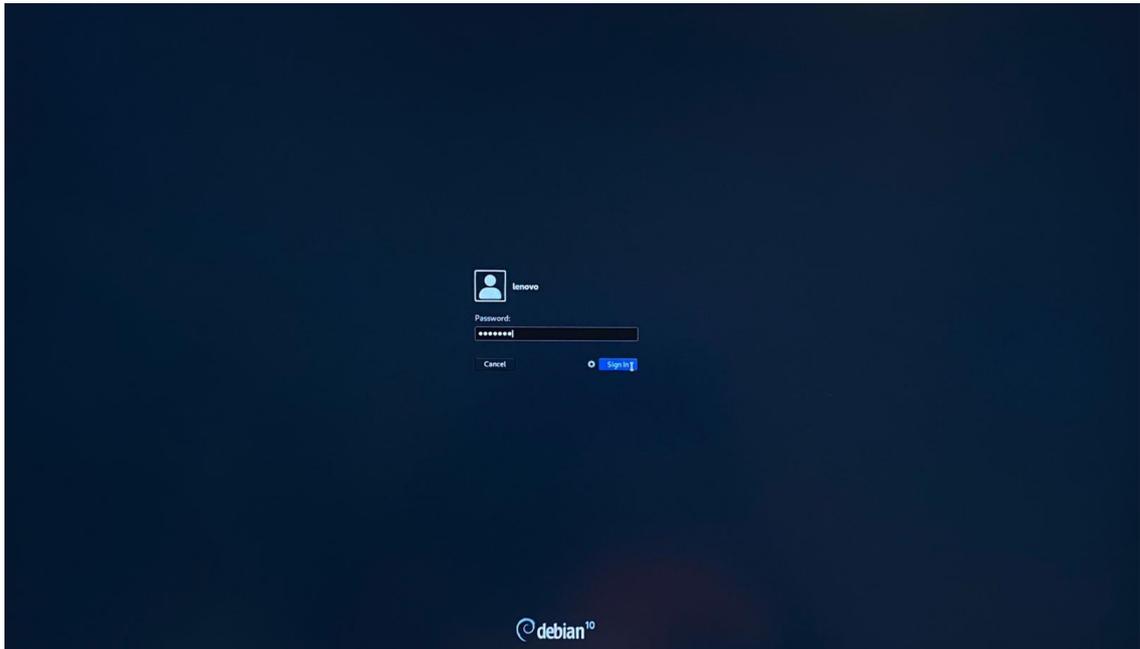
- Select the package manager of choice and press Continue.



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



- Enter user credentials created during the installation to login into the system.



- Welcome to the Debian 10.03 login screen. Select “Yes” to save history.



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## Section 3 – RAID Array Installation

Please refer to the following instructions and screenshots on how to install Debian 10.03 using RAID arrays on ThinkStation P620.

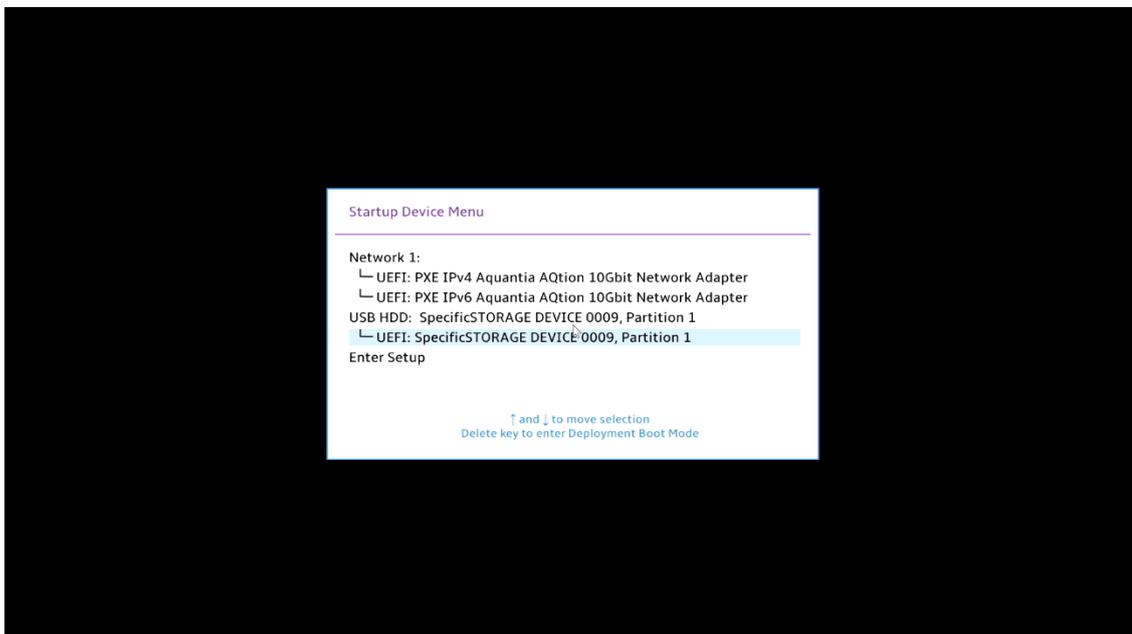
**Note:** This is assuming storage RAID is already set up and configured in BIOS.

- Download the Linux AMD storage RAID driver from the Lenovo support site and copy the contents onto a directory labelled 'dd' from the root of a USB flash drive.
- Insert the Debian 10.03 installation media either through USB or CD/DVD.
- Power on the system and press the function F12 key when the Lenovo splash screen appears.

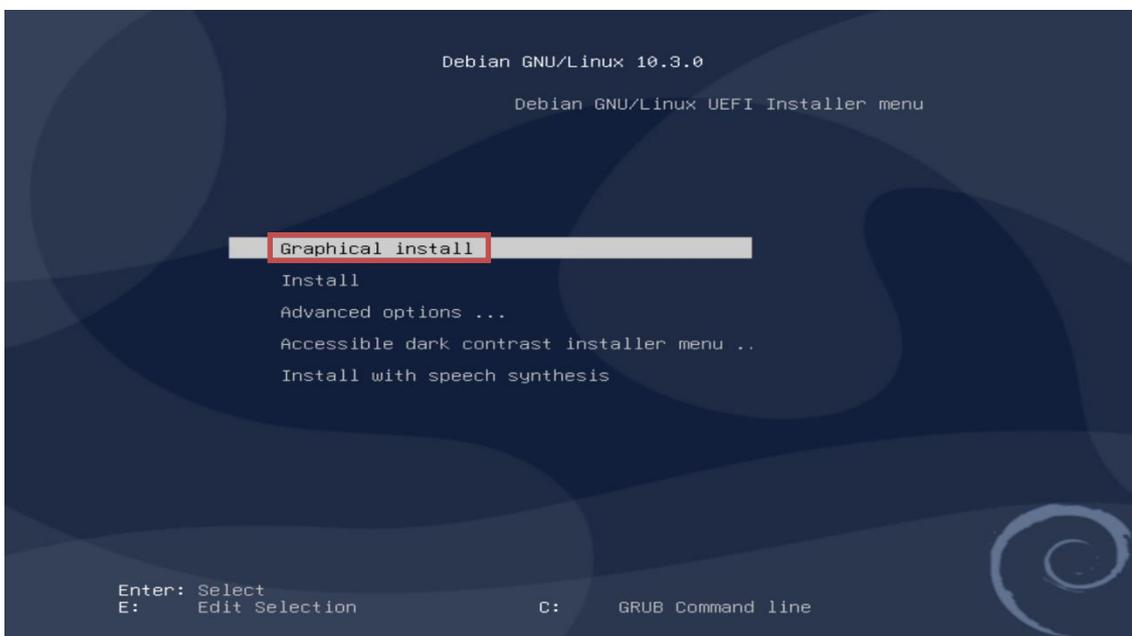
A black rectangular splash screen with the white "Lenovo" logo centered in the middle. The logo consists of the word "Lenovo" in a bold, sans-serif font, with a small trademark symbol (TM) to its right.

Lenovo™

- Select the Debian 10.03 bootable installation media from the Startup Device Menu.



- Select the “Graphical Install” option from the GRUB boot menu, and press ‘e’.



- Add the following lines to the end of the Linux kernel command parameter and press Ctrl-x.  
“*break=mount modprobe.blacklist=ahci, nvme nomodeset*”

```
Debian GNU/Linux 10.3.0
Debian GNU/Linux UEFI Installer menu
GNU GRUB version 2.02+dfsg1-20

setparams 'Graphical install'
set background_color=black
linux /install.amd/vmlinuz vga=788 --- quiet modprobe.blacklist=ahci\
,nvme nomodeset_
initrd /install.amd/gtk/initrd.gz

Minimum Emacs-like screen editing is supported. TAB lists
completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for a
command-line or ESC to discard edits and return to the GRUB menu.

Enter: Select
E:      Edit Selection
C:      GRUB Command line
```

- At the “BusyBox” shell, insert the USB flash drive with the Linux AMD RAID driver into a USB port of the system and mount it using the following command:  
“*mount -t vfat /dev/sdb1 /tmp*”

**Note:** /dev/sdb1 may need to be changed depending on the number of devices attached to the system.

```
Please press Enter to activate this console.

BusyBox v1.30.1 (Debian 1:1.30.1-4) built-in shell (ash)
Enter 'help' for a list of built-in commands.

# mount -t vfat /dev/sdb1 /tmp
#
```

- Copy the contents of the driver to the root directory using the following command:  
“`cp -ap /tmp/dd /`”

```
Please press Enter to activate this console.

BusyBox v1.30.1 (Debian 1:1.30.1-4) built-in shell (ash)
Enter 'help' for a list of built-in commands.

# mount -t ufat /dev/sdb1 /tmp
# cp -ap /tmp/dd /
```

- Install the driver by running the following command:  
“`/dd/pre_install`”

```
Please press Enter to activate this console.

BusyBox v1.30.1 (Debian 1:1.30.1-4) built-in shell (ash)
Enter 'help' for a list of built-in commands.

# mount -t ufat /dev/sdb1 /tmp
# cp -ap /tmp/dd /
# /dd/pre_install
```

