

Ubuntu 18.04 LTS Linux Setup Guide

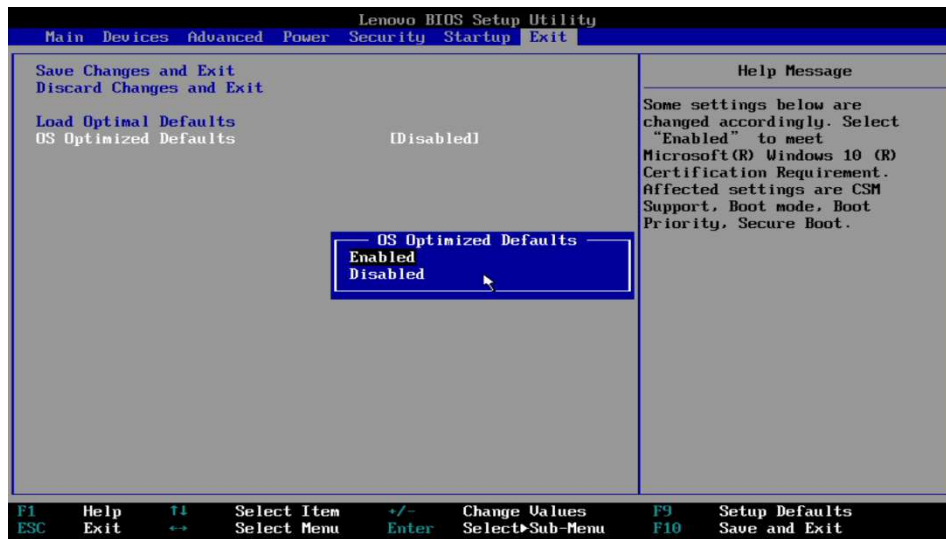
For ThinkStation P330



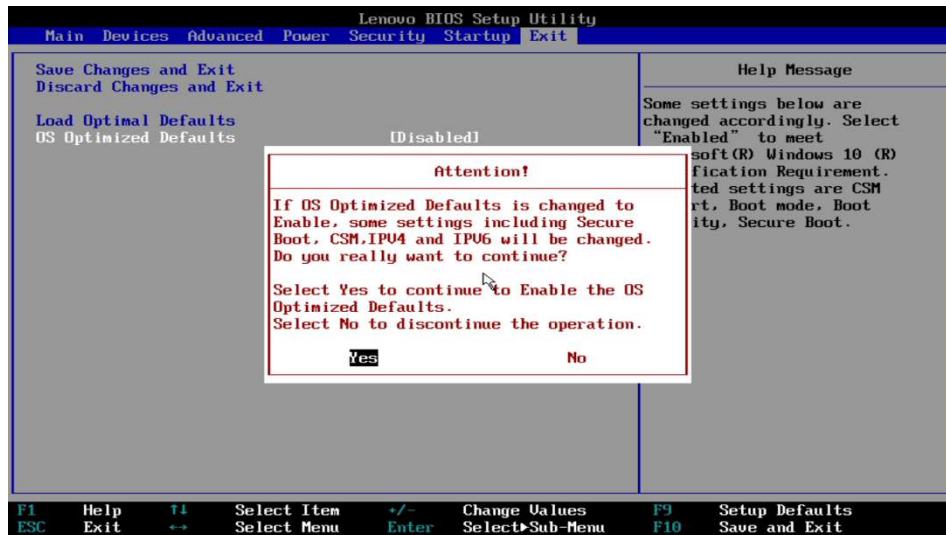
Section 1 - BIOS Setup and Preinstallation Steps

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

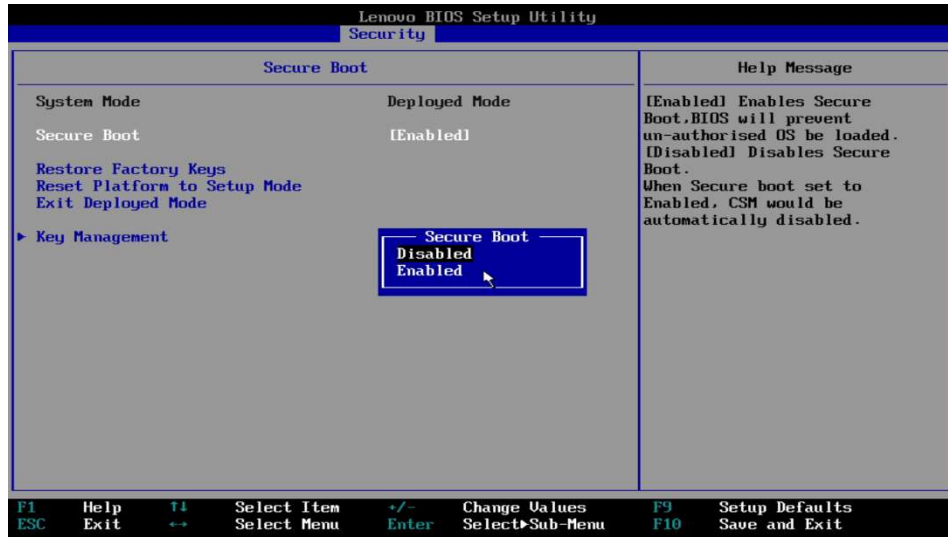
- **For UEFI/GPT installations (recommended):**
 - Boot into BIOS by pressing the function F1 key at the “Lenovo” splash screen.
 - Tab over to the “Exit” menu tab and set “OS “Optimized Defaults” to “Enabled”.



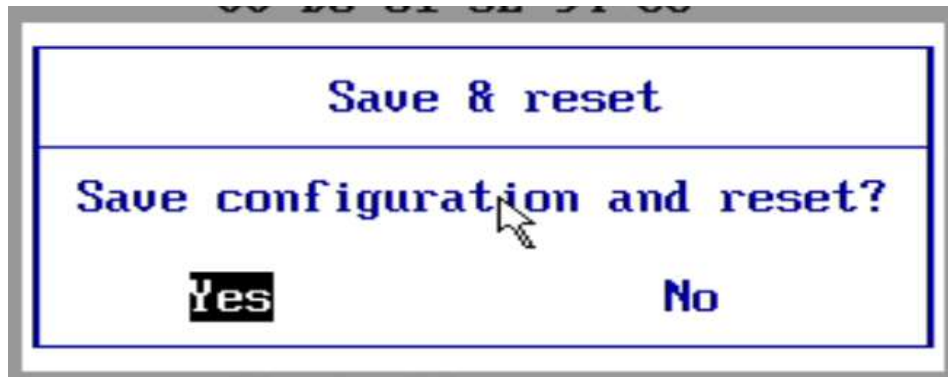
- Select “Yes” at the confirmation screen indicated below.



- Tab over to the “Security” menu tab, select “Secure Boot”, and set the option to “Disabled”.



- Press F10 to “Save and Exit” the BIOS setup menu.

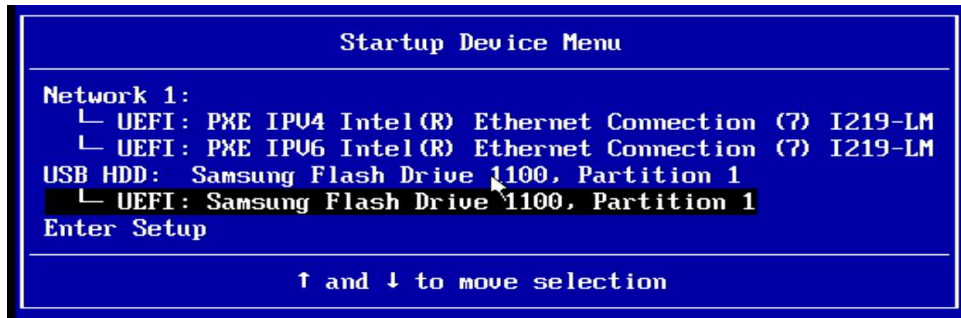


- Insert the Ubuntu install media (either through USB or CD/DVD).

- Power on the system and press the F12 function key whenever the following Lenovo splash screen appears.

