Ubuntu Linux 22.04 LTS Installation

Lenovo ThinkStation P3 Tower, Ultra, Tiny

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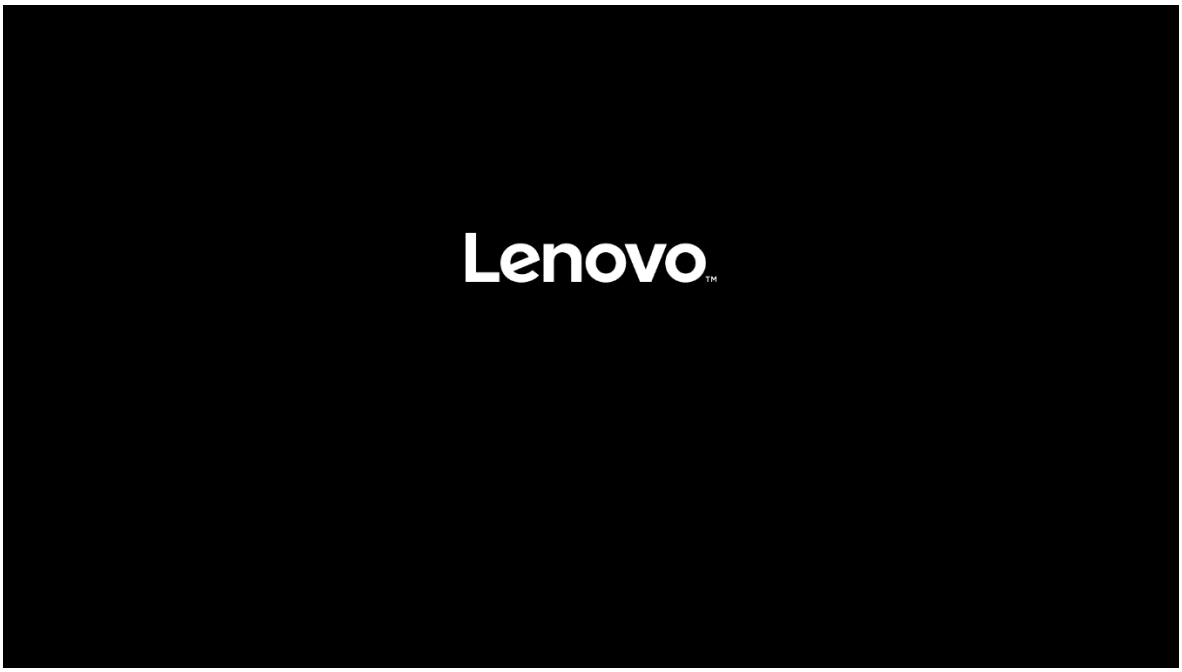
Overview

The purpose of this document is to provide high-level guidance for users to adequately install an Ubuntu Linux 22.04 LTS operating system on the new ThinkStation P3 Family platforms.

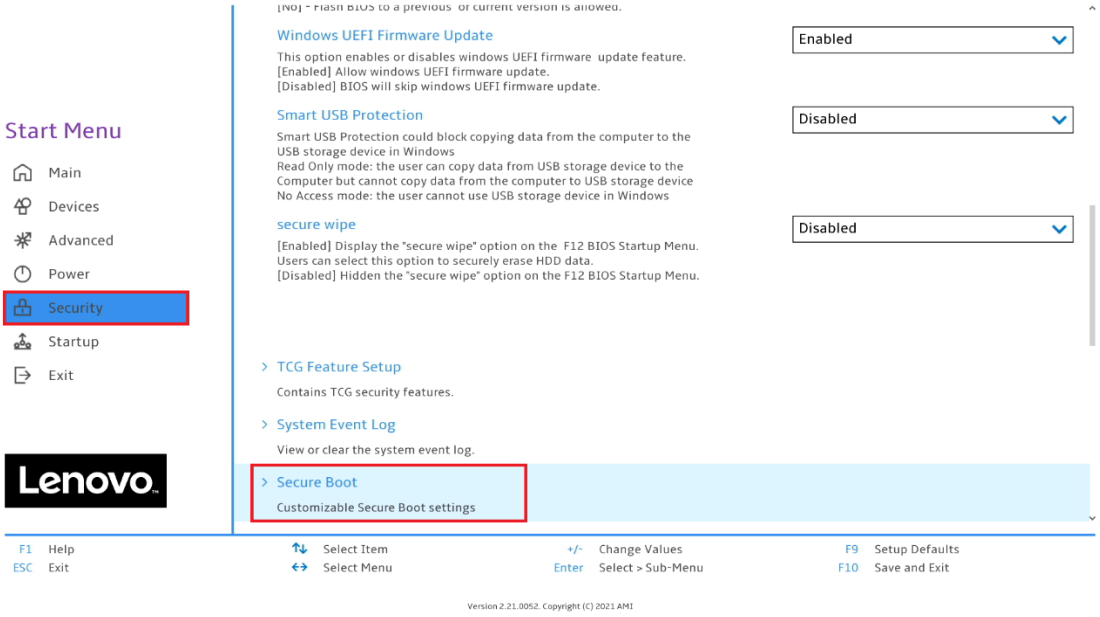
Section 1 – BIOS Setup

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

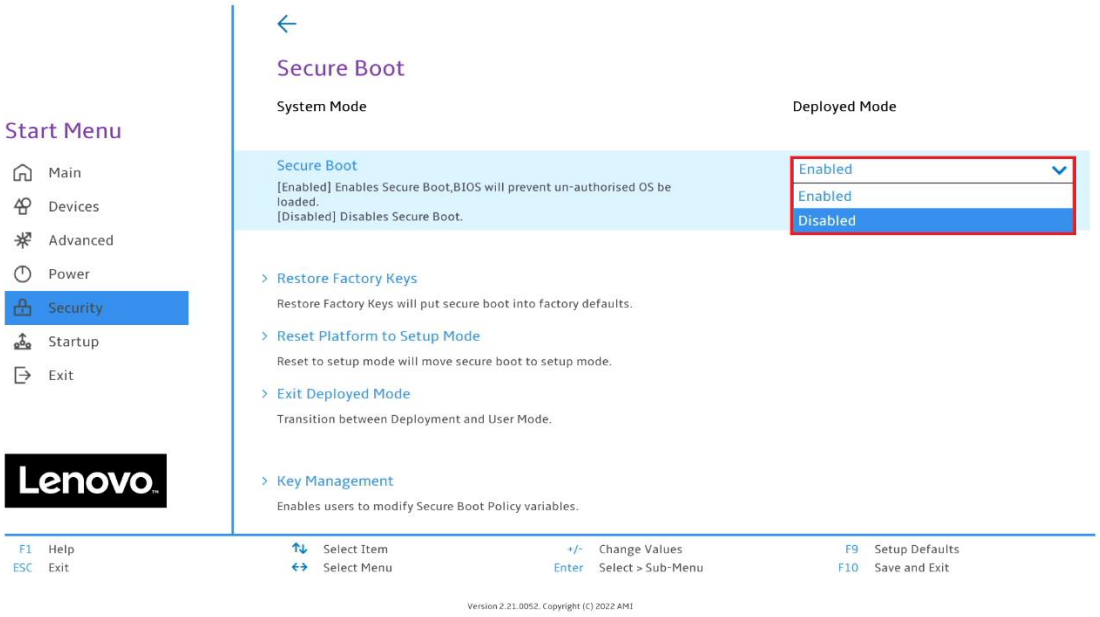
- Boot into BIOS by pressing the function F1 key at the “Lenovo” splash screen.