- Unmount and remove the USB flash drive by running the following command:  
“umount /tmp”

```
Please press Enter to activate this console.

BusyBox v1.30.1 (Debian 1:1.30.1-4) built-in shell (ash)
Enter 'help' for a list of built-in commands.

~ # mount -t vfat /dev/sdb1 /tmp
~ # cp -ap /tmp/dd /
~ # /dd/pre_install
~ # umount /tmp
~ #
~ _
```

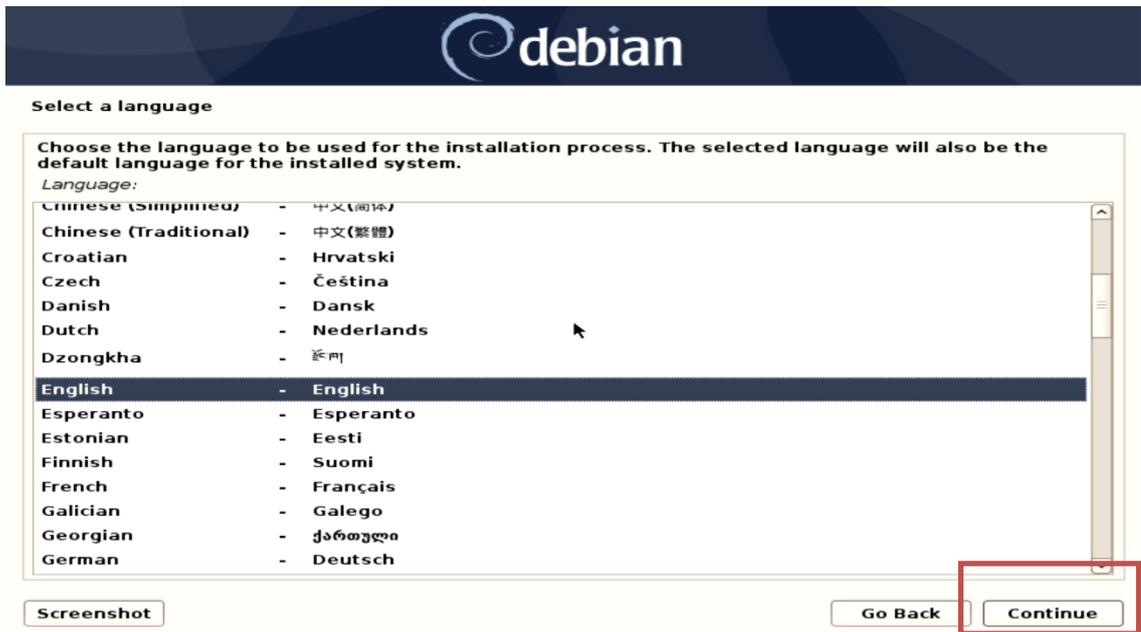
- Exit the “BusyBox” shell by running the following command:  
“exit”

```
Please press Enter to activate this console.

BusyBox v1.30.1 (Debian 1:1.30.1-4) built-in shell (ash)
Enter 'help' for a list of built-in commands.

~ # mount -t vfat /dev/sdb1 /tmp
~ # cp -ap /tmp/dd /
~ # /dd/pre_install
~ # umount /tmp
~ # exit
~ _
```

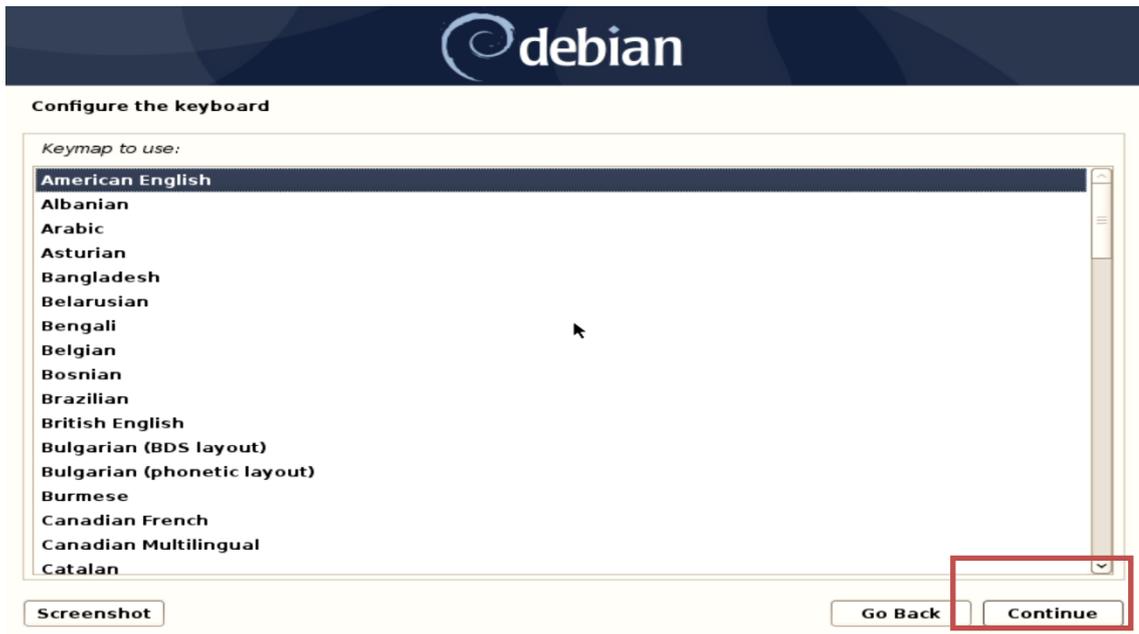
- The Debian 10.03 welcome screen should appear. Choose the appropriate language and select “Continue”.



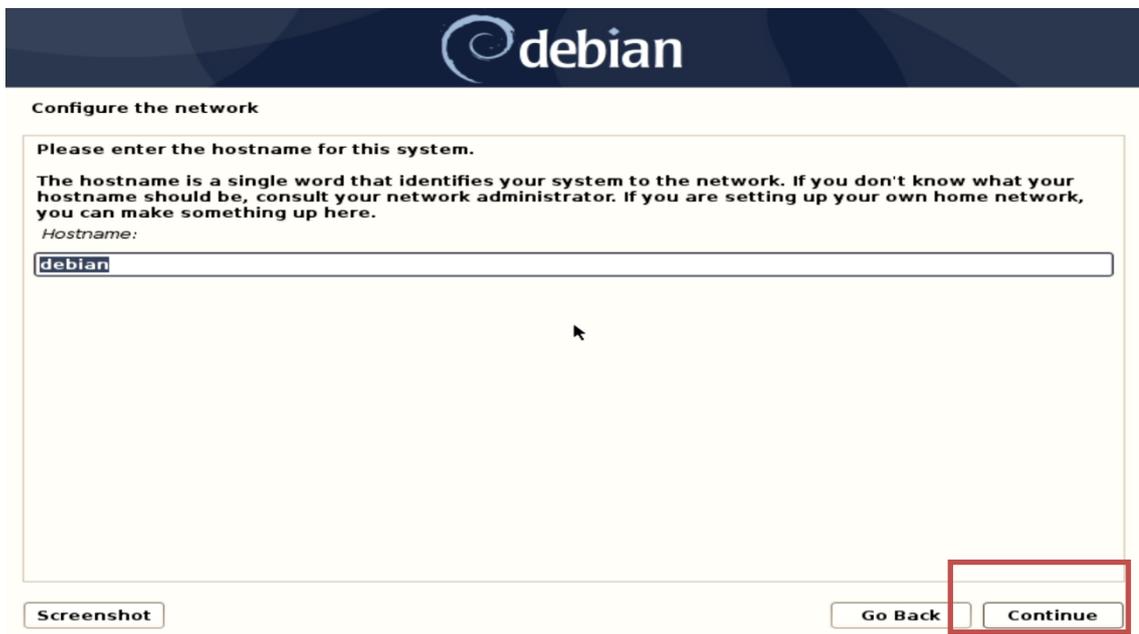
- Select your location and press “Continue”.



- Configure the keyboard selecting an appropriate language and press “Continue”.



- Configure the network by entering a hostname and press “Continue”.



- Continue configuring the network by entering a domain name and press “Continue”.

**Configure the network**

The domain name is the part of your Internet address to the right of your host name. It is often something that ends in .com, .net, .edu, or .org. If you are setting up a home network, you can make something up, but make sure you use the same domain name on all your computers.

Domain name:

Screenshot Go Back Continue

- Enter a root password and press “Continue”.

**Set up users and passwords**

You need to set a password for 'root', the system administrative account. A malicious or unqualified user with root access can have disastrous results, so you should take care to choose a root password that is not easy to guess. It should not be a word found in dictionaries, or a word that could be easily associated with you.

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.

The root user should not have an empty password. If you leave this empty, the root account will be disabled and the system's initial user account will be given the power to become root using the "sudo" command.

Note that you will not be able to see the password as you type it.