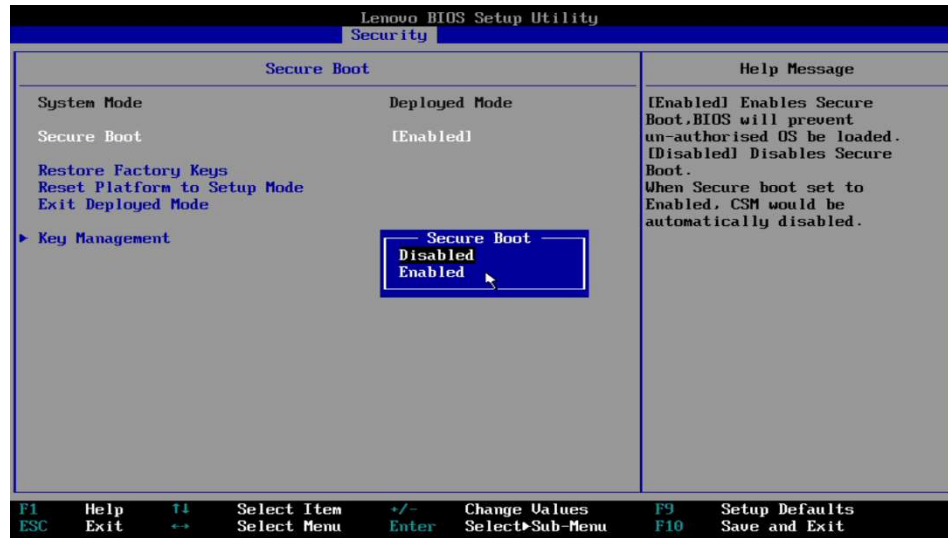


- Select the Linux bootable installation media "UEFI" option from the F12 boot menu.

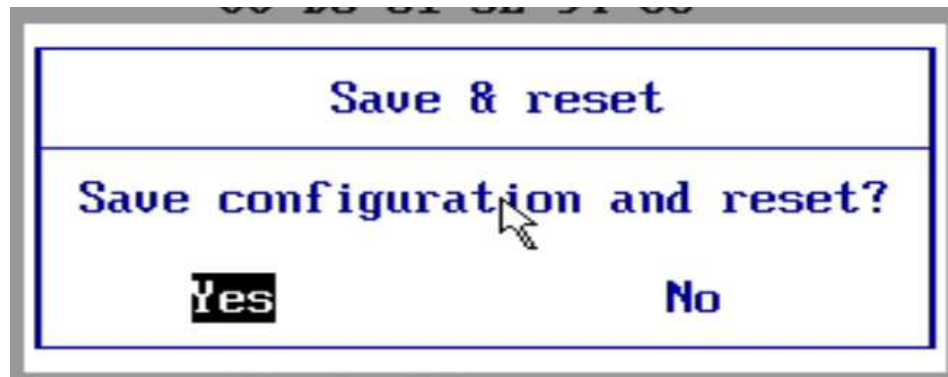


- **For Legacy/MBR installations (not recommended):**

- Boot into BIOS by pressing the function F1 key at the “Lenovo” splash screen.
- Tab over to the “Exit” menu tab and set “OS “Optimized Defaults” to “Disabled”.



- Select F10 to “Save and Exit” BIOS.



- Insert the Ubuntu install media (either through USB or CD/DVD).

- Power on the system and press the F12 function key whenever the following Lenovo splash screen appears.



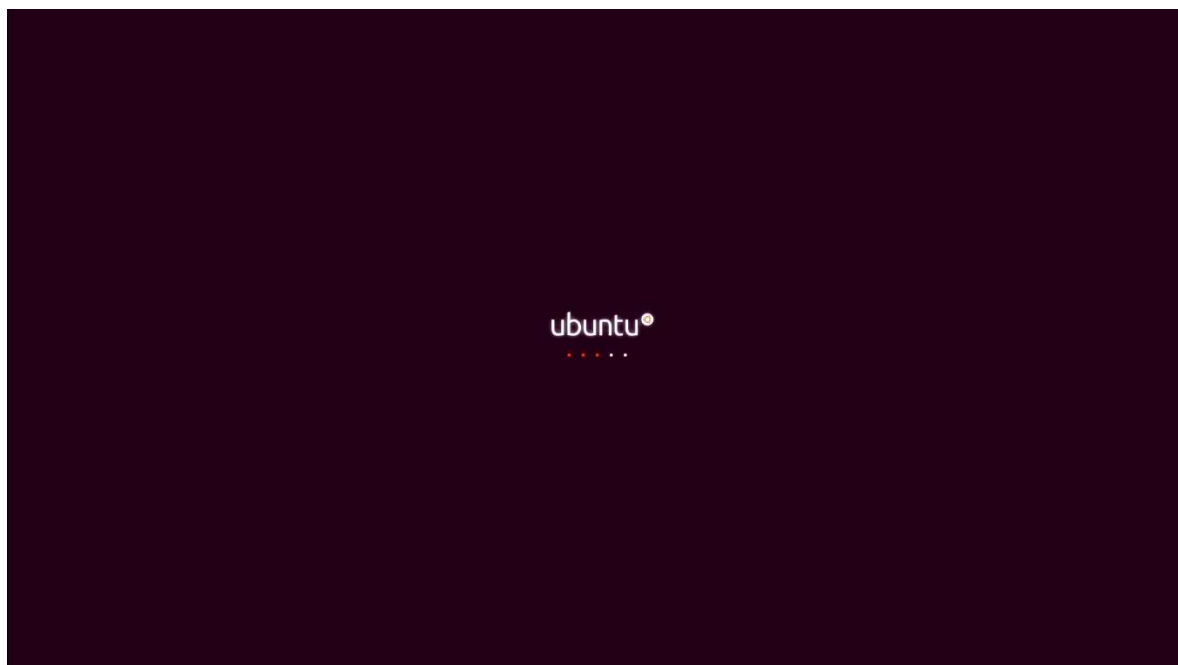
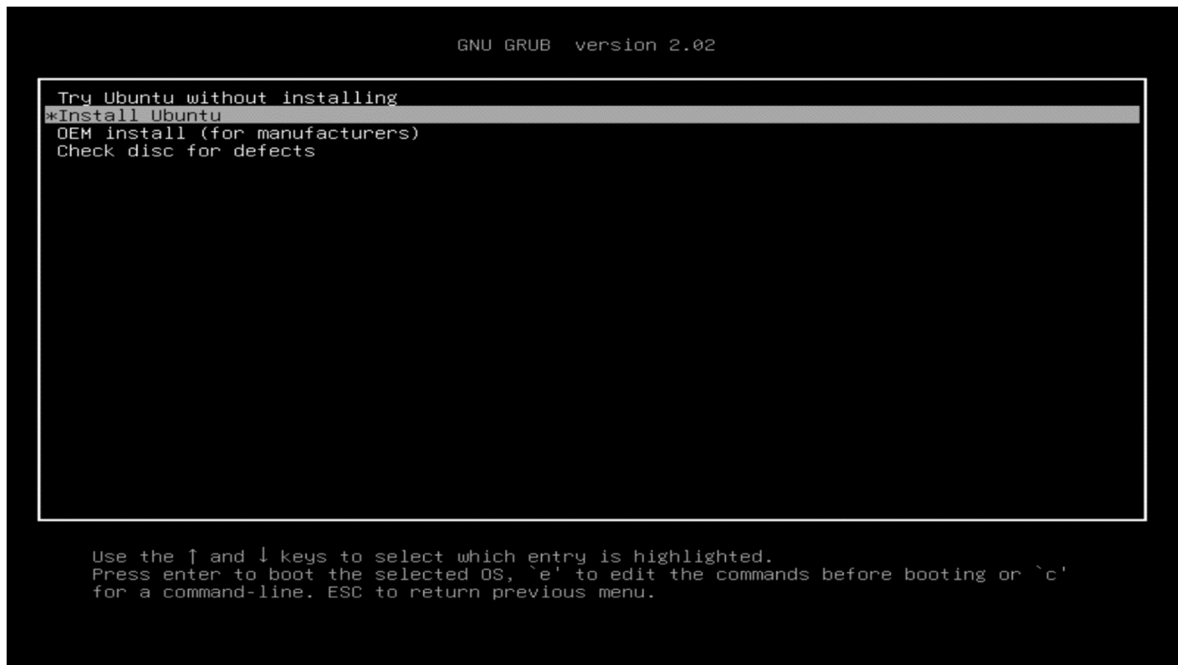
- Select the Linux bootable installation media "Legacy" option from the F12 boot menu.