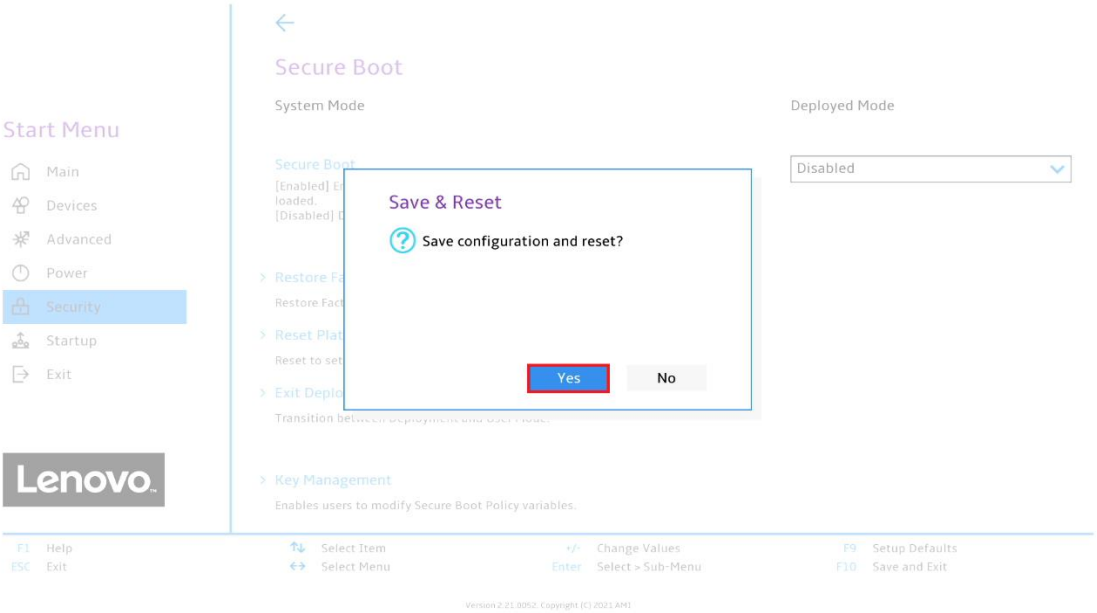
- Tab over to the Security tab and select “Secure Boot”.



- Ensure that Secure Boot option is set to “Disabled”.



- Save changes by pressing F10 function key.



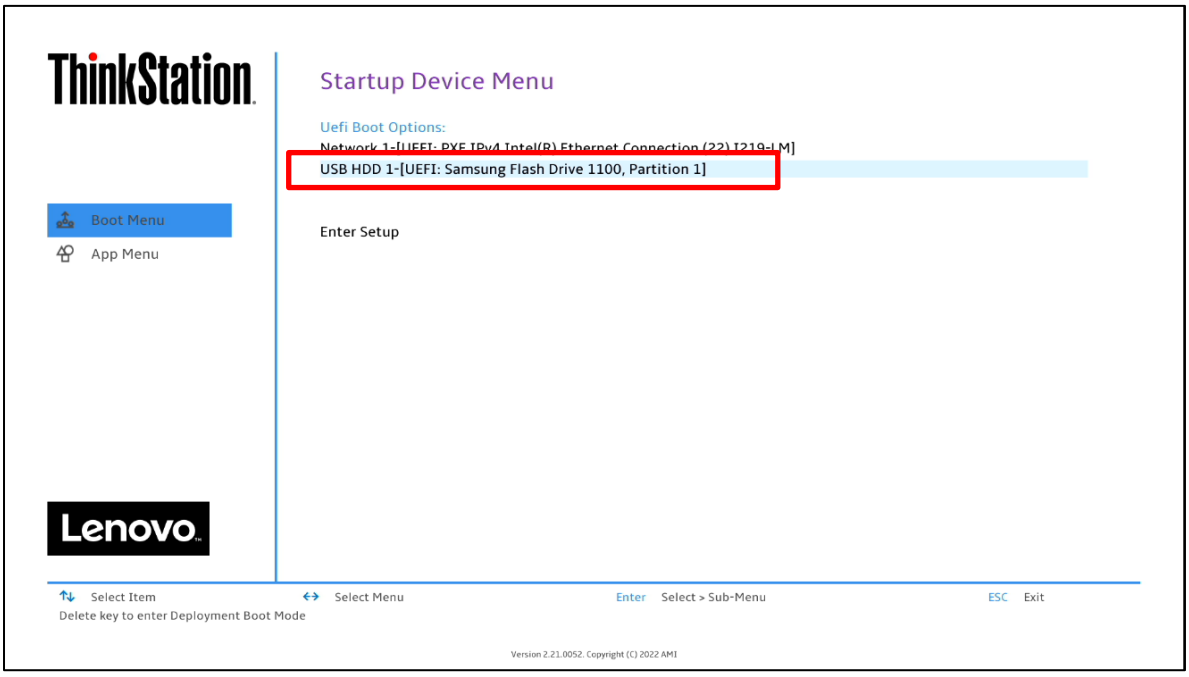
Section 2 – Ubuntu 22.04 Installation

Here are step-by-step instructions on how to install an Ubuntu Linux 22.04 LTS operating system on the new ThinkStation P3 family platforms.

1. Obtain a copy of the Ubuntu 22.04 installation media. It is recommended to extract the Ubuntu 22.04 iso media to a USB.

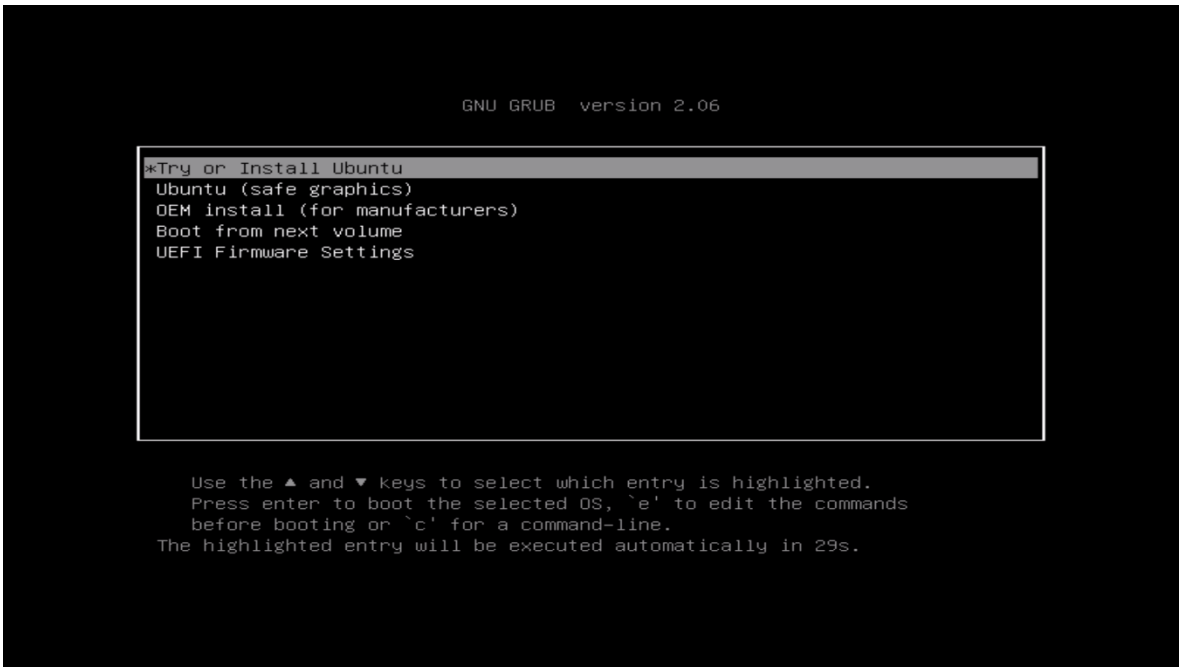
2. Insert the USB memory key into one of the USB ports on the system and power on the system.

3. At the Lenovo splash screen, press the function F12 key to enter the BIOS startup menu and select the USB installation media from the list.



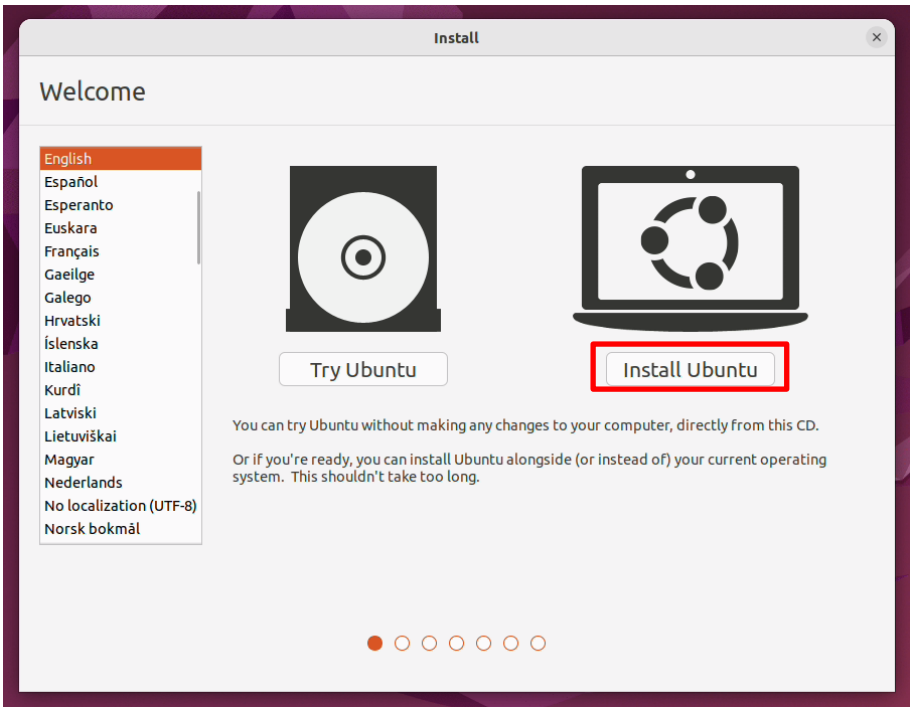
Note: Legacy boot is not supported on P3 platforms. Only UEFI bootable options will be available.