Root password:

Show Password in Clear

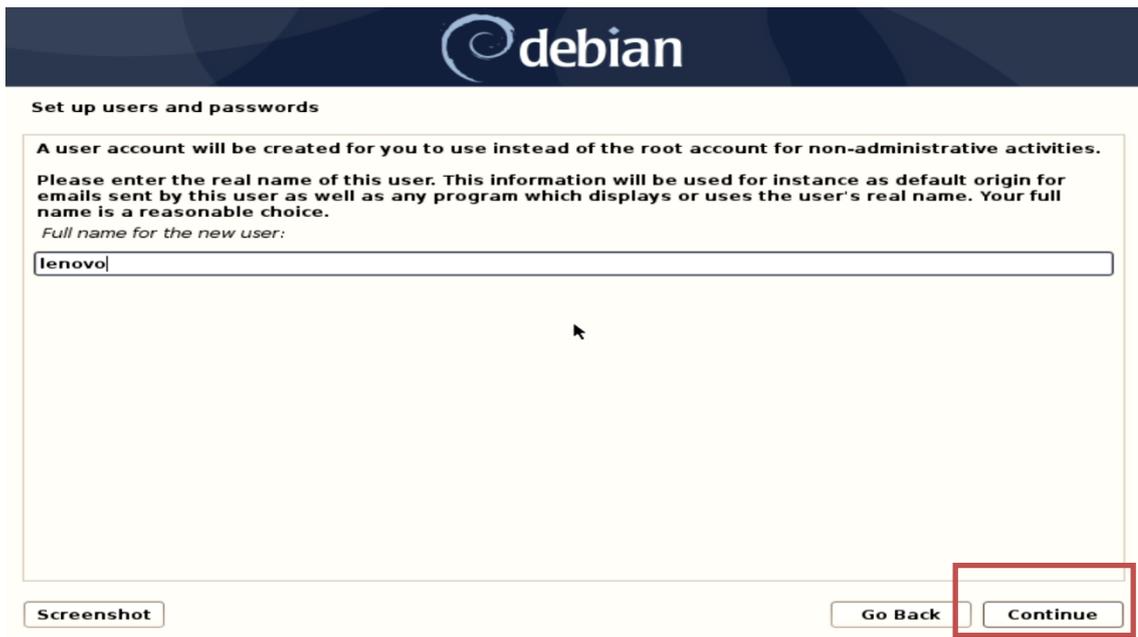
Please enter the same root password again to verify that you have typed it correctly.

Re-enter password to verify:

Show Password in Clear

Screenshot Go Back Continue

- Enter a username to set up a user and press “Continue”.



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**Set up users and passwords**

**A user account will be created for you to use instead of the root account for non-administrative activities.**

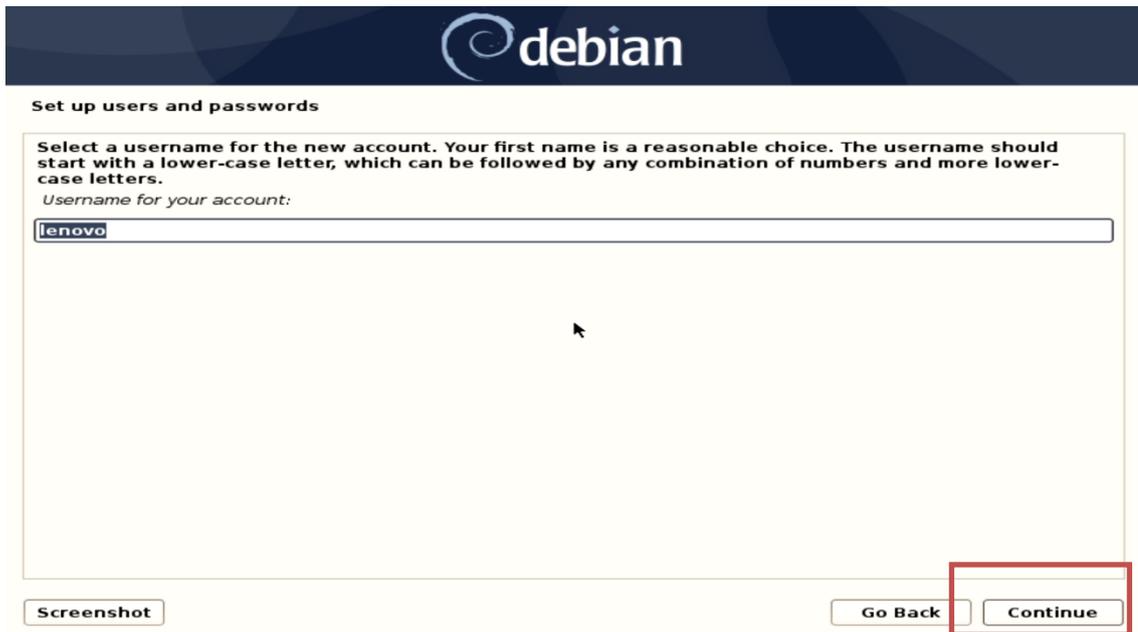
**Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.**

*Full name for the new user:*

Screenshot Go Back



- Select a username for the new account and press “Continue”.



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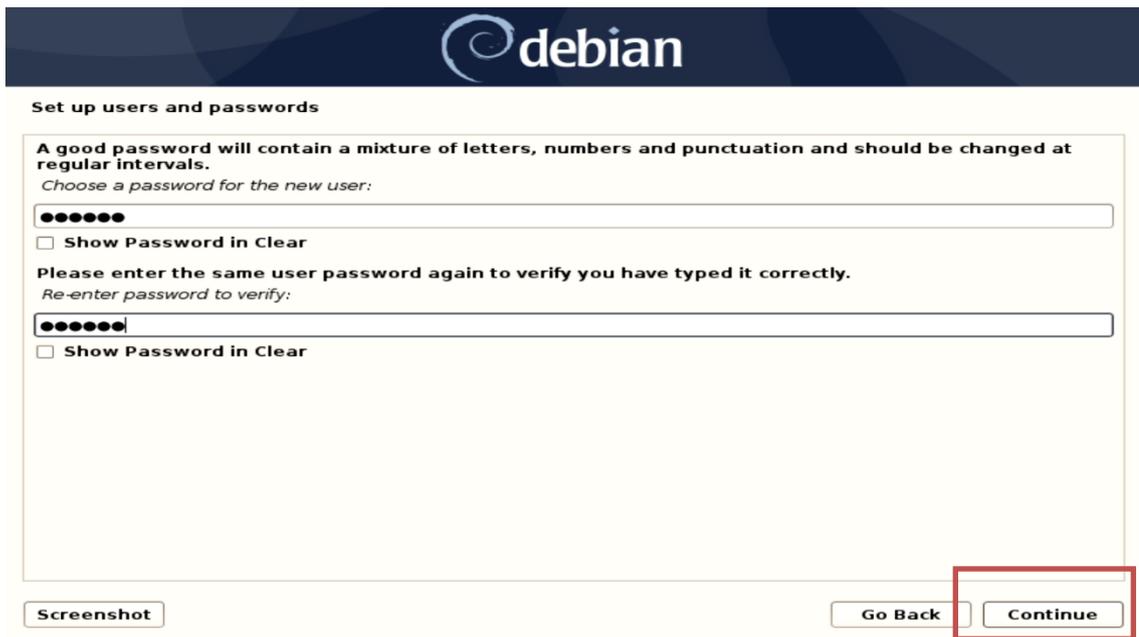
**Set up users and passwords**

**Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination of numbers and more lower-case letters.**

*Username for your account:*

Screenshot Go Back

- Enter password for the newly created username and press “Continue”.



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**Set up users and passwords**

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.  
Choose a password for the new user:

●●●●●●

Show Password in Clear

Please enter the same user password again to verify you have typed it correctly.  
Re-enter password to verify:

●●●●●●

Show Password in Clear

Screenshot Go Back Continue



- Configure the clock by selecting an appropriate time zone and press “Continue”



**debian**

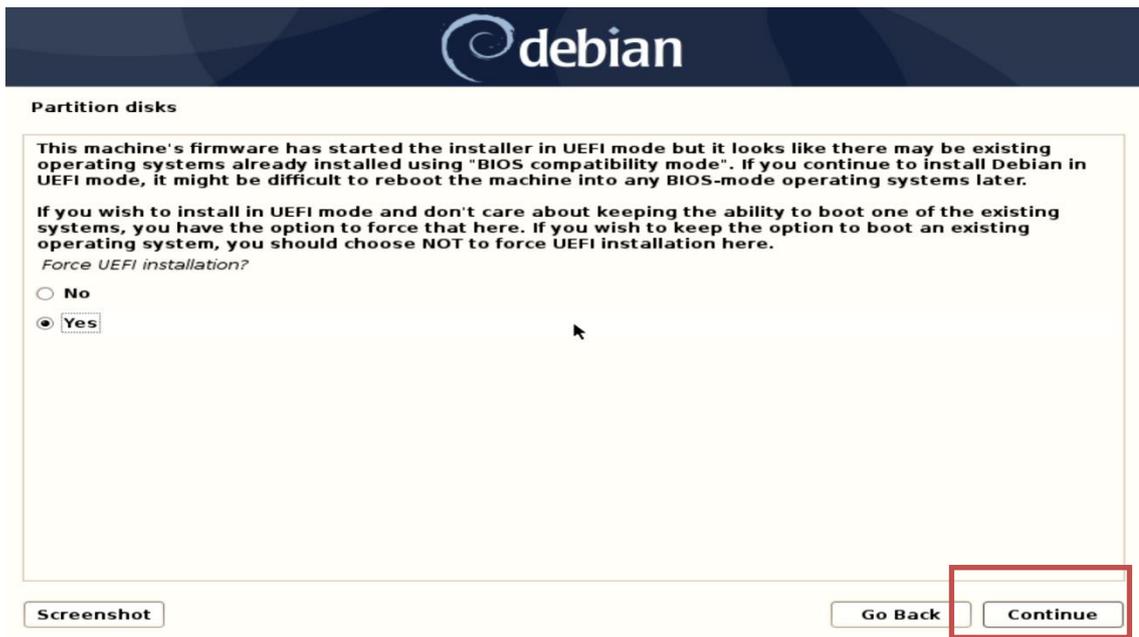
**Configure the clock**

If the desired time zone is not listed, then please go back to the step "Choose language" and select a country that uses the desired time zone (the country where you live or are located).  
Select your time zone:

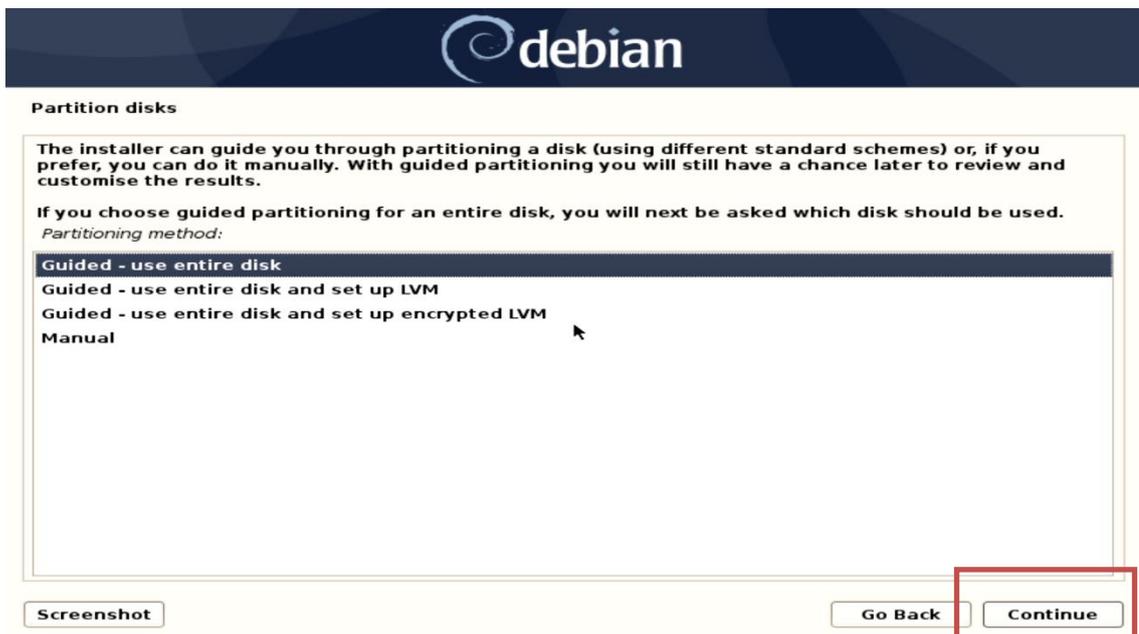
Eastern  
Central  
Mountain  
Pacific  
Alaska  
Hawaii  
Arizona  
East Indiana  
Samoa

Screenshot Go Back Continue

- Select “Yes” for forcing UEFI installation and press “Continue”.



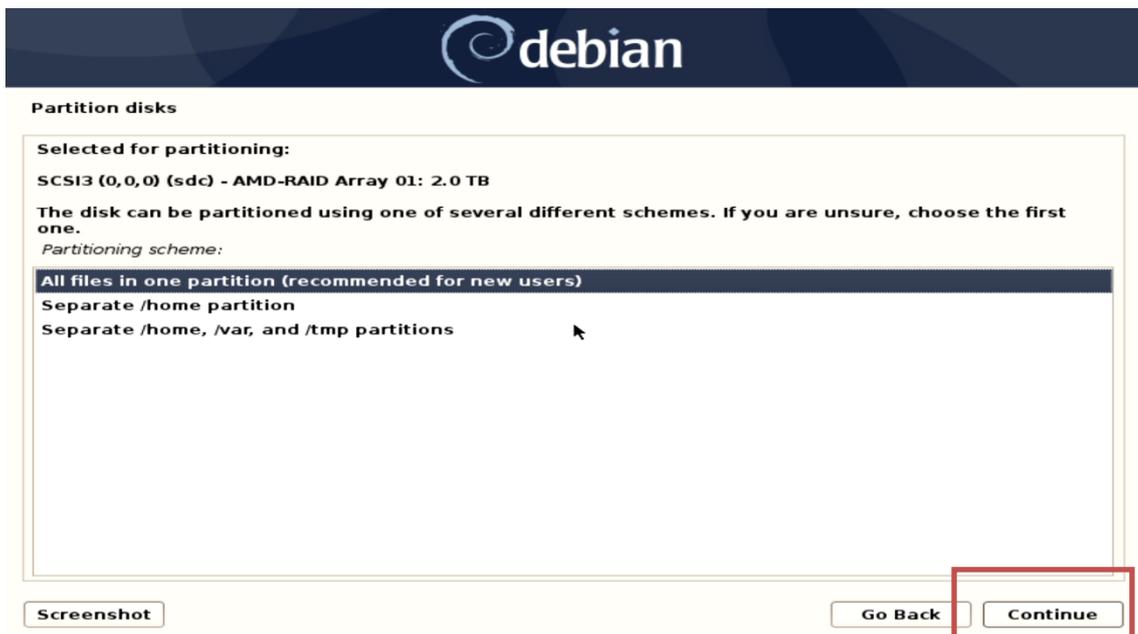
- Select a suitable partitioning method and press “Continue”.



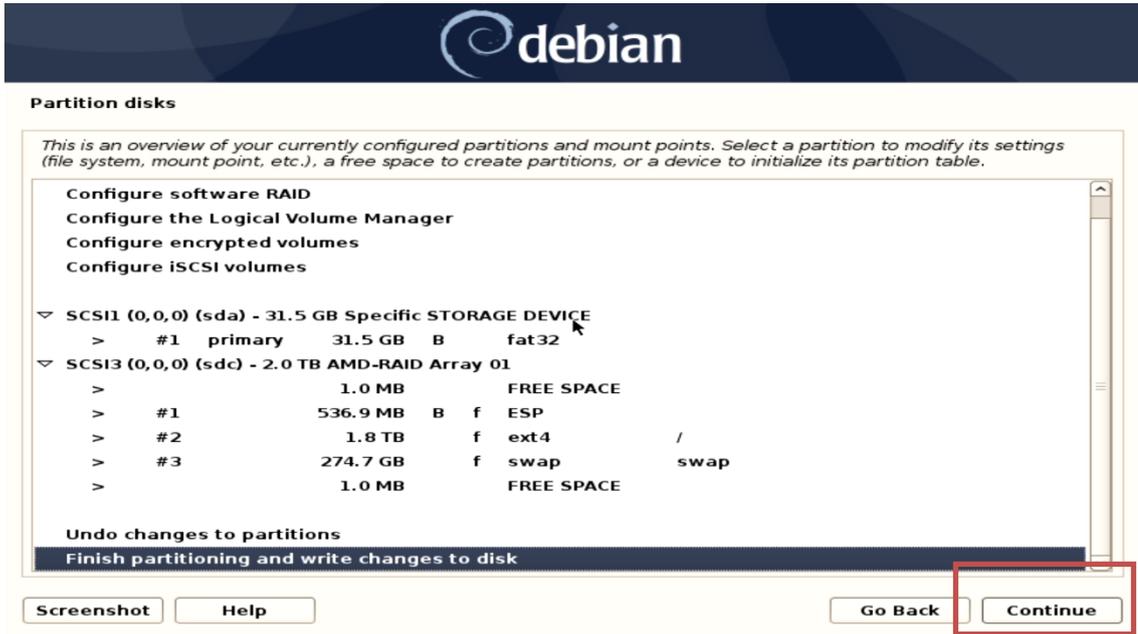
- Select the RAID array partition and press “Continue”.



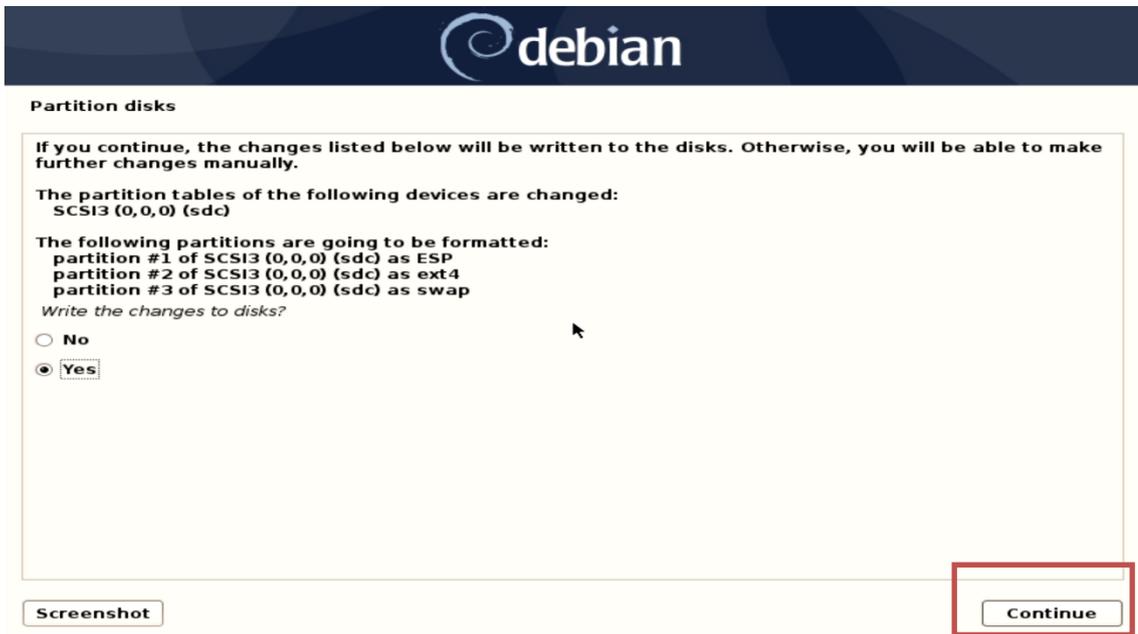
- Select a suitable partitioning scheme and press “Continue”.