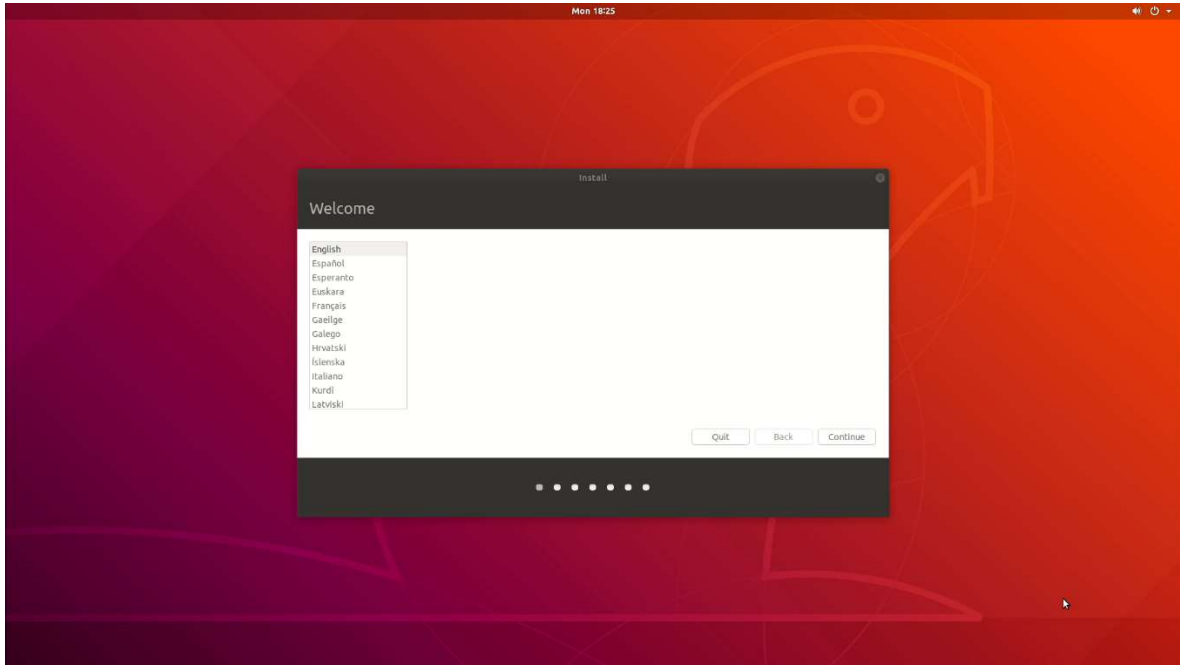
Section 2 – Installing Ubuntu 18.04 LTS

Please refer to the following instructions and screenshots on how to install Ubuntu 18.04 LTS on the ThinkStation P330 workstations.

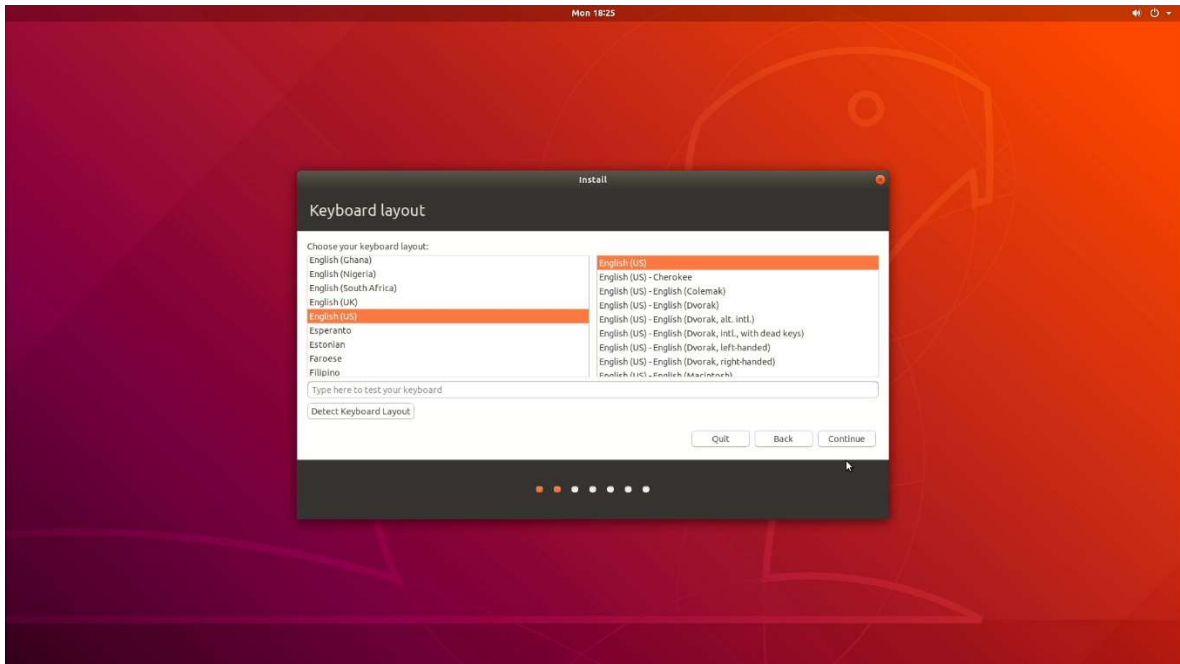
- Highlight the “*Install Ubuntu*” from the Installer menu and press Enter.



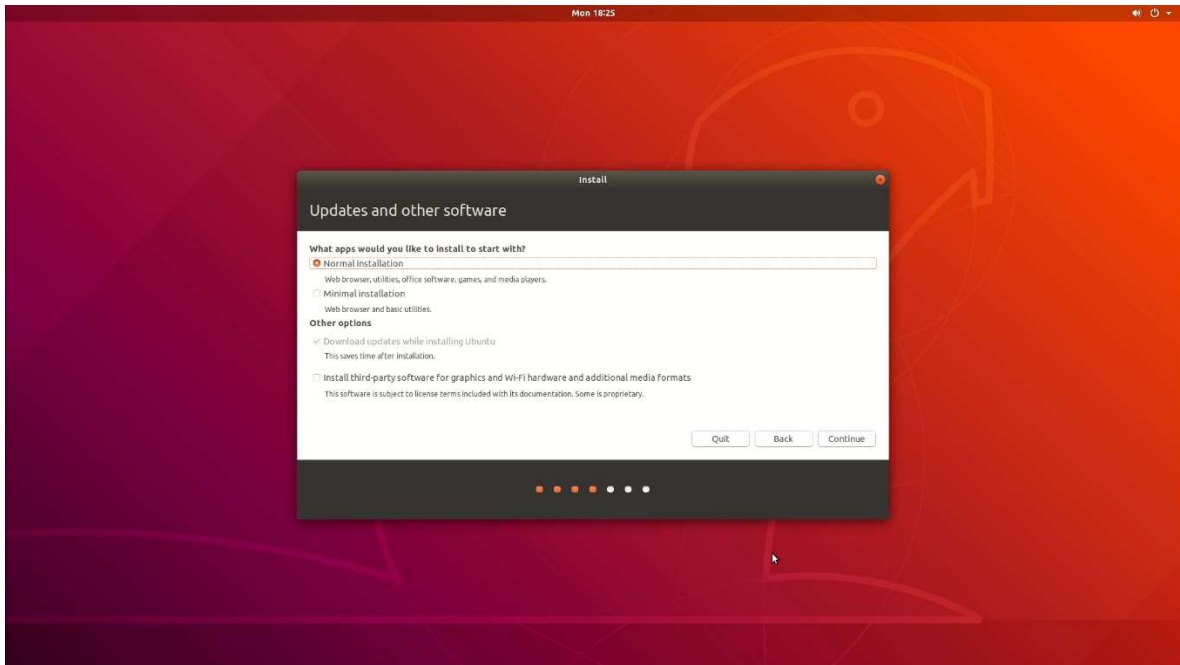
- Select the language to use during the installation process and “Continue”.