4. Select the ‘Try or Install Ubuntu’ option from the GRUB boot menu and press ‘Enter’.

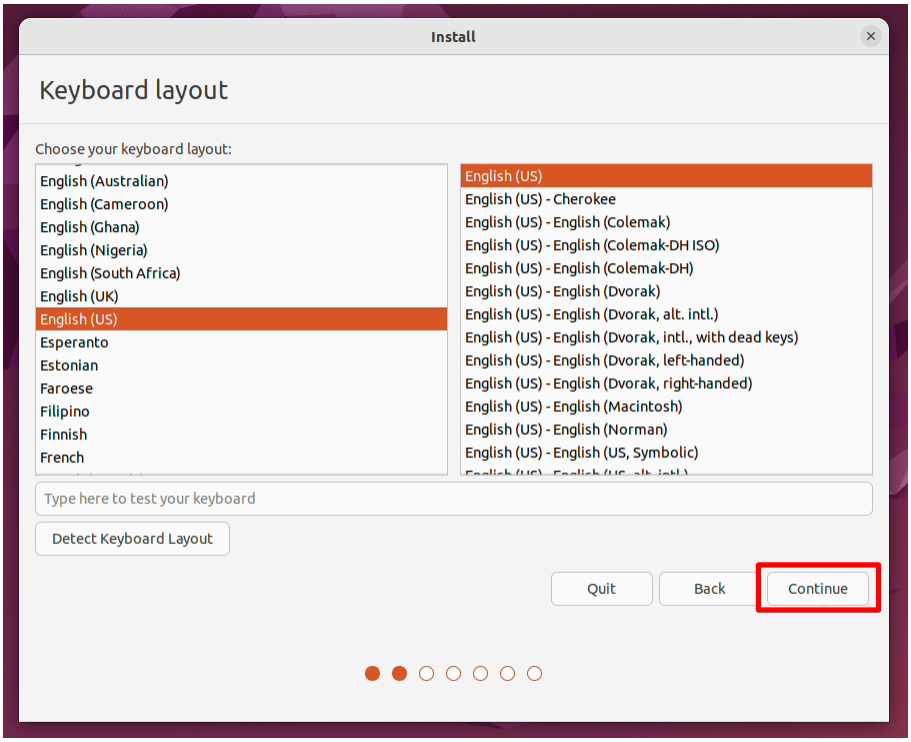


5. The Ubuntu installation media will begin to load.

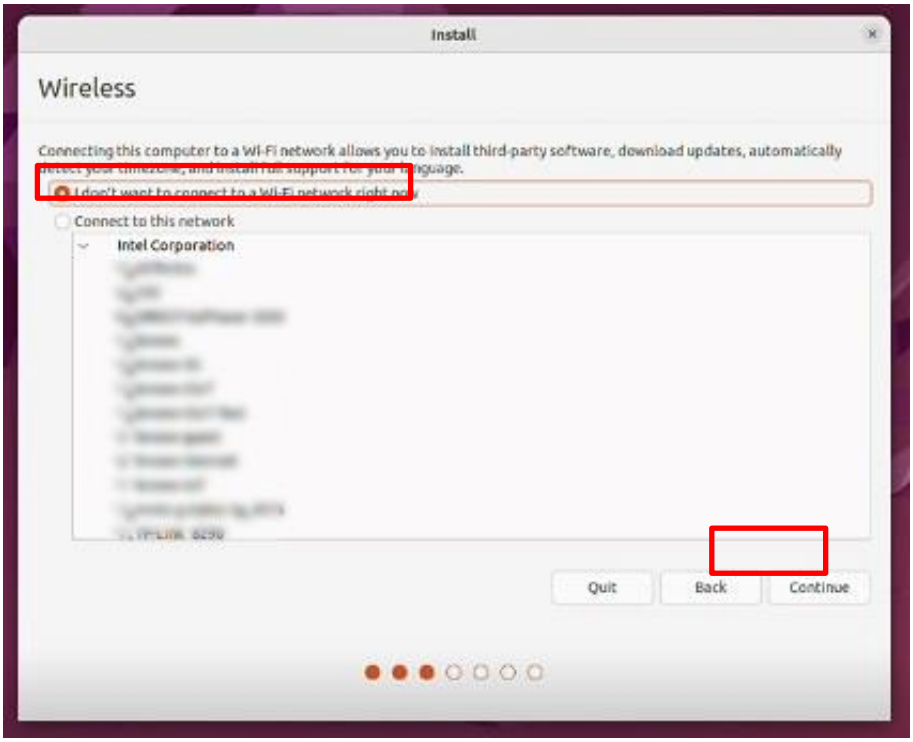
6. The Ubuntu Linux Welcome screen should eventually appear. Select the appropriate language and select ‘Install Ubuntu’.



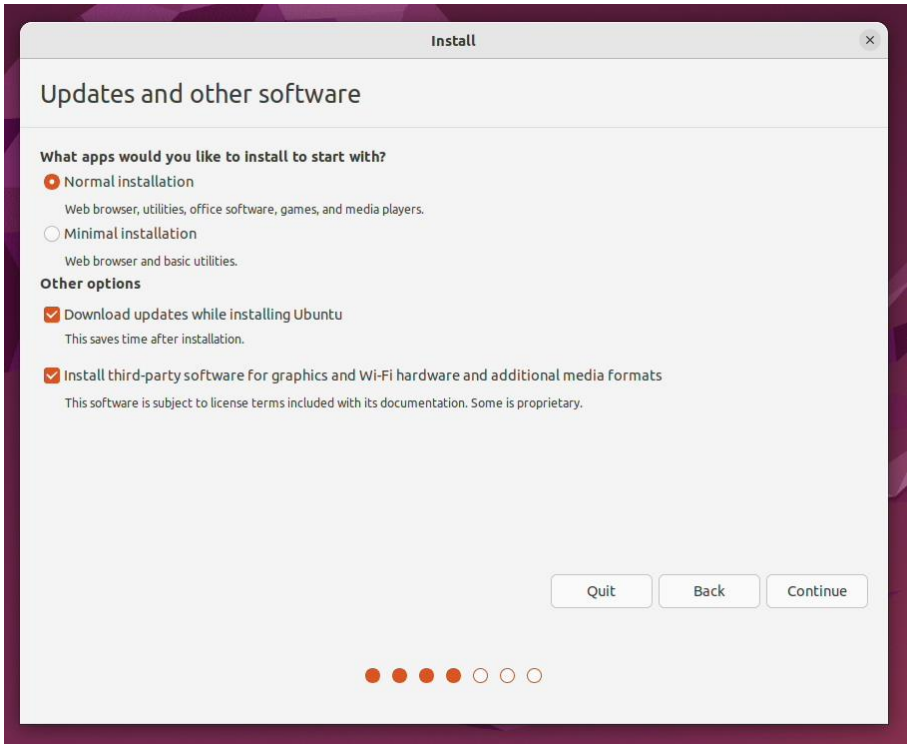
7. Select the appropriate keyboard layout and ‘Continue’.



8. If a wireless module is installed in the system, the installation media may prompt the user to connect to a network. In this example, '*I don't want to connect to a Wi-Fi network right now'* was selected.



9. Select the type of installation and 'Continue'.
   Note: If there is a valid internet connection on the system, items available under the 'Other options' sections will be selectable.