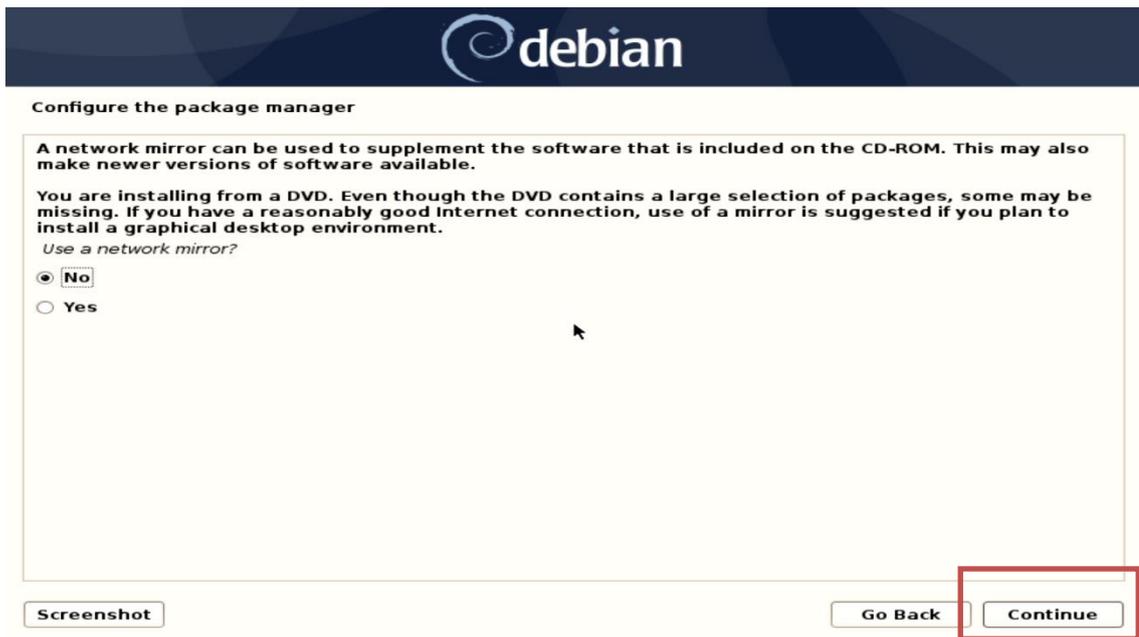
- Select “Finish partitioning and write changes to disk” and press “Continue”.



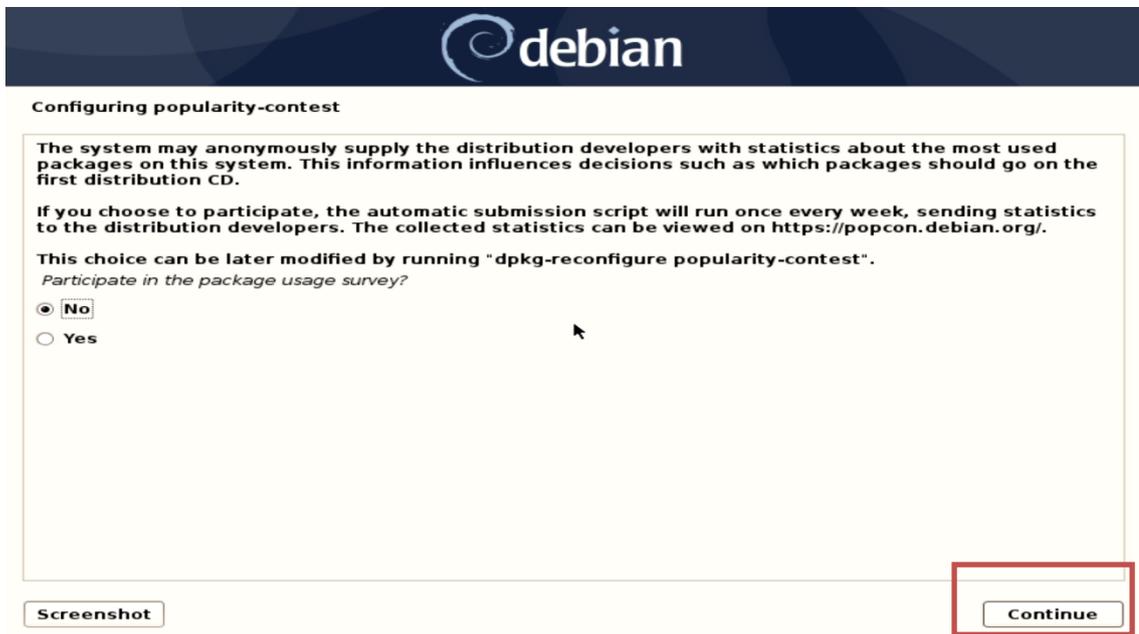
- Select “Yes” for writing the changes to disks and press “Continue”.



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



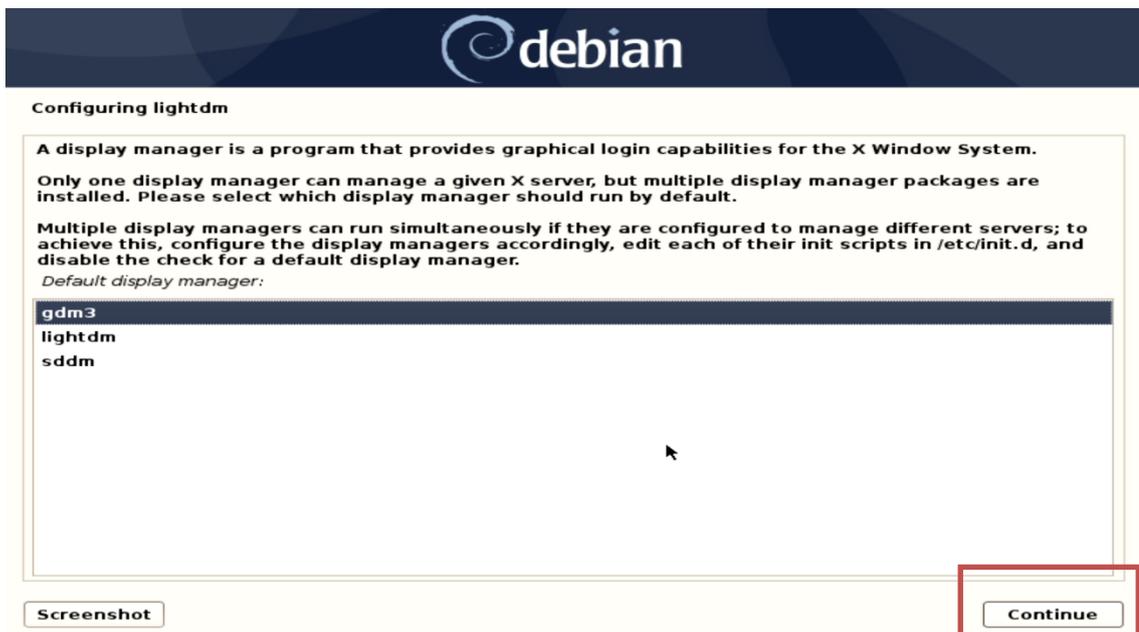
- Select “No/Yes” to participate in the package usage survey and press “Continue”.



- Choose software to install and press “Continue”.



- Select a display manager for Debian 10.03 and press “Continue”.



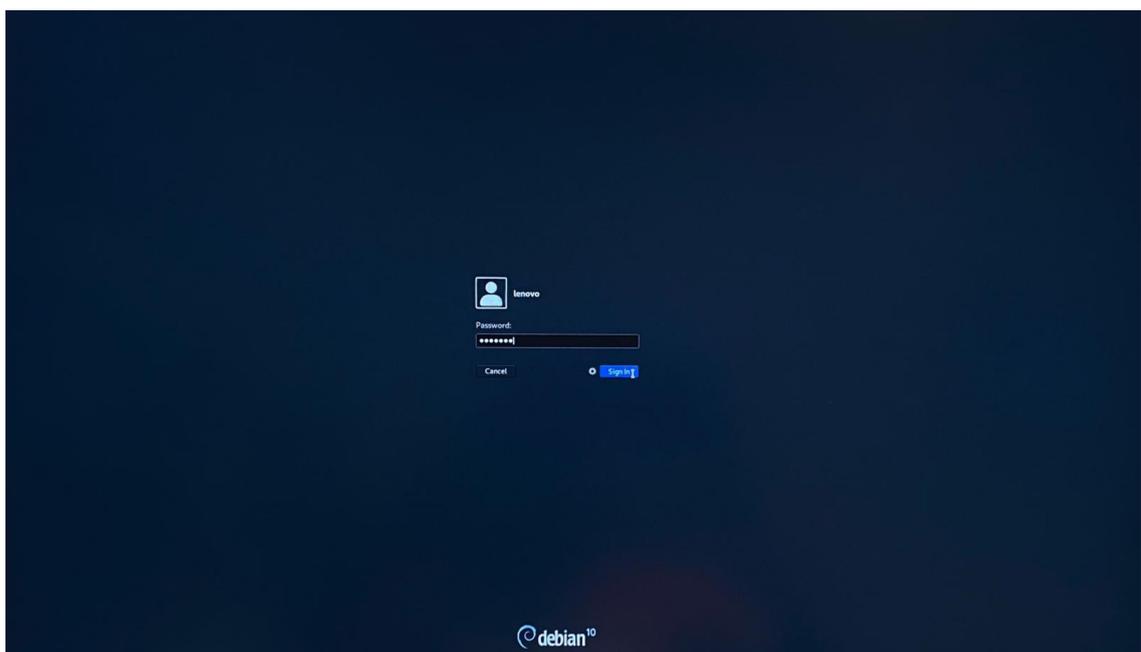
- Remove the installation media and select “Continue” to restart the system.



- Select “\*Debian GNU/Linux” and press enter.



- Enter user credentials to log in and select “Sign In”.



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## Section 4 – RAIDXpert2 Management Application

**Optional:** AMD has a RAIDXpert2 Management Application for AMD RAID arrays. Please refer to the following instructions and screenshots for installing the AMD management utility on ThinkStation P620.