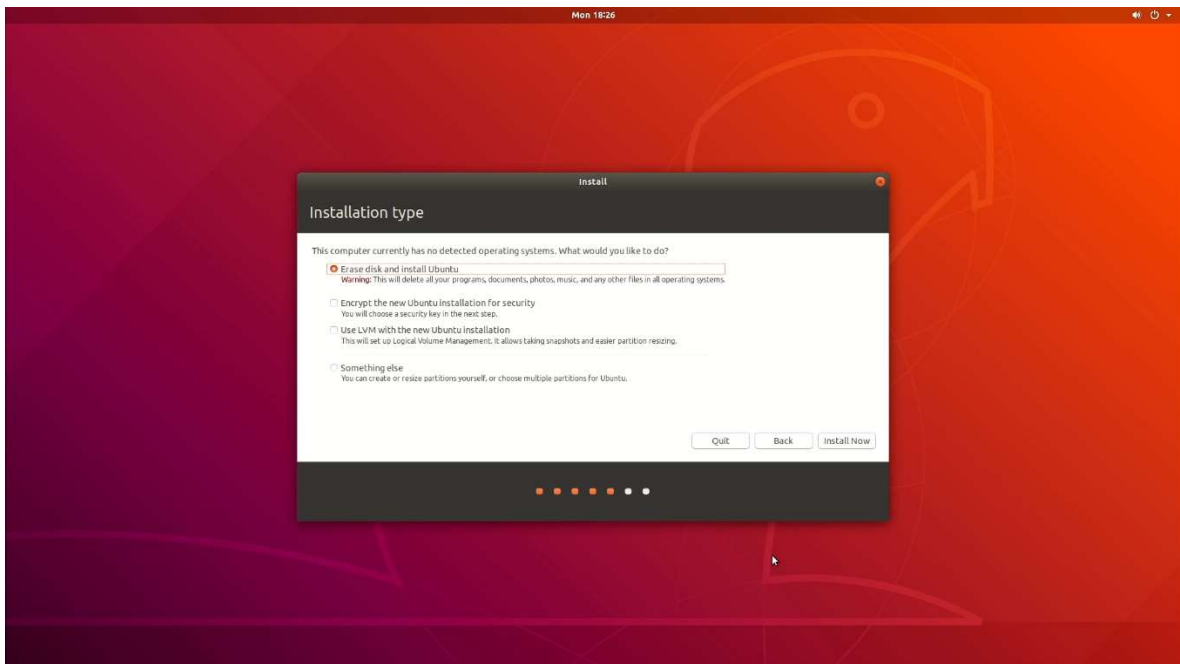
- Select your keyboard layout and “Continue”.



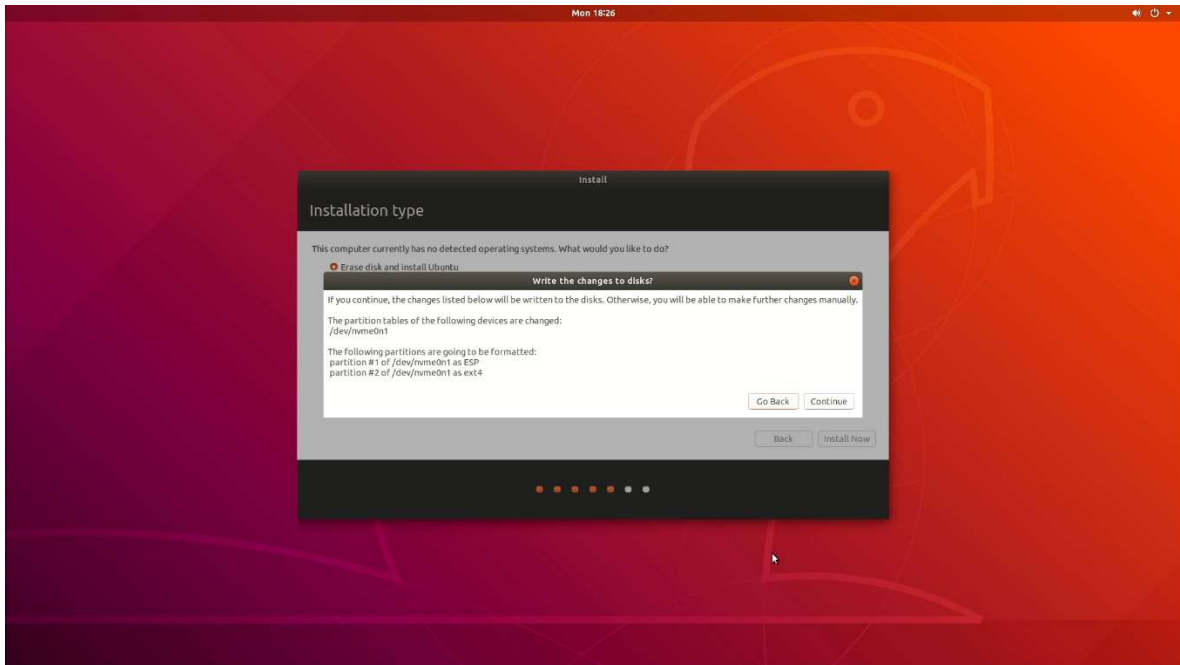
- Select “Normal Installation” and “Continue”.



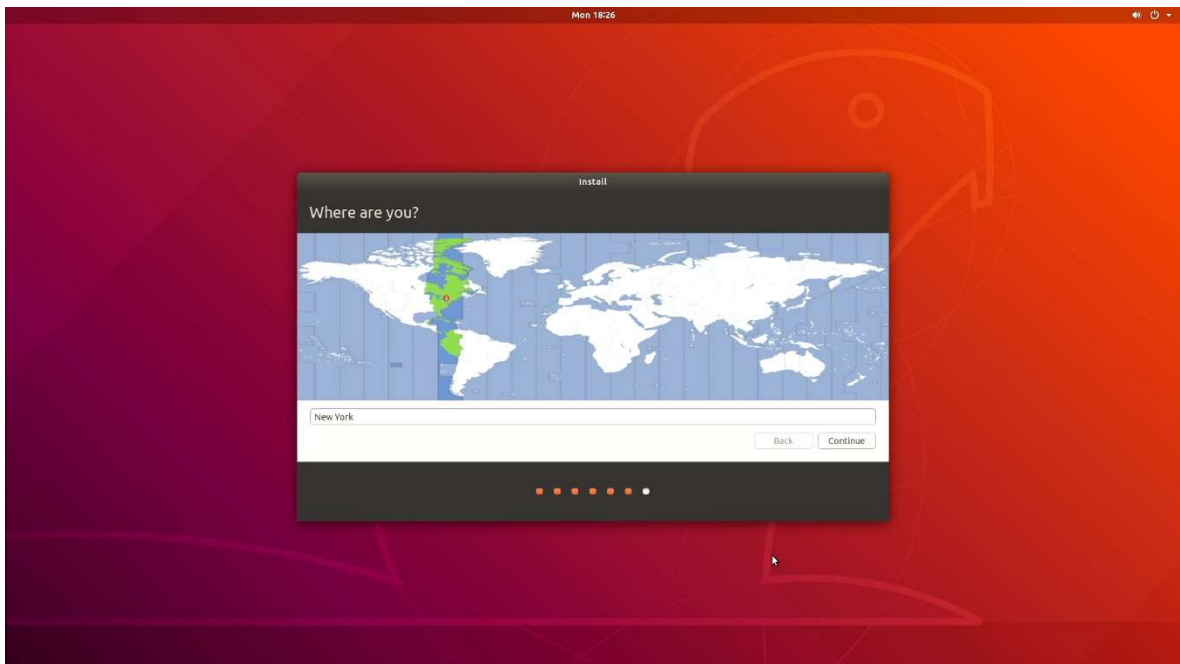
- Select “Erase disk and install Ubuntu” option and “Install Now”.