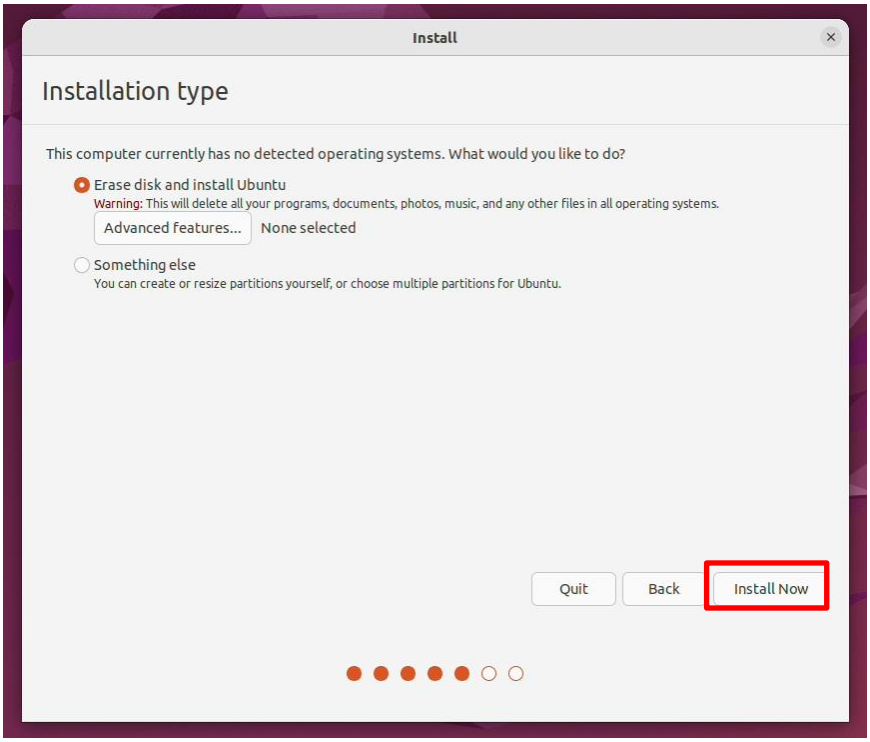


10. Select ‘Erase disk and install Ubuntu’ to automatically create the file system partitions and ‘Continue’.

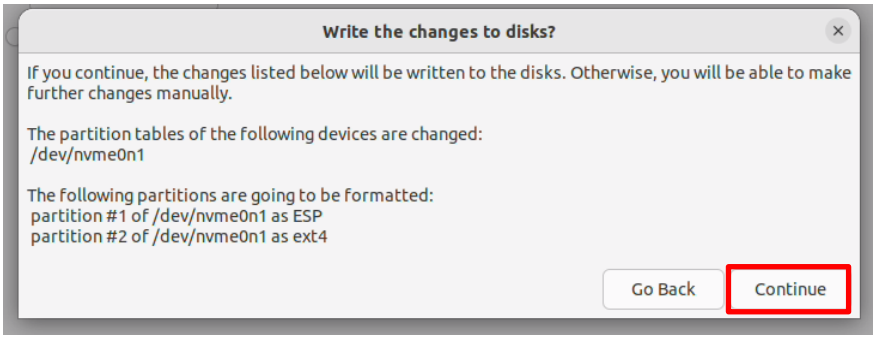
    To manually create file system partitions, select ‘Something else’.

    Note: If the disk has data on it already the options here may be different.

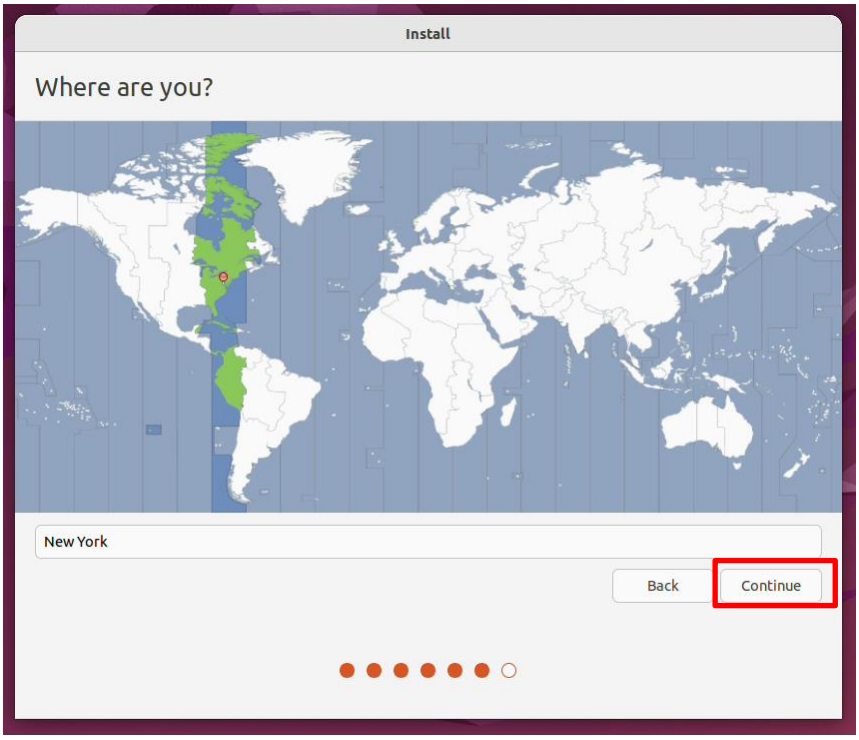
    In this document, ‘Erase disk and install Ubuntu’ was selected.



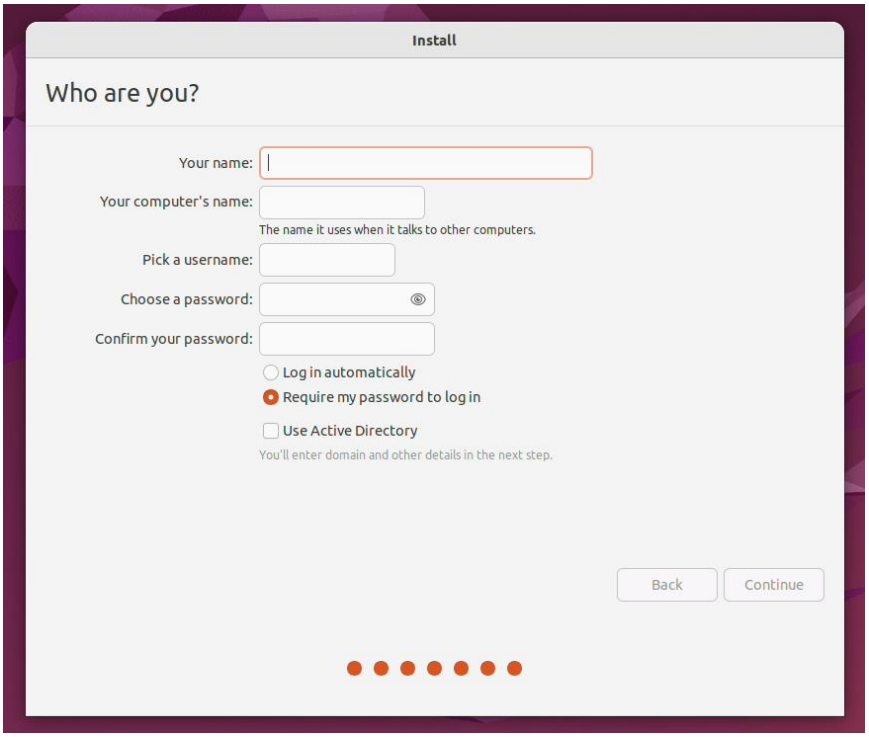
11. Select ‘Continue’ to confirm writing changes to the disk.