- Download the Linux AMD RAIDXpert2 Management Application from the Lenovo support site directly onto the Debian 10.03 desktop.
- Open a terminal window and browse to the location where the driver package is stored.

```
root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_RHEL_Ubuntu_Linux_930_00180# ls
9.3.0-00180_linux RAIDxpert2.tgz rcadm
RAIDXpert2_Linux_installguide.docx ReadMe.rtf
root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_RHEL_Ubuntu_Linux_930_00180#
```

- Extract the contents of the \*.tgz file using the following command:  
“tar xzvf 9.3.0-00180\_linux RAIDxpert2.tgz -C /opt”

```
root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_RHEL_Ubuntu_Linux_930_00180# ls
9.3.0-00180_linux RAIDxpert2.tgz rcadm
RAIDXpert2_Linux_installguide.docx ReadMe.rtf
root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_RHEL_Ubuntu_Linux_930_00180# tar xzvf 9.3.0-00180_linux RAIDxpert2.tgz -C /opt
```

- Change directory path to where the package was extracted to from above:  
“cd /opt/ RAIDxpert2/bin”

```
root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_RHEL_Ubuntu_Linux_930_00180# cd /opt/RAIDXpert2/bin/
root@lenovo-ThinkStation-P620:/opt/RAIDXpert2/bin# ls
RAIDXpert2 rcadm
root@lenovo-ThinkStation-P620:/opt/RAIDXpert2/bin#
```

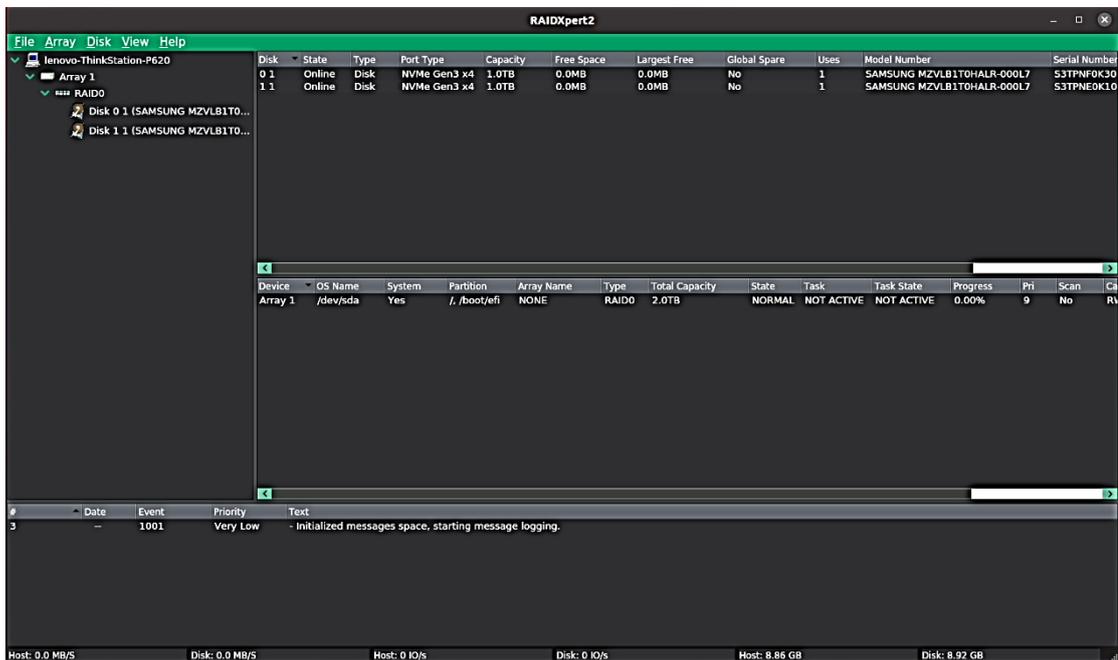
- To launch the AMD RAIDXpert2 Management Application, run the following command:  
“./RAIDXpert2 &”

```

root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_RHEL_Ubuntu_Linux_930_00180# cd /opt/raidxpert2//bin/
root@lenovo-ThinkStation-P620:/opt/raidxpert2/bin# ls
RAIDXpert2  rcadm
root@lenovo-ThinkStation-P620:/opt/raidxpert2/bin# ./RAIDXpert2 &

```

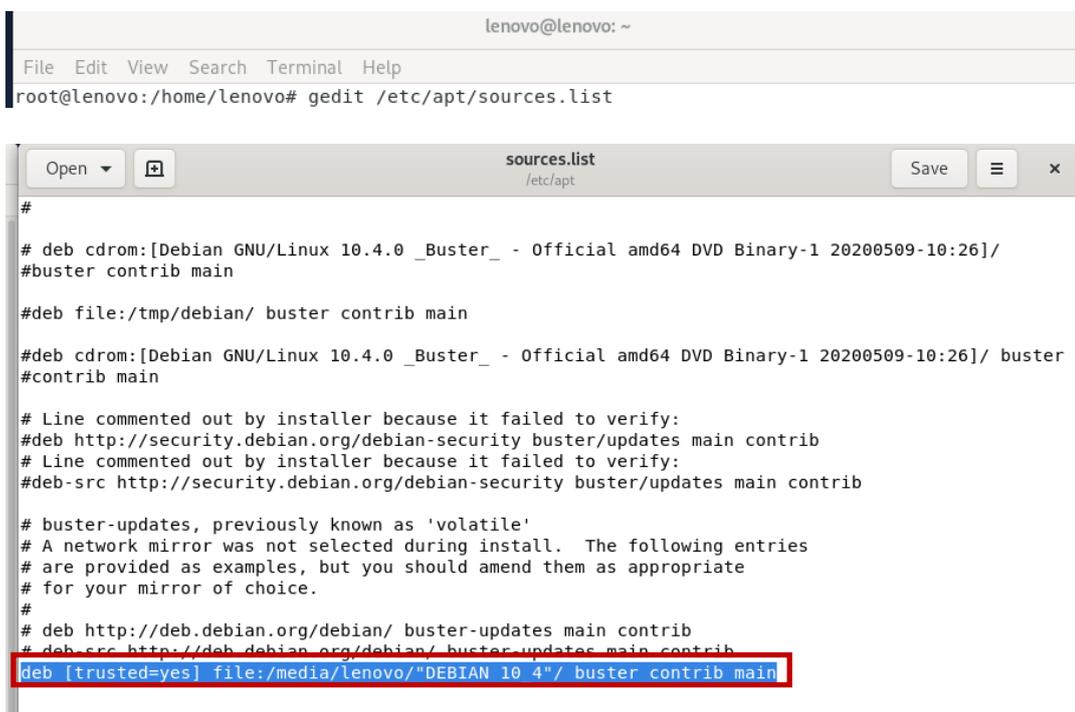
- RAIDXpert2 Management Application.



## Section 5 – Installing the Aquantia LAN Driver

The onboard Aquantia LAN driver is not native to Debian 10.03 on Lenovo P620 system. In order to make your LAN working, follow the steps below.

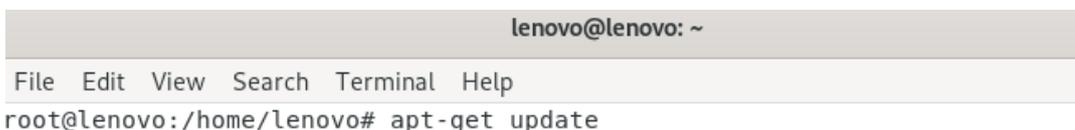
- Mount the Debian media key to the system and comment all lines in the source.list file and add the highlighted comment using an editor of your choice and save the changes.



```
lenovo@lenovo: ~  
File Edit View Search Terminal Help  
root@lenovo:/home/lenovo# gedit /etc/apt/sources.list
```

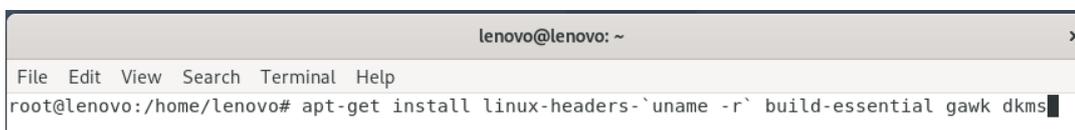
```
sources.list  
/etc/apt  
#  
# deb cdrom:[Debian GNU/Linux 10.4.0 _Buster_ - Official amd64 DVD Binary-1 20200509-10:26]/  
#buster contrib main  
  
#deb file:/tmp/debian/ buster contrib main  
  
#deb cdrom:[Debian GNU/Linux 10.4.0 _Buster_ - Official amd64 DVD Binary-1 20200509-10:26]/ buster  
#contrib main  
  
# Line commented out by installer because it failed to verify:  
#deb http://security.debian.org/debian-security buster/updates main contrib  
# Line commented out by installer because it failed to verify:  
#deb-src http://security.debian.org/debian-security buster/updates main contrib  
  
# buster-updates, previously known as 'volatile'  
# A network mirror was not selected during install. The following entries  
# are provided as examples, but you should amend them as appropriate  
# for your mirror of choice.  
#  
# deb http://deb.debian.org/debian/ buster-updates main contrib  
# deb-src http://deb.debian.org/debian/ buster-updates main contrib  
deb [trusted=yes] file:/media/lenovo/"DEBIAN 10 4"/ buster contrib main
```

- Update the package list with the “apt-get update” command.



```
lenovo@lenovo: ~  
File Edit View Search Terminal Help  
root@lenovo:/home/lenovo# apt-get update
```

- Install the necessary packages by using the following command.



```
lenovo@lenovo: ~  
File Edit View Search Terminal Help  
root@lenovo:/home/lenovo# apt-get install linux-headers-`uname -r` build-essential gawk dkms
```

- Navigate to the directory where the Aquantia LAN driver is stored and unzip it.

```

lenovo@lenovo: ~
File Edit View Search Terminal Help
root@lenovo:/home/lenovo/Downloads# ls
L6ETN02US14WSUSI.zip
root@lenovo:/home/lenovo/Downloads# unzip L6ETN02US14WSUSI.zip

```

- Untar the “atlantic.tar.gz” file by running the following command.

```

root@lenovo:/home/lenovo/Downloads# tar xzf atlantic.tar.gz
root@lenovo:/home/lenovo/Downloads# ls
atlantic.tar.gz L6ETN02US14WSUSI.zip Linux README.txt version.txt
root@lenovo:/home/lenovo/Downloads# █