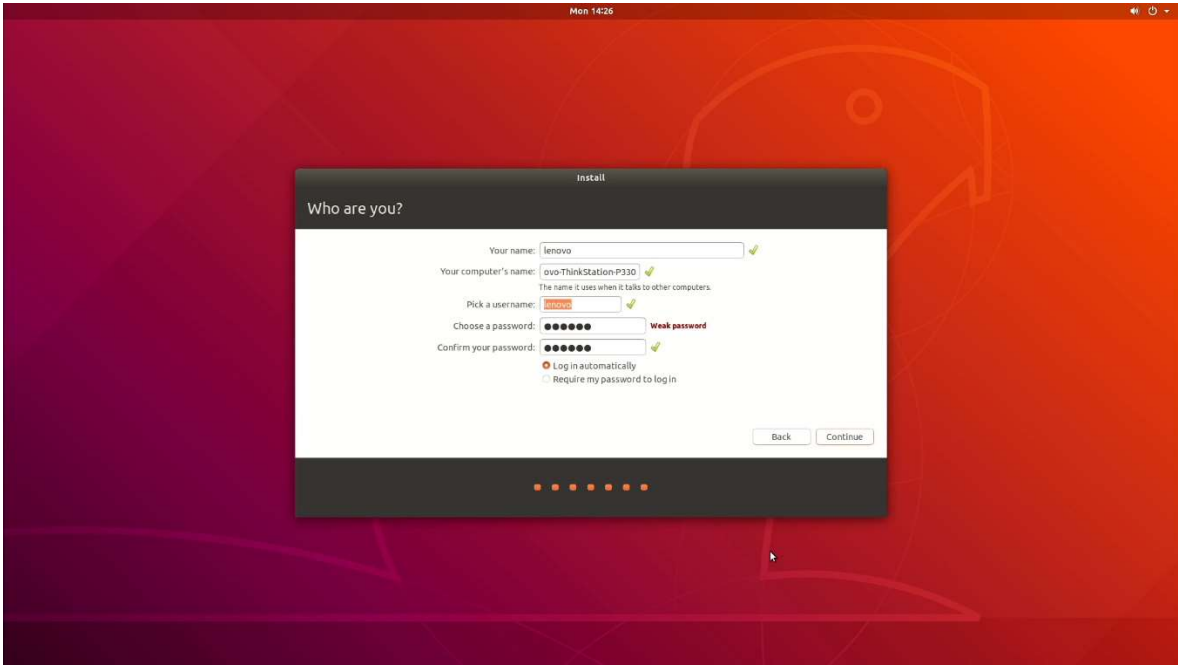
- Select “Continue” to confirm making changes to the disk.



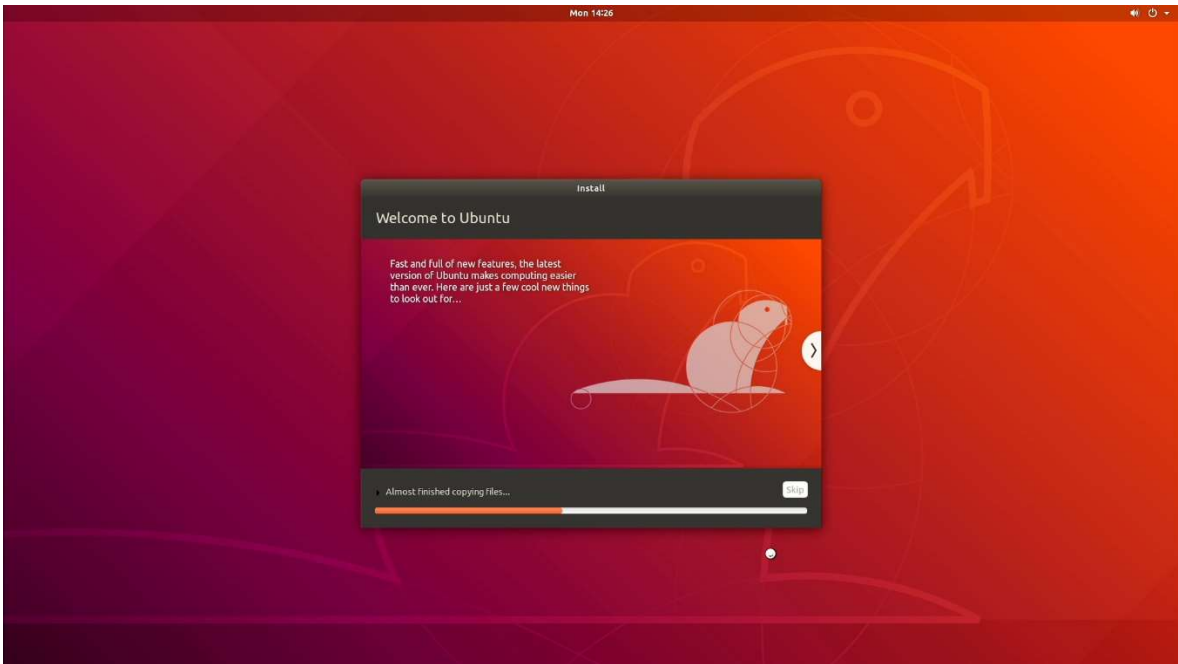
- Select your location from the map and “Continue”.



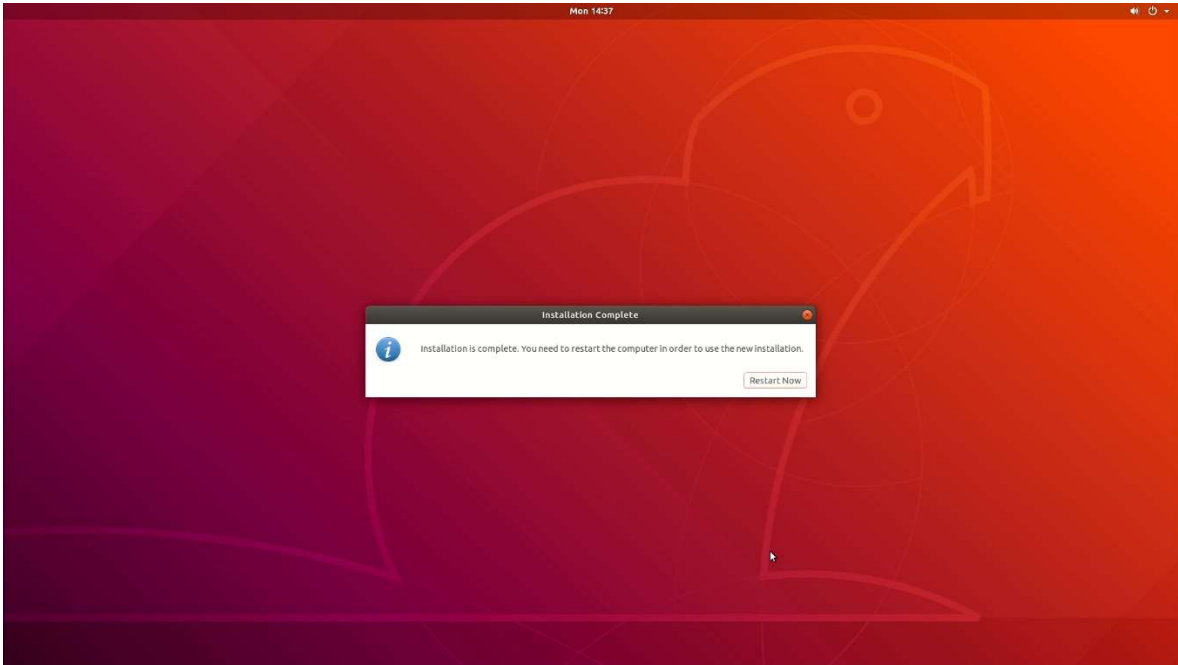
- Enter a Username and Password and select “Continue”.