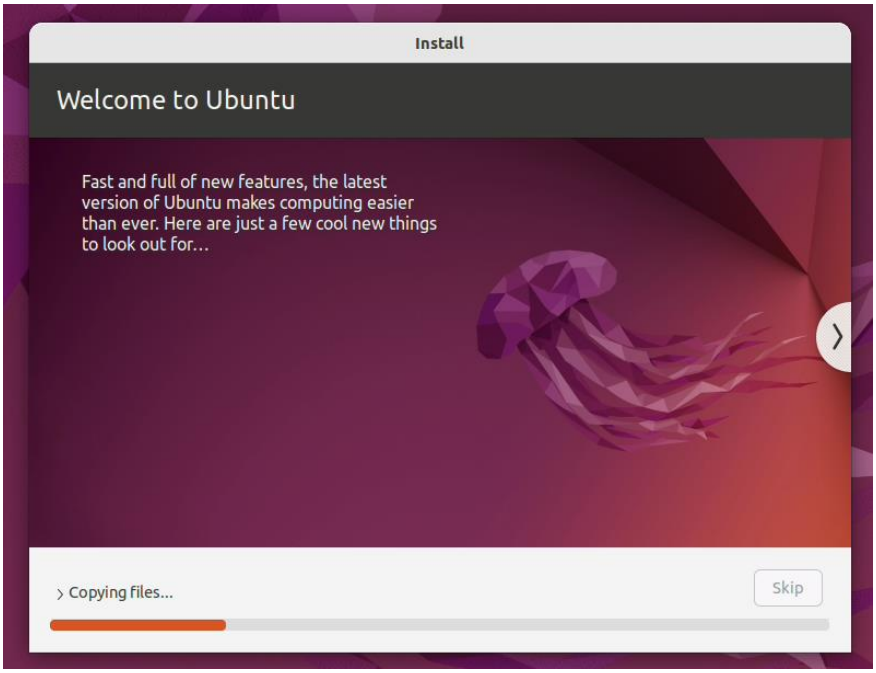
12. Select the appropriate geographical location and ‘Continue’.



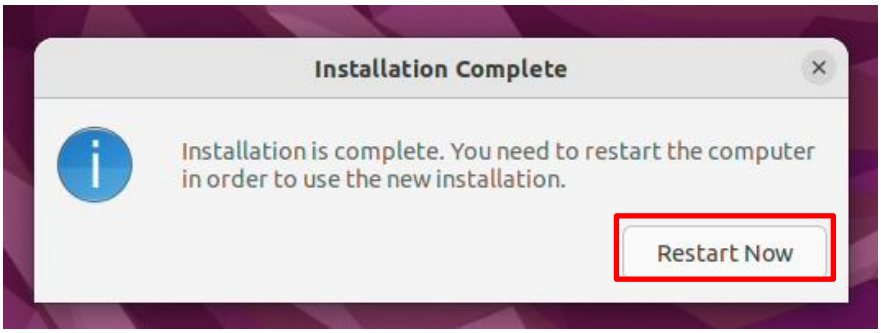
13. Fill in the appropriate boxes below and select ‘Continue’.



14. Let the system finish the installation.

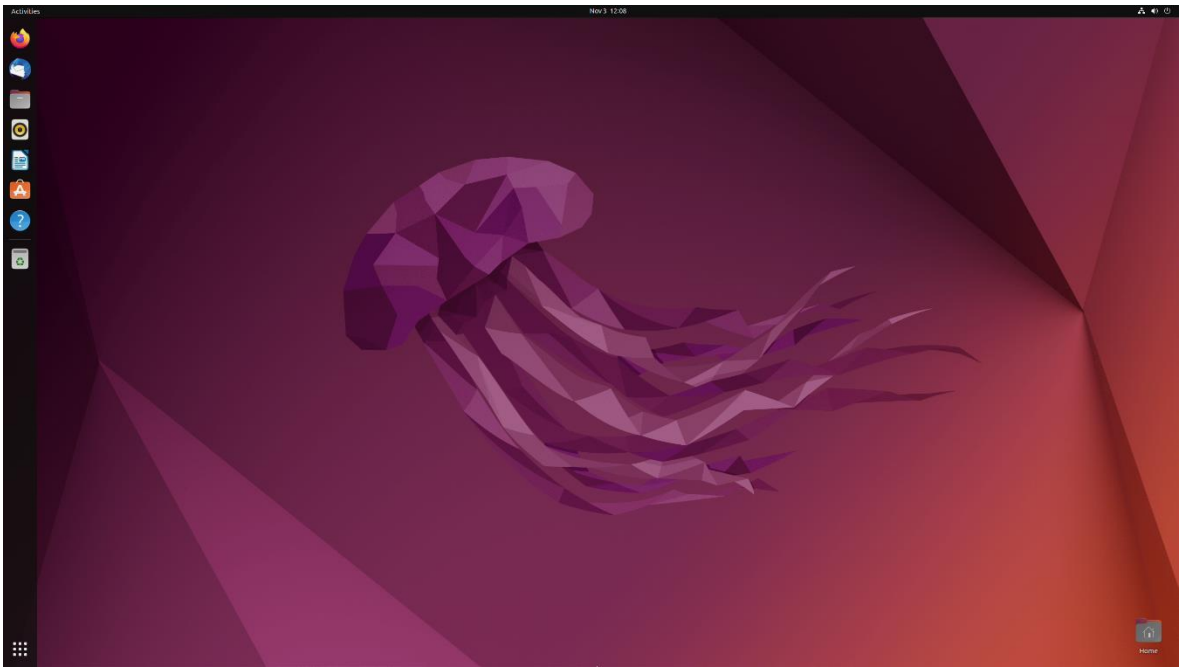


15. Once the installation completes, select ‘Reboot Now’.



16. Remove the installation media (USB/DVD) and press ‘Enter’.

17. Ubuntu 22.04 LTS Desktop screen.



Section 3 – Install Device Drivers

Most of the standard building blocks used in the ThinkStation P3 platform are native to the Ubuntu Linux 22.04 LTS base kernel. Installing a proprietary graphics driver is recommended to get optimal performance from the graphics card. The next sections provide step-by-step instructions on how to install a proprietary Nvidia graphics driver in Ubuntu Linux.

Note 1: All commands need to be executed with superuser privileges in the following sections. All commands that need to be typed in, start with the # sign.

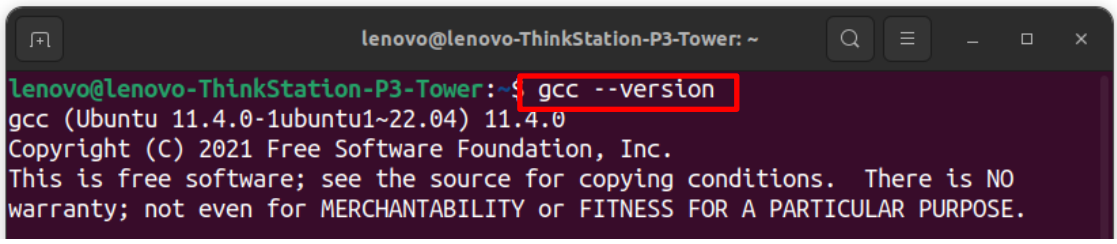
Note 2: Non-native drivers need to be manually installed. Refer to the vendor's documentation for a detailed process of obtaining and installing drivers.

Section 4 – Install Nvidia Proprietary Drivers

Newer versions of Nvidia driver require to have GCC version 12. Here are steps how to update the GCC version:

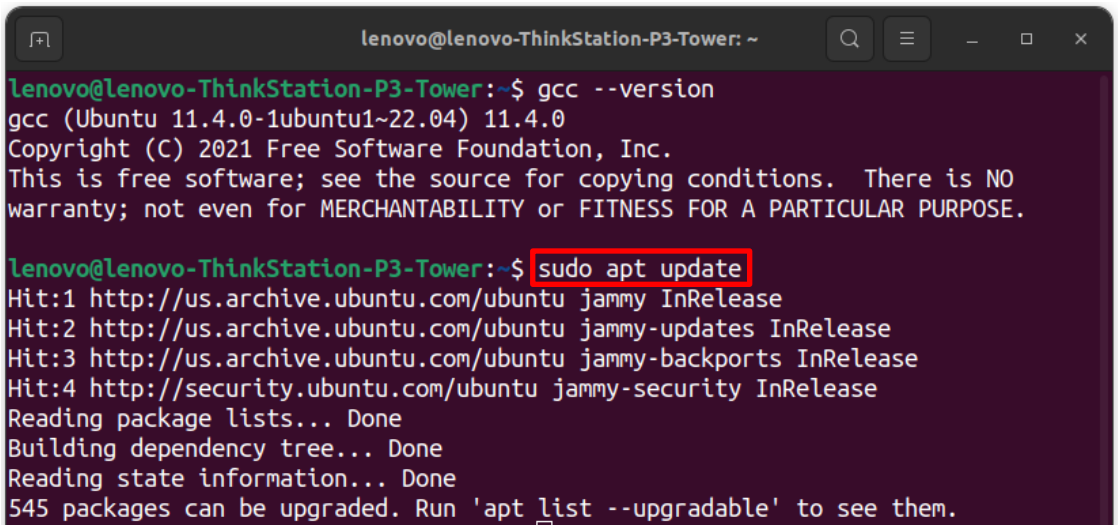
1. Check current GCC version.