```

- Compile the modules inside the “Linux” folder using “make”.

```

lenovo@lenovo: ~
File Edit View Search Terminal Help
root@lenovo:/home/lenovo/Downloads# cd Linux/
root@lenovo:/home/lenovo/Downloads/Linux# ls
aq_cfg.h      aq_filters.c  aq_main.h     aq_ptp.h      aq_tsn.c      hw_atl2
aq_common.h   aq_filters.h  aq_nic.c      aq_ring.c     aq_tsn.h      Kconfig
aq_compat.c   aq_hw.h       aq_nic.h      aq_ring.h     aq_utils.h    macsec
aq_compat.h   aq_hw_utils.c aq_pci_func.c aq_rss.h      aq_vec.c      Makefile
aq_drvinfo.c  aq_hw_utils.h aq_pci_func.h aq_sysfs.c    aq_vec.h      README.txt
aq_drvinfo.h  aq_macsec.c  aq_phy.c      aq_sysfs.h    build-deb.sh  release_notes.txt
aq_ethtool.c  aq_macsec.h  aq_phy.h      aq_trace.c    dkms.sh       rpm-src.spec
aq_ethtool.h  aq_main.c     aq_ptp.c      aq_trace.h    hw_atl        ver.h
root@lenovo:/home/lenovo/Downloads/Linux# make █

```

- Build and install the driver using dkms.sh script. In case of an error, run the command “export PATH=\$PATH:/usr/sbin” and try running the script again.

```

lenovo@lenovo: ~
File Edit View Search Terminal Help
root@lenovo:/home/lenovo/Downloads/Linux# export PATH=$PATH:/usr/sbin █

root@lenovo:/home/lenovo/Downloads/Linux# ./dkms.sh install █

```

- Load the dependencies and the module using the following list of commands-  
 modprobe ptp  
 modprobe crc\_itu\_t  
 insmod atlantic.ko

```

lenovo@lenovo: ~
File Edit View Search Terminal Help
root@lenovo:/home/lenovo/Downloads/Linux# modprobe ptp
root@lenovo:/home/lenovo/Downloads/Linux# modprobe crc_itu_t
root@lenovo:/home/lenovo/Downloads/Linux# insmod atlantic.ko
insmod: ERROR: could not insert module atlantic.ko: File exists
root@lenovo:/home/lenovo/Downloads/Linux# █

```

- Unload and install the driver in the system using “rmmod atlantic” and “make && make install” commands. Type “y” for yes for attempting initramfs update.

```

lenovo@lenovo: ~
File Edit View Search Terminal Help
root@lenovo:/home/lenovo/Downloads/Linux# rmmod atlantic
root@lenovo:/home/lenovo/Downloads/Linux# make && make install
make -j4 -C /lib/modules/4.19.0-9-amd64/build M="/home/lenovo/Downloads/Linux" modules
make[1]: Entering directory '/usr/src/linux-headers-4.19.0-9-amd64'
Building modules, stage 2.
MODPOST 1 modules
make[1]: Leaving directory '/usr/src/linux-headers-4.19.0-9-amd64'
make[1]: Entering directory '/home/lenovo/Downloads/Linux'
atlantic.ko is in initramfs.
CAUTION! Updating initramfs is potentially dangerous.
Attempt initramfs update? [yN] y

```

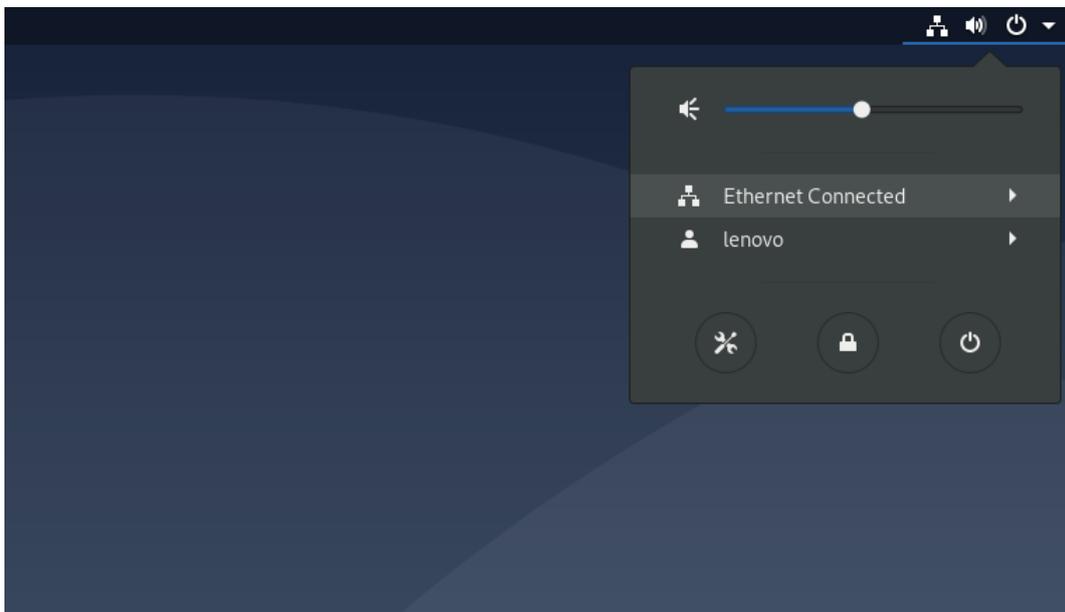
- Verify if the LAN driver is present in /lib/modules/`uname -r` atlantic.ko

```

lenovo@lenovo: ~
File Edit View Search Terminal Help
root@lenovo:/home/lenovo/Downloads/Linux# find /lib/modules/4.19.0-9-amd64/ -name atlantic.ko
/lib/modules/4.19.0-9-amd64/kernel/drivers/net/ethernet/aquantia/atlantic/atlantic.ko
/lib/modules/4.19.0-9-amd64/updates/dkms/atlantic.ko
/lib/modules/4.19.0-9-amd64/updates/drivers/net/ethernet/aquantia/atlantic/atlantic.ko
root@lenovo:/home/lenovo/Downloads/Linux#

```

- Reboot the system or run the command “modprobe atlantic” and verify if the LAN is working.



- Run the command “ip addr” to check the IP from the terminal window.

```

lenovo@lenovo: ~
File Edit View Search Terminal Help
root@lenovo:/home/lenovo# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
4: enp34s0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc mq state DOWN group default qlen
1000
   link/ether 00:17:b6:00:a7:55 brd ff:ff:ff:ff:ff:ff
5: enp1s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
   link/ether 00:17:b6:00:a7:55 brd ff:ff:ff:ff:ff:ff
   inet 192.168.1.48/24 brd 192.168.1.255 scope global dynamic noprefixroute enp1s0
       valid_lft 259170sec preferred_lft 259170sec
   inet6 2606:a000:111a:c656::913/128 scope global dynamic noprefixroute
       valid_lft 604769sec preferred_lft 604769sec
   inet6 2606:a000:111a:c656:9003:b3:81ba:cad1/64 scope global temporary dynamic
       valid_lft 604769sec preferred_lft 85963sec
   inet6 2606:a000:111a:c656:217:b6ff:fe00:0/64 scope global dynamic mngtmpaddr noprefixroute
       valid_lft 604791sec preferred_lft 604791sec
   inet6 fe80::217:b6ff:fe00:0/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
root@lenovo:/home/lenovo#

```

## Section 6 – 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.

- Download the latest Nvidia graphics driver for the appropriate Nvidia GPU from [here](#).
- 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`
  - Create `blacklist.conf` file under the `modprobe.d` directory:  
`gedit /etc/modprobe.d/blacklist.conf`
  - Blacklist nouveau driver by writing: `blacklist nouveau`

```
lenovo@lenovo: ~  
File Edit View Search Terminal Help  
lenovo@lenovo:~$ su  
Password:  
root@lenovo:/home/lenovo# gedit /etc/modprobe.d/blacklist.conf
```

```
lenovo@debian: ~  
File Edit View Search Terminal Help  
No protocol specified  
(gedit:3104): dbind-WARNING **: 18:08:35.053: Could not open X display  
(gedit:3104): dconf-WARNING **: 18:08:35.080: failed to commit changes to dconf:  
The connection is closed  
(gedit:3104): dconf-WARNING **: 18:08:35.082: failed to commit changes to dconf:  
The connection is closed  
Error creating proxy: The connection is closed (g-io-error-quark, 18)  
Error creating proxy: The connection is closed (g-io-error-quark, 18)  
Error creating proxy: The connection is closed (g-io-error-quark, 18)  
Error creating proxy: The connection is closed (g-io-error-quark, 18)  
(gedit:3104): dconf-WARNING **: 18:08:35.202: failed to commit changes to dconf:  
The connection is closed  
(gedit:3104): dconf-WARNING **: 18:08:35.202: failed to commit changes to dconf:  
The connection is closed  
(gedit:3104): dconf-WARNING **: 18:08:35.202: failed to commit changes to dconf:  
The connection is closed  
blacklist nouveau  
Plain Text Tab Width: 8 Ln1, Col 18 INS
```

- Run the command `update-initramfs -u`

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

- Reboot the system.
- Open a terminal window and run the command `init 3`.
- Once into `init 3`, login using the user credentials.

```
Debian GNU/Linux 10 lenovo tty2
lenovo login: lenovo
Password:
Linux lenovo 4.19.0-9-amd64 #1 SMP Debian 4.19.118-2+deb10u1 (2020-06-07) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
lenovo@lenovo:~$ su
Password:
```

- Install `build-essential` and `linux-headers*` packages.