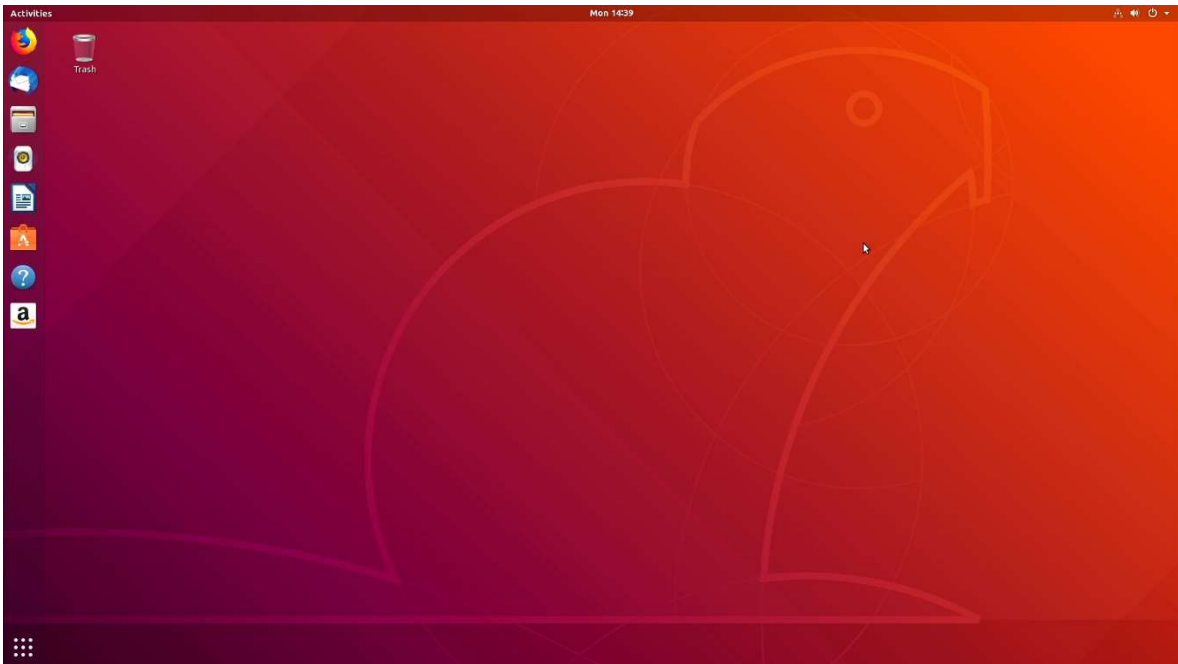
- Installing Ubuntu.



- Installation Complete. Select “Restart Now”.



- Ubuntu desktop screen.

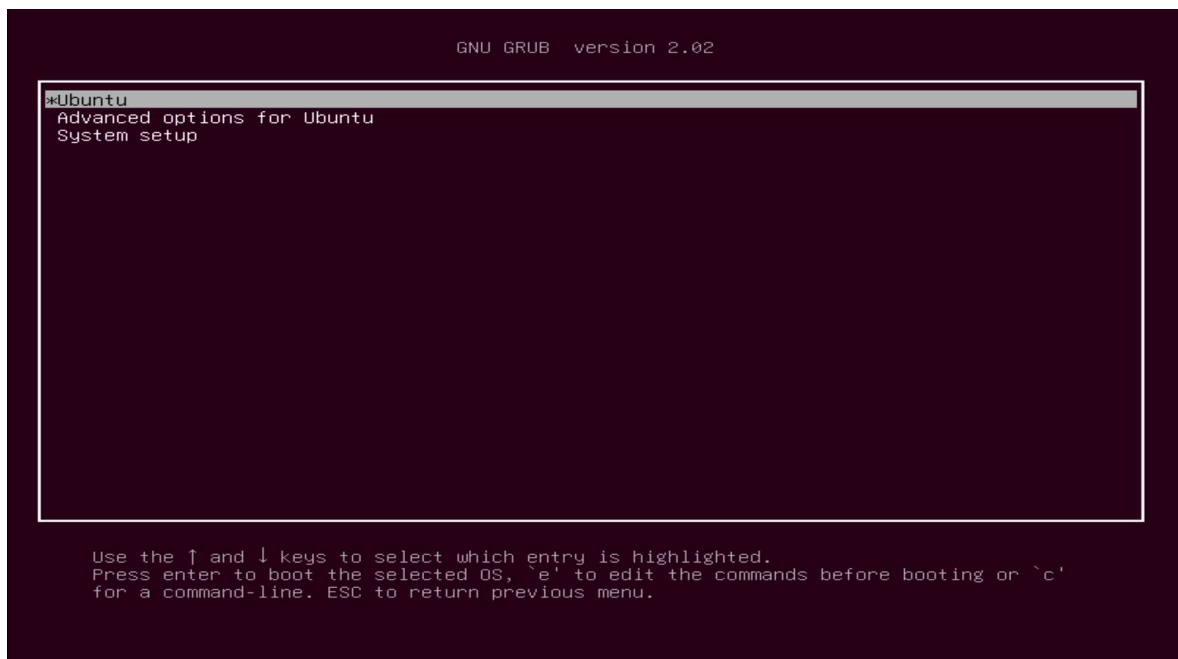


Section 3 – Installing the Nvidia Graphics Driver

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 Nvidia graphics driver from the Lenovo Support Website.
https://download.lenovo.com/pccbbs/thinkcentre_drivers/l3vdo66ws14.zip
- **Step 2:**
 - As superuser (root), blacklist the Linux Nouveau driver.
 - Edit /etc/modprobe.d/blacklist.conf and add the line "**blacklist nouveau**".
sudo nano /etc/modprobe.d/blacklist.conf
 - Run the command from a terminal window:
sudo update-initramfs -u
 - Reboot the system.
- **Step 3:**
 - During a system reboot, press the "ESC" button on the keyboard to enter the Ubuntu grub boot menu.



- Press 'e' to edit the kernel boot parameter and add "nomodeset" to the Linux boot command line.

```

GNU GRUB  version 2.02

setparams 'Ubuntu'
    recordfail
    load_video
    gfxmode $linux_gfx_mode
    insmod gzio
    if [ x$grub_platform = xxen ]; then insmod xzio; insmod lzopio; fi
    insmod part_gpt
    insmod ext2
    if [ x$feature_platform_search_hint = xy ]; then
        search --no-floppy --fs-uuid --set=root 50a94072-5b91-4e90-b3a5-0d7c65c48d34
    else
        search --no-floppy --fs-uuid --set=root 50a94072-5b91-4e90-b3a5-0d7c65c48d34
    fi
    linux /boot/vmlinuz-5.0.0-25-generic root=UUID=50a94072-5b91-4e90-b3a5-0d7c65\
c48d34 no nomodeset_ quiet splash $vt_handoff
    edited /boot/initrd.img-5.0.0-25-generic

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.

```

- Press CTRL-X or F10 to boot the system.

- **Step 4:**

- At the Ubuntu desktop screen, open a terminal window and stop X-windows by using the following command:

```
# init 3
```

- **Step 5:**
 - Log in as superuser (root) using the credentials created above.

```
Ubuntu 18.04.2 LTS lenovo-ThinkStation-P330 tty1
lenovo-ThinkStation-P330 login: lenovo
Password:
Last login: Fri Aug 16 10:10:12 EDT 2019 on tty1
Welcome to Ubuntu 18.04.2 LTS (GNU/Linux 5.0.0-25-generic x86_64)

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

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

479 packages can be updated.
234 updates are security updates.

Your Hardware Enablement Stack (HWE) is supported until April 2023.
lenovo@lenovo-ThinkStation-P330:~$ sudo su
[sudo] password for lenovo:
root@lenovo-ThinkStation-P330:~/home/lenovo# _
```

- **Step 6:**
 - Connect the system to the internet and install the “Development Tools” libraries.

```
# sudo apt-get update

# sudo apt-get install build-essential
```

```
root@lenovo-ThinkStation-P330:~/home/lenovo/Desktop/L3UD062WS14# apt-get update
Get:1 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Hit:2 http://us.archive.ubuntu.com/ubuntu bionic InRelease
Get:3 http://us.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:5 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [22.7 kB]
Get:6 http://security.ubuntu.com/ubuntu bionic-security/main DEP-11 64x64 Icons [31.7 kB]
Get:7 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [589 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [709 kB]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/universe i386 Packages [579 kB]
Get:10 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [195 kB]
Get:11 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 DEP-11 Metadata [42.0 kB]
Get:12 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 48x48 Icons [16.4 kB]
Get:13 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 64x64 Icons [111 kB]
Get:14 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:15 http://us.archive.ubuntu.com/ubuntu bionic-updates/main i386 Packages [571 kB]
Get:16 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Metadata [282 kB]
Get:17 http://us.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 48x48 Icons [66.6 kB]
Get:18 http://us.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 64x64 Icons [124 kB]
Get:19 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe i386 Packages [974 kB]
Get:20 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [997 kB]
Get:21 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [305 kB]
Get:22 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11 Metadata [252 kB]
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Get:25 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:26 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [4,000 B]
Get:27 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe i386 Packages [4,008 B]
Get:28 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [1,856 B]
Get:29 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 DEP-11 Metadata [7,712 B]
Fetched 6,797 kB in 1s (4,625 kB/s)
Reading package lists... Done
root@lenovo-ThinkStation-P330:~/home/lenovo/Desktop/L3UD062WS14# apt-get install build-essential_
```