   #gcc –version



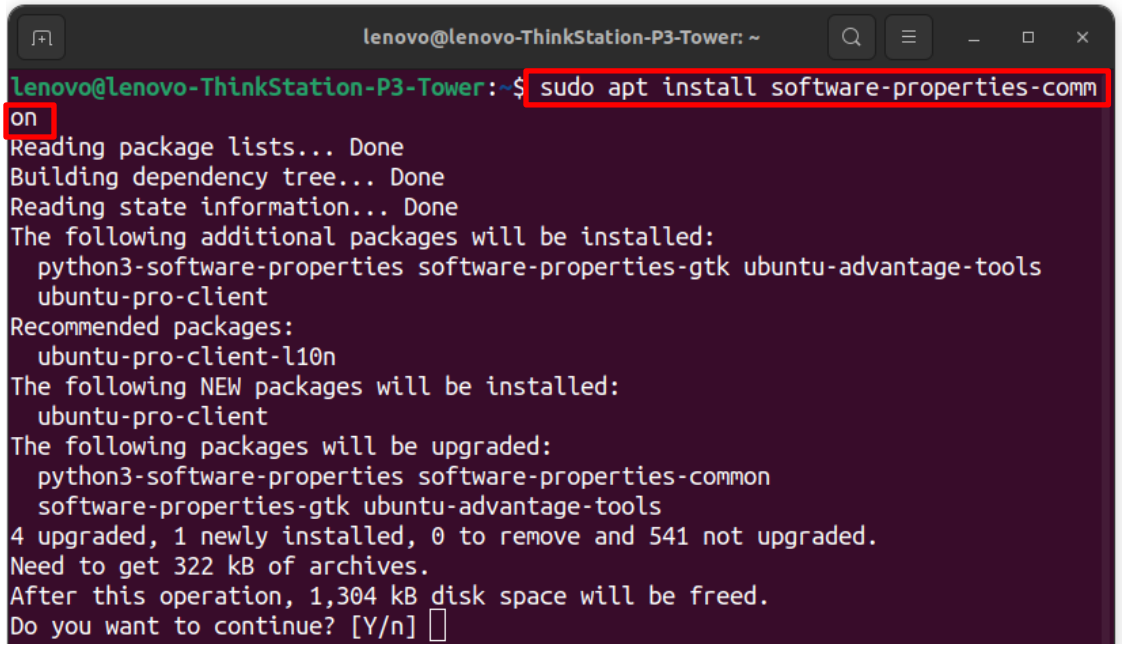
2. Update the repository information.

   #sudo apt update



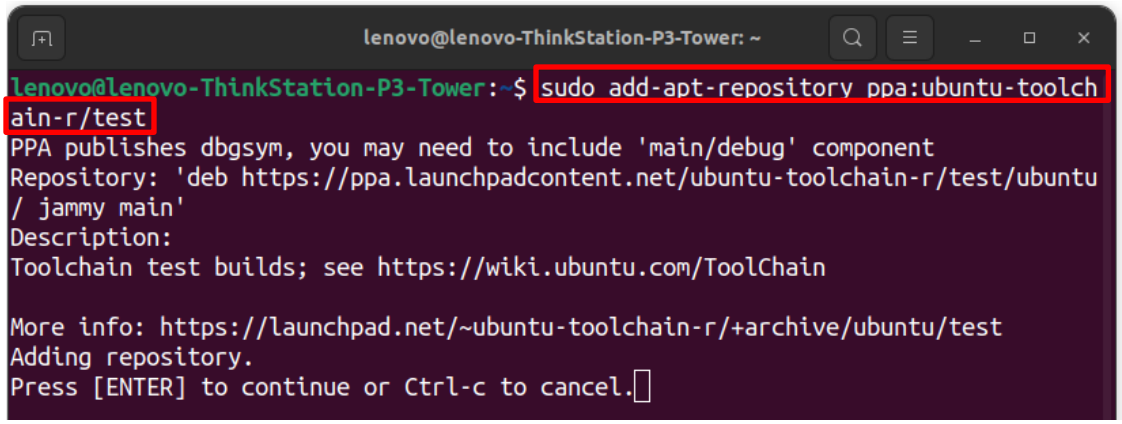
3. Install the software Properties Common Package.

   #sudo apt install software-properties-common



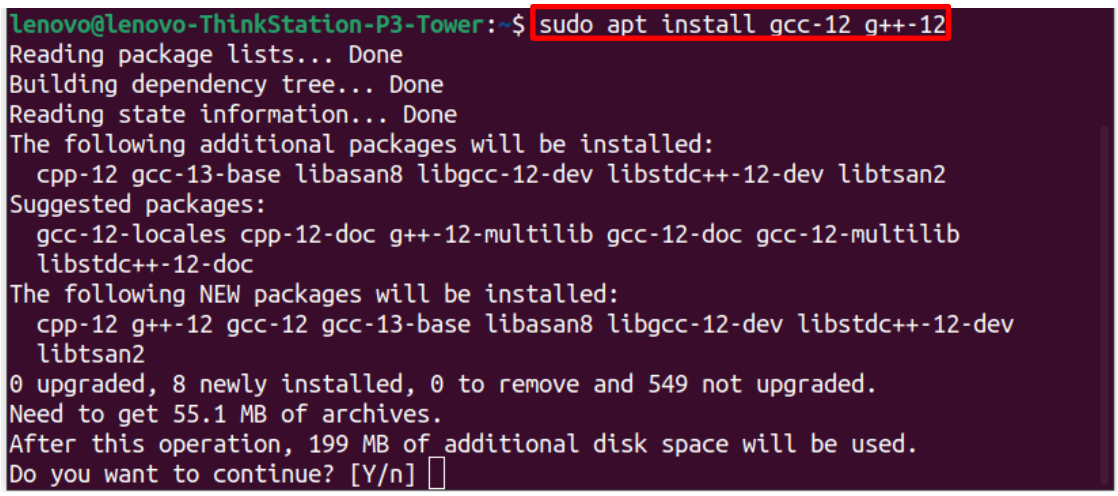
4. Add the GCC Repository.

   #sudo add-apt-repository ppa:ubuntu-toolchain-r/test



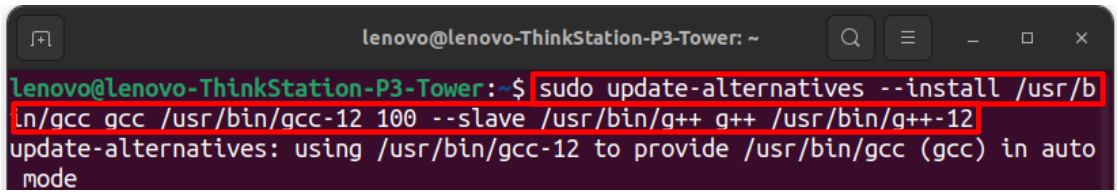
5. Install the desired GCC version.

   #sudo apt install gcc-12 g++-12



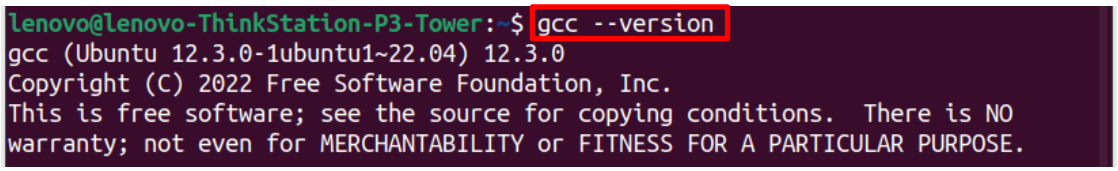
6. Configure the default GCC version.