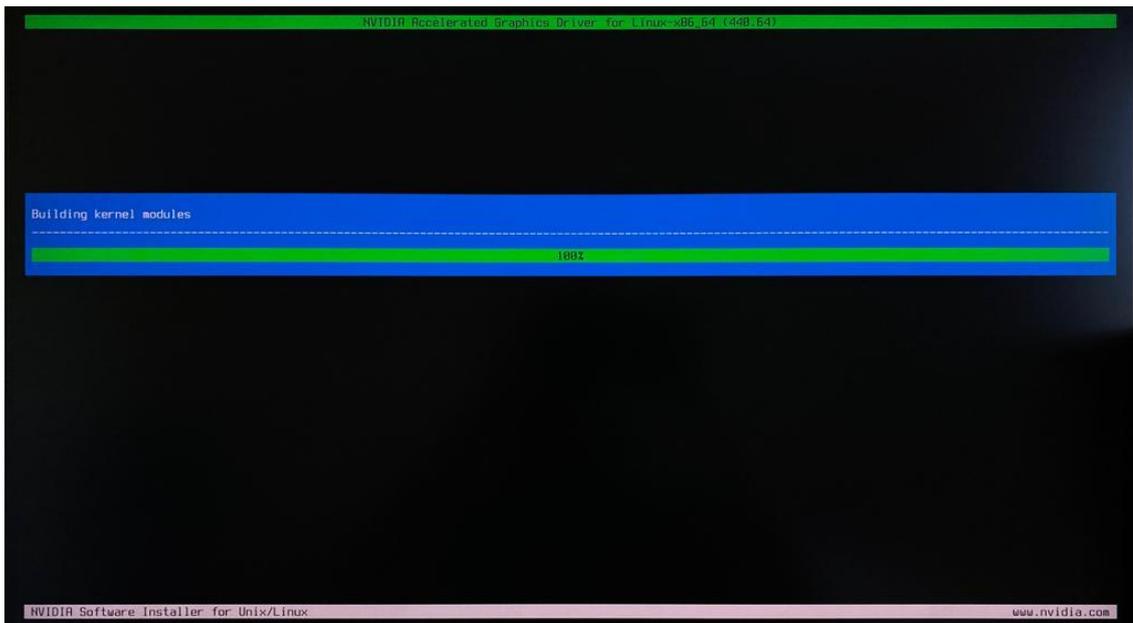
```
root@lenovo:/home/lenovo/Documents# apt-get install 'build-essential'
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version (12.6).
build-essential set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@lenovo:/home/lenovo/Documents# apt-get install linux-headers*_
```

- Browse into the directory where the Nvidia driver is stored and make the Nvidia installer an executable by the command- `chmod +x NVIDIA-Linux-x86-64-*`

Once done, run the Nvidia driver by- `./NVIDIA-Linux-x86_64-430.50.run`

```
root@lenovo:/home/lenovo# cd Documents/
root@lenovo:/home/lenovo/Documents# ls
NVIDIA-Linux-x86_64-440.100.run
root@lenovo:/home/lenovo/Documents# chmod +x NVIDIA-Linux-x86_64-440.100.run
root@lenovo:/home/lenovo/Documents# ls
NVIDIA-Linux-x86_64-440.100.run
root@lenovo:/home/lenovo/Documents# ./NVIDIA-Linux-x86_64-440.100.run _
```

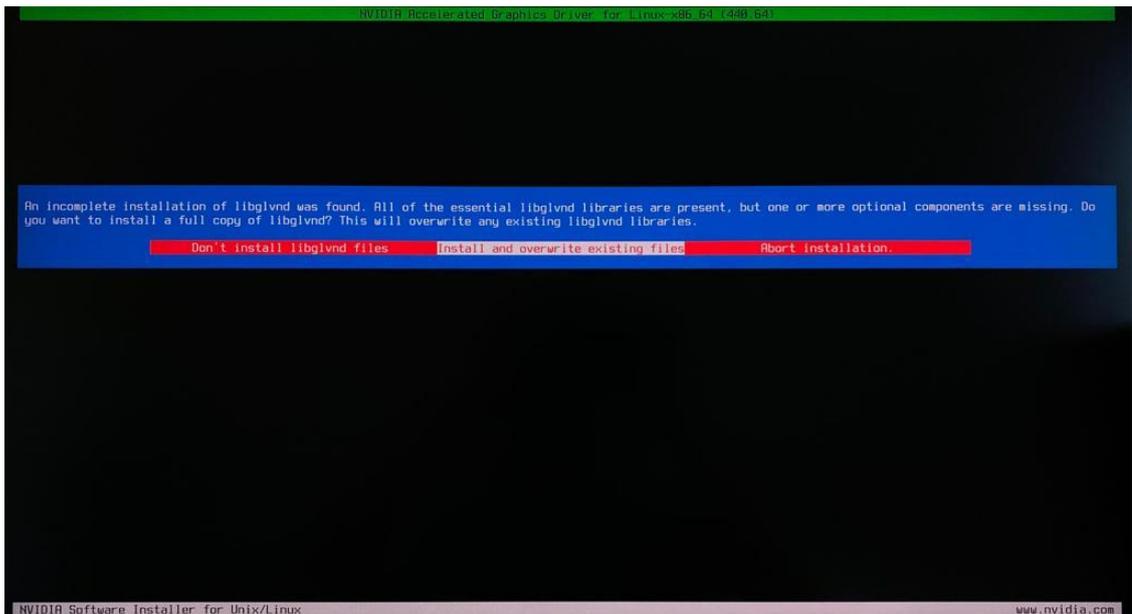
- Wait until the kernel modules are completely built.



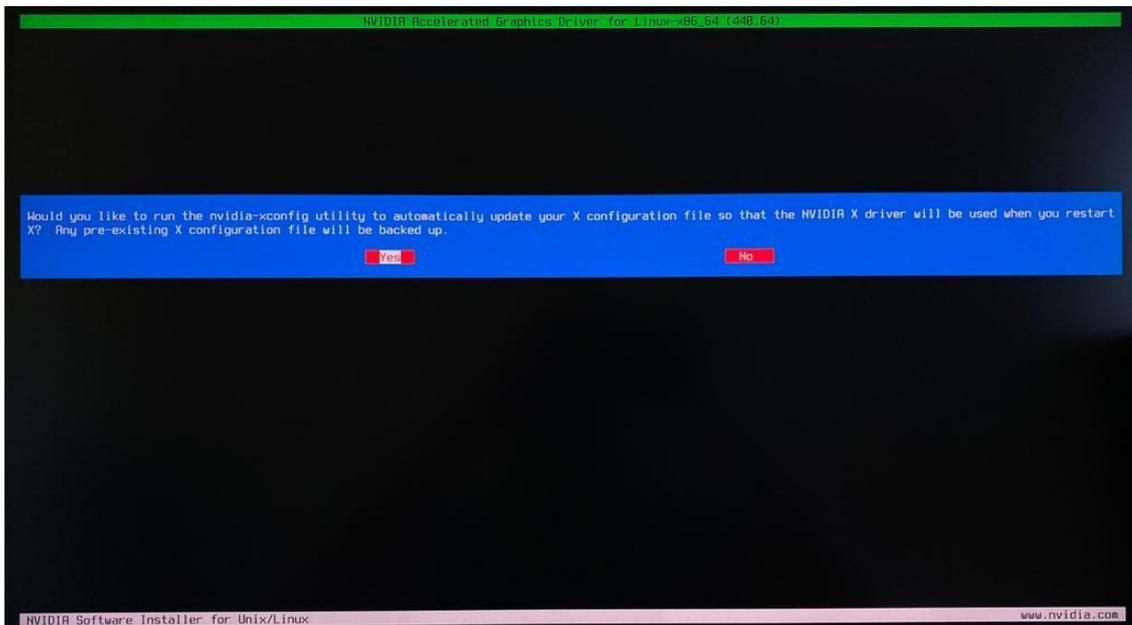
- Select Yes for installing 32-bit compatibility libraries.



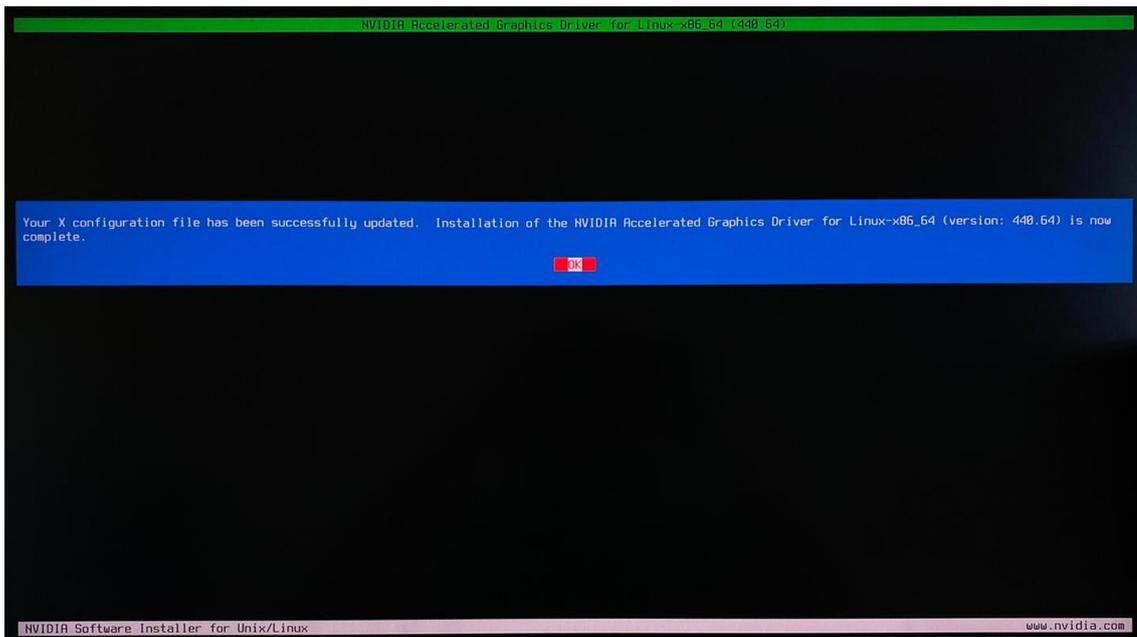
- Select Install and overwrite existing files.



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



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



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

```

root@lenovo:/home/lenovo/Documents# nvidia-smi
Wed Jul 15 13:33:11 2020
+-----+
| NVIDIA-SMI 440.100      Driver Version: 440.100      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 P620         Off       | 00000000:61:00:0 Off |           /           |
| 42%   50C    P0          N/A /  N/A | 0MiB / 1997MiB |      2%      Default  |
+-----+-----+
+-----+
| Processes:                                                       GPU Memory |
|  GPU       PID    Type   Process name                               Usage      |
+-----+-----+
| No running processes found                                     |
+-----+
root@lenovo:/home/lenovo/Documents#

```

- Reboot the system.

---

## Section 7 – Revision History

| Version | Date       | Author       | Changes/Updates        |
|---------|------------|--------------|------------------------|
| 1.0     | 06/09/2020 | Sayali Pawar | Initial launch release |