- **Step 7:**

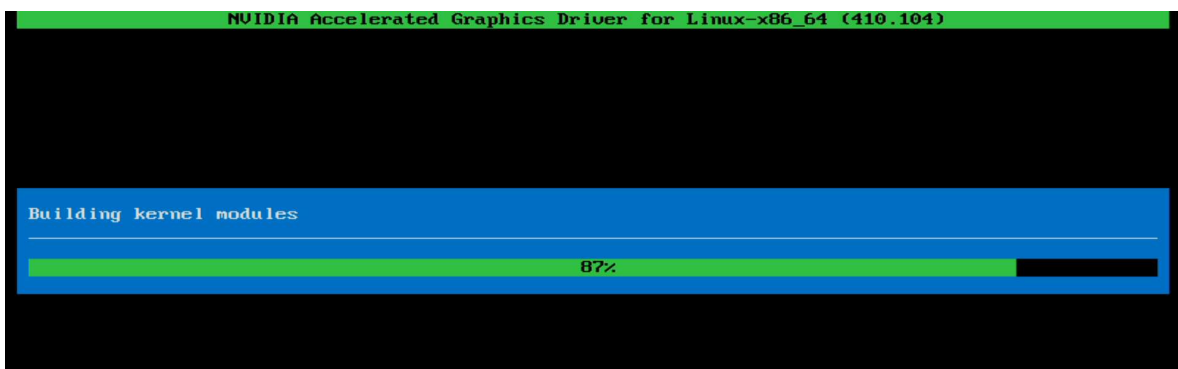
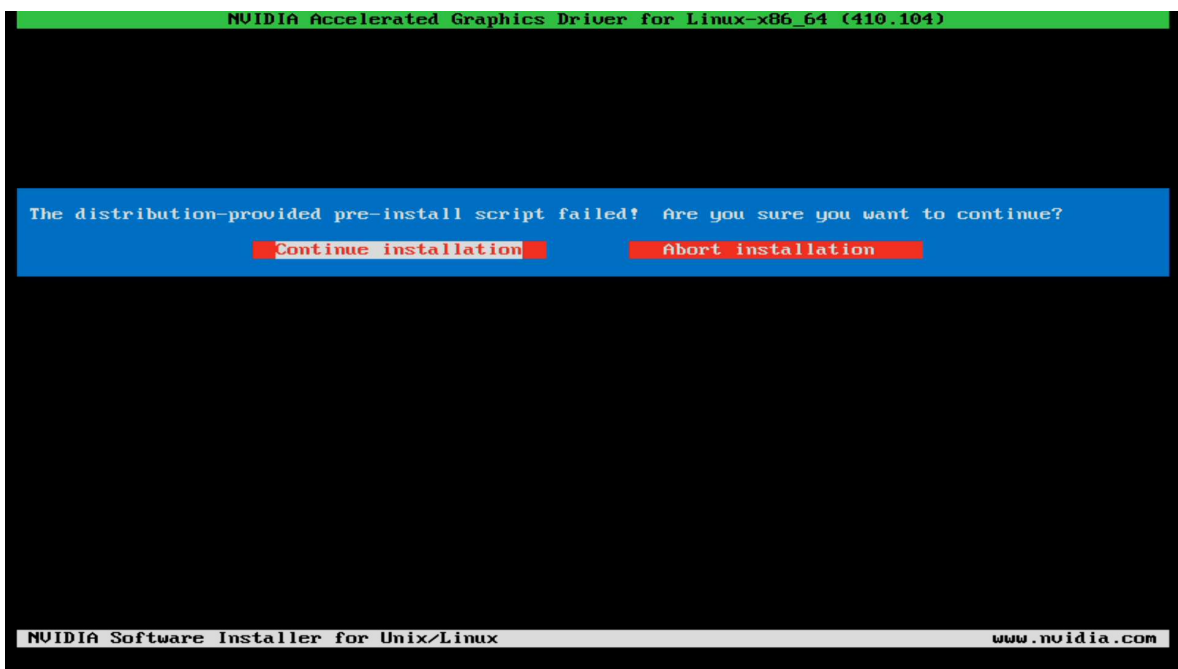
- Browse to the directory location to where the Nvidia driver was downloaded and run the following commands to unzip and install the driver.

```
# unzip l3vdo66ws14.zip
```

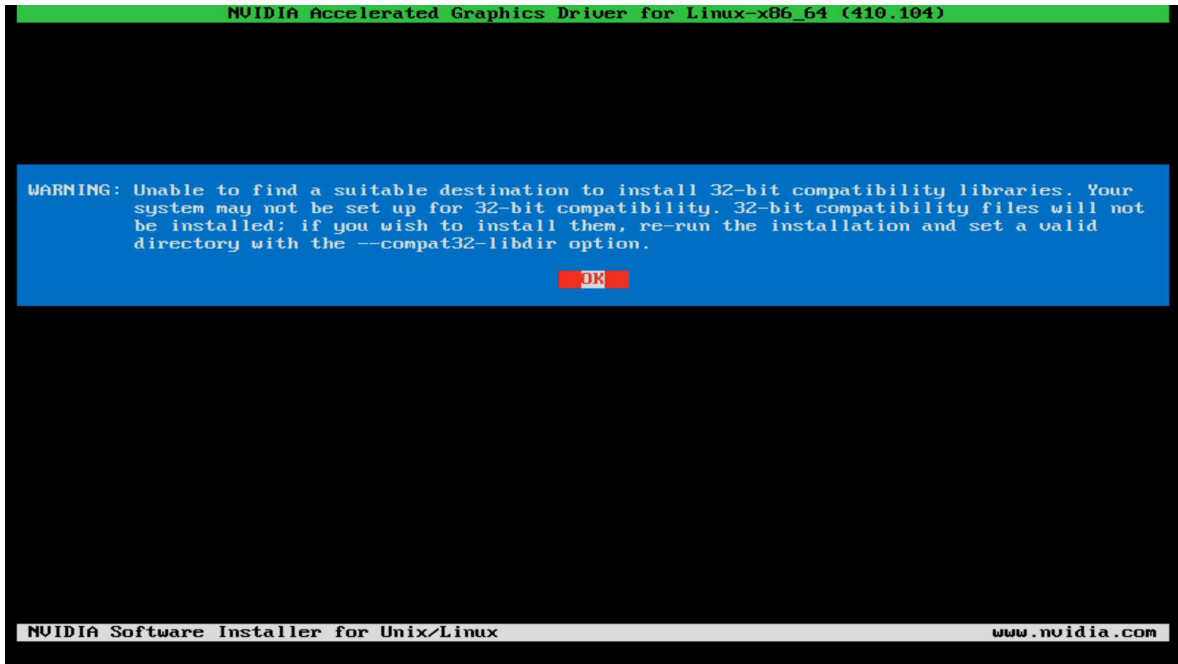
```
# sudo sh NVIDIA-Linux-x86_64-410.104.run
```