   #sudo update-alternatives --install /usr/bin/gcc gcc /usr/bin/gcc-12 100 --slave /usr/bin/g++ g++ /usr/bin/g++-12



7. Verify updated version GCC.

   #gcc –version

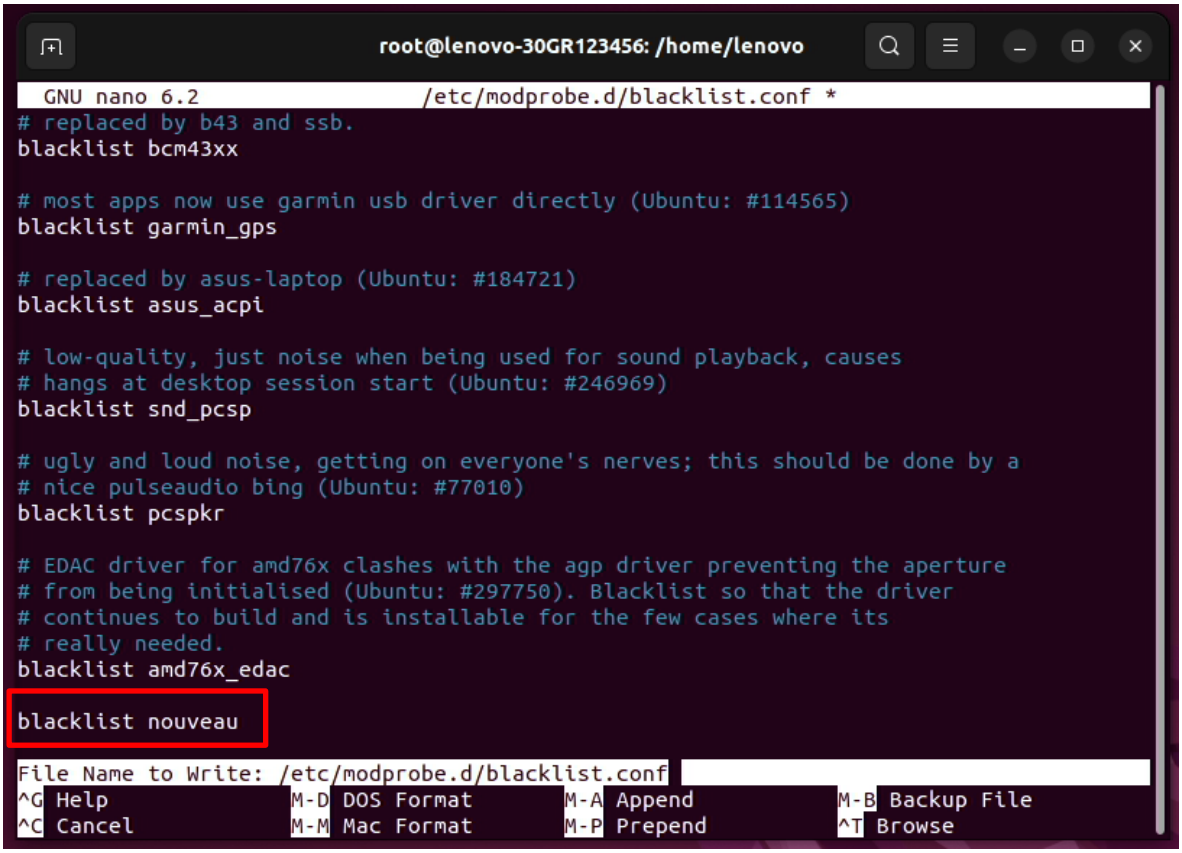


The below step-by-step instructions on how to install Nvidia proprietary drivers.

1. Download the appropriate Nvidia graphics driver from the Lenovo Support portal.

2. Blacklist the Linux Nouveau driver.

    - # nano /etc/modprobe.d/blacklist.conf
    - Add the following line, ‘blacklist nouveau’, and save and exit the file.



3. Update the initramfs file and reboot the system.
    - # update-initramfs -u
    - # reboot now

```
root@lenovo-30GR123456:/home/lenovo# nano /etc/modprobe.d/blacklist.conf
root@lenovo-30GR123456:/home/lenovo# update-initramfs -u
update-initramfs: Generating /boot/initrd.img-5.15.0-58-generic
root@lenovo-30GR123456:/home/lenovo#
```

4. Once the system reboots to the Linux desktop screen, run the following command as superuser from a terminal window to exit X-windows.

    - # init 3

5. Login as root (superuser).

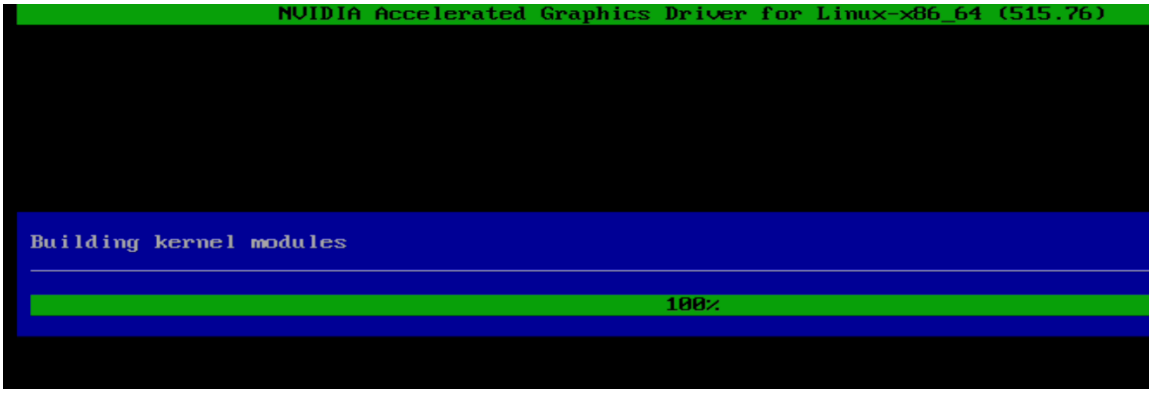
```
Ubuntu 22.04.1 LTS lenovo-30GR123456 tty1

lenovo-30GR123456 login: _
```

6. Navigate to the directory to where the Nvidia driver installation file is located and run the following command. *In this example, it is on the Linux desktop.*

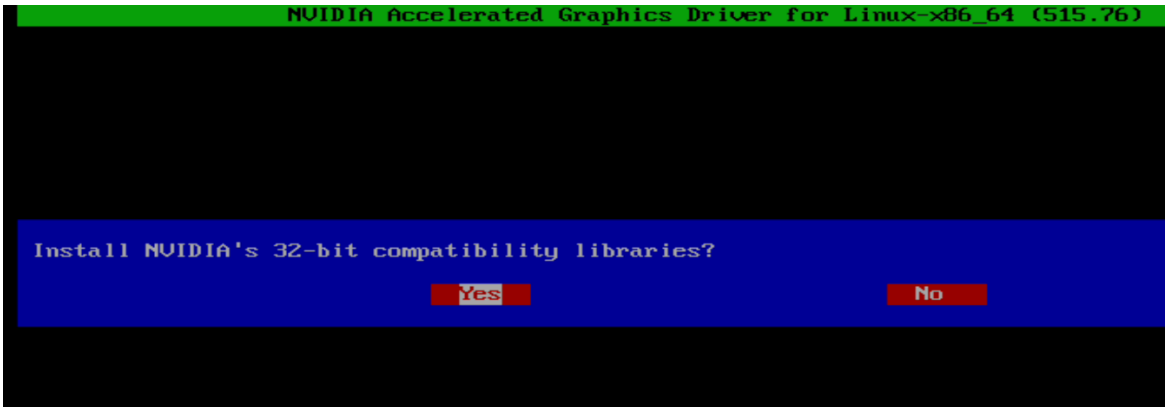
    - # bash ./NVIDIA*

```
lenovo@lenovo-30GR123456:~$ sudo su
[sudo] password for lenovo:
root@lenovo-30GR123456:/home/lenovo# cd Downloads/
root@lenovo-30GR123456:/home/lenovo/Downloads# bash ./NVIDIA-Linux-x86_64-525.78.01.run _
```

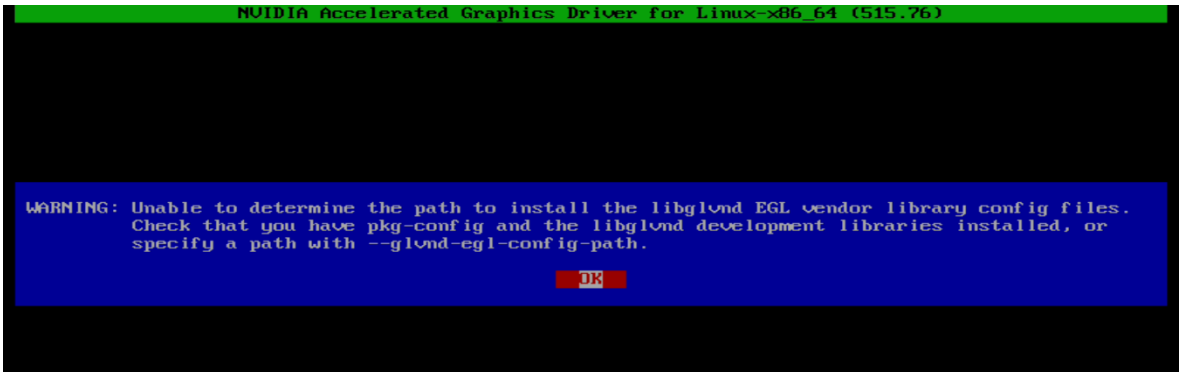
7. Note the driver should start to install.



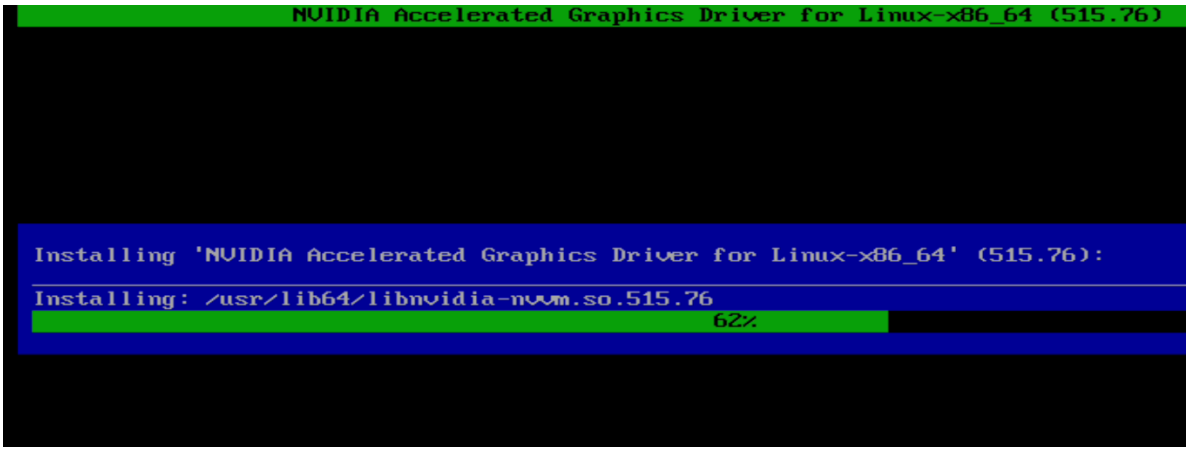
8. The driver will ask whether to install NVIDIA's 32-bit compatibility libraries.
   In this example, 'yes' was selected.



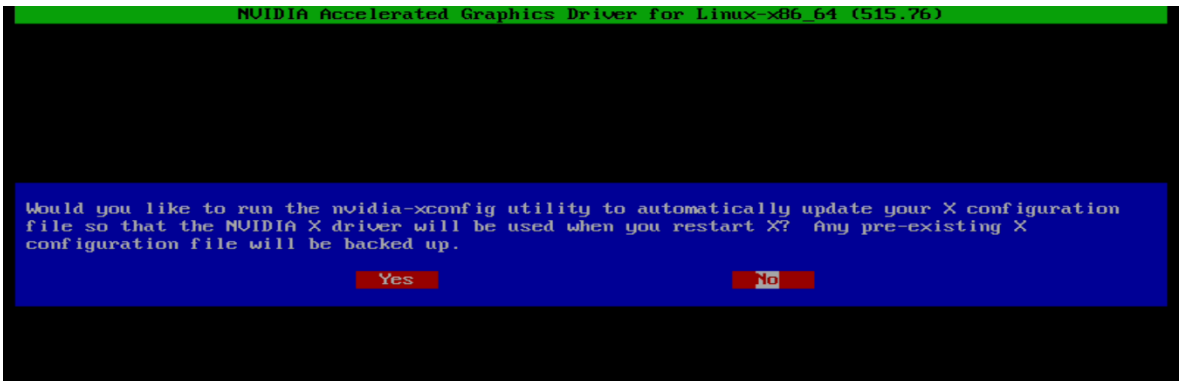
9. Select 'OK' on the following warning message.



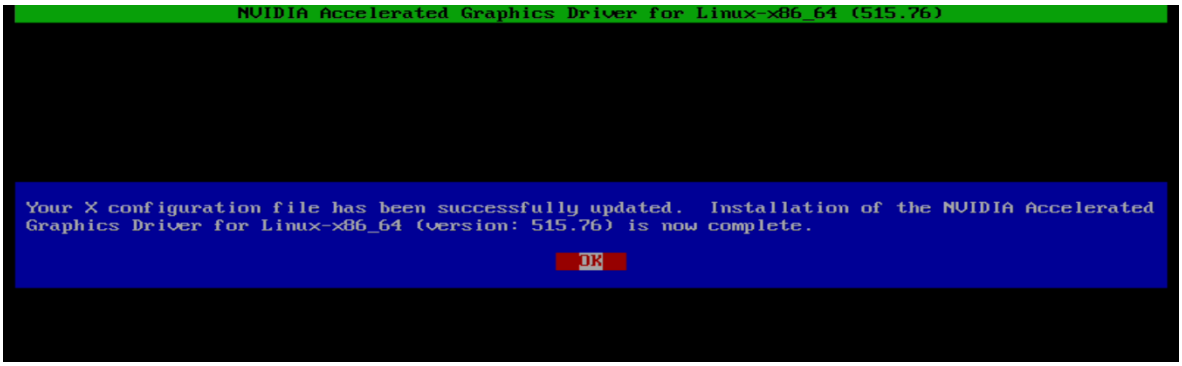
10. The driver should continue to install.



11. Select ‘Yes’ to update the x-configuration file.

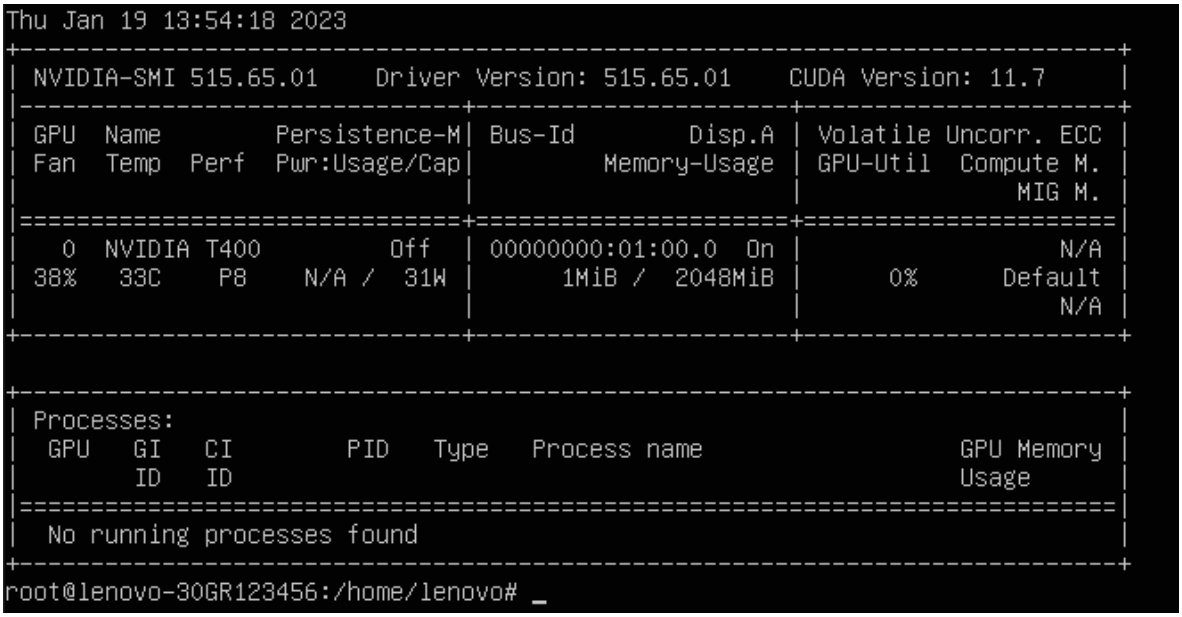


12. Select ‘OK’ to acknowledge that the x-configuration file has successfully been updated.



13. Run the following command to verify the Nvidia driver has been installed and loaded properly, then reboot the system.

    # nvidia-smi



Revision History

Version	Date	Author	Changes/Updates
1.1	3/27/2024	A. Panteleev	Updated Section 4
1.0	5/23/2023	A. Panteleev	Initial launch release.