- **Step 8:**

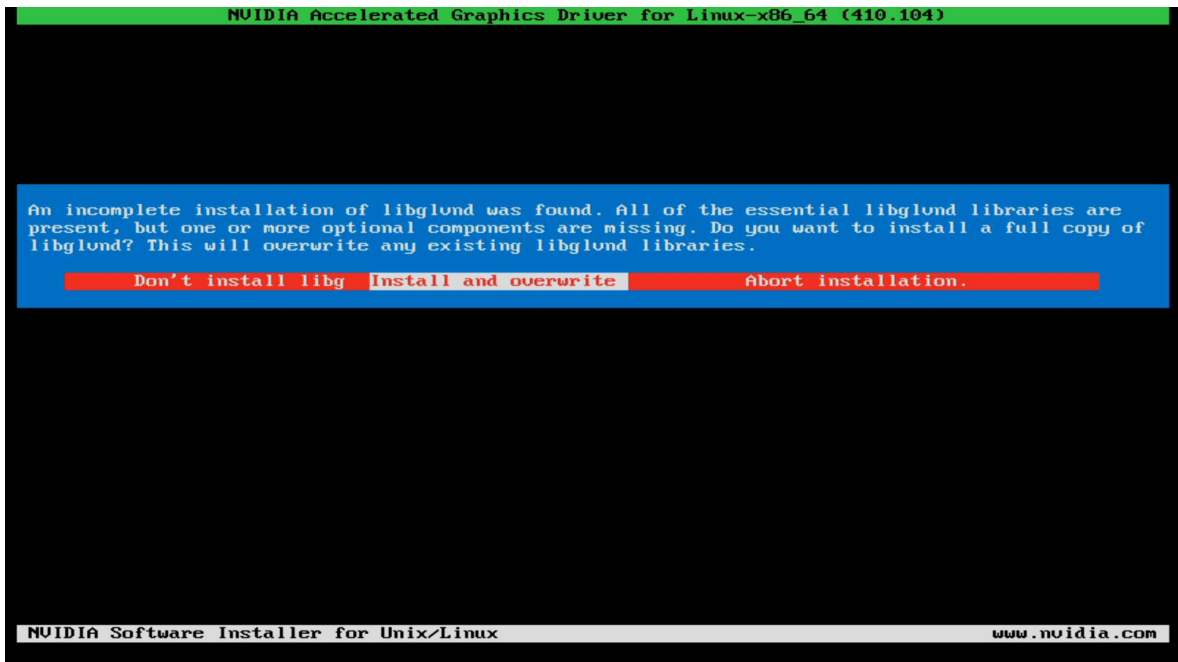
- Select “Continue Installation” at the pre-install script failed message.



- **Step 9:**
 - Select “OK” at the warning message where the installer couldn’t find 32-bit compatible libraries.

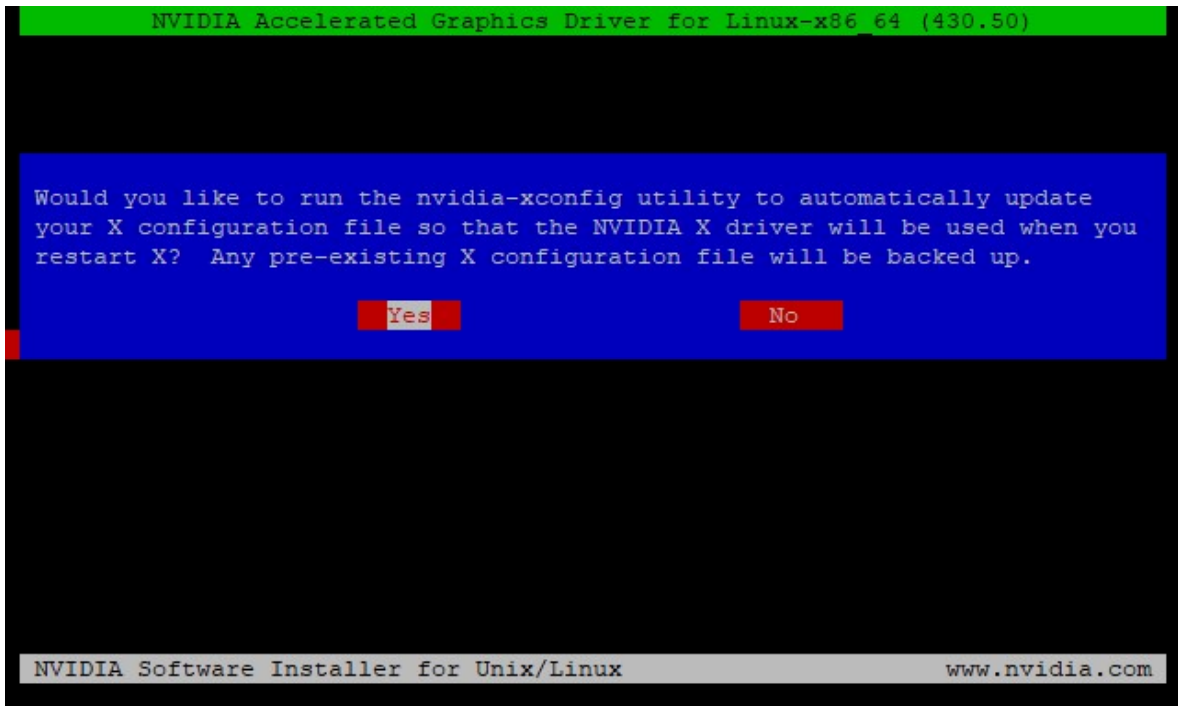


- **Step 10:**
 - Select “Install and overwrite” for the libglvnd libraries.



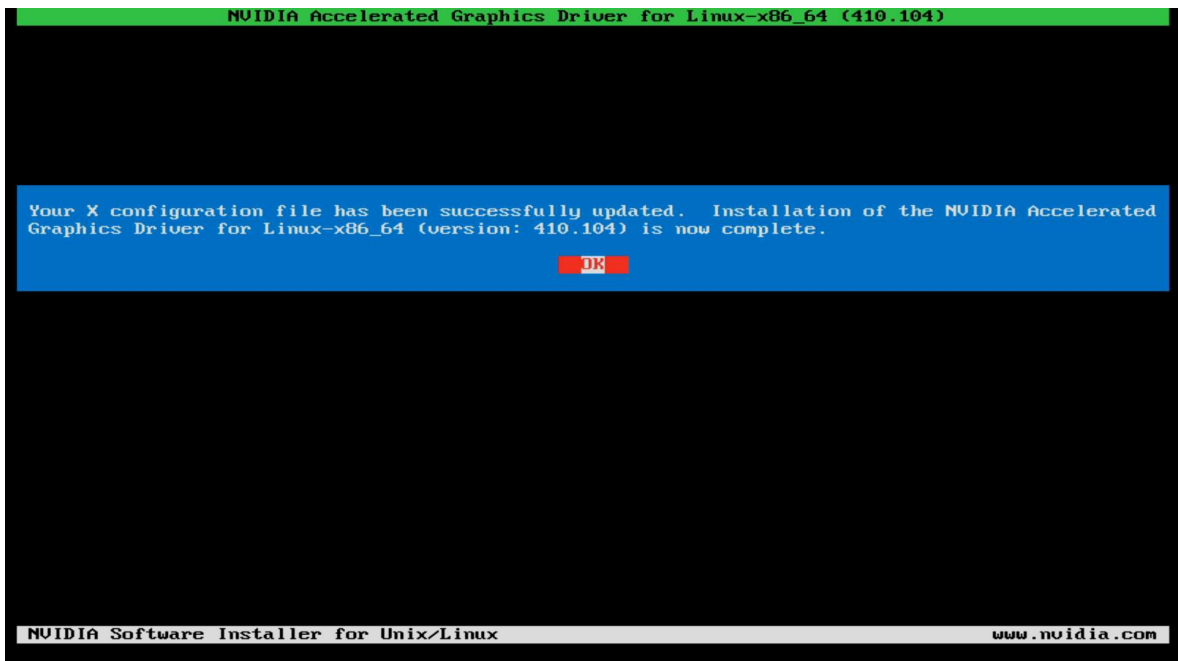
- **Step 11:**

- Select “Yes” to update the X-configuration file to use the Nvidia X driver.



- **Step 12:**

- Select “OK” at the completion of the driver installation process.



- **Step 13:**
 - Verify the Nvidia driver has been installed successfully and is loaded properly by running the following command:

```
# nvidia-smi
```

```
root@lenovo-ThinkStation-P330:~/home/lenovo/Desktop/L3UD062WS14# nvidia-smi
Fri Aug 16 10:15:26 2019

+-----+
| NVIDIA-SMI 410.104      Driver Version: 410.104      CUDA Version: 10.0      |
+-----+
| 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           | 00000000:01:00:0 | Off      | N/A |
| 43%  49C    P0      N/A /  N/A | 0MiB / 1997MiB | 2%      | Default |
+-----+-----+

+-----+
| Processes:                                                       GPU Memory |
|  GPU       PID    Type   Process name                               Usage      |
+-----+-----+
| No running processes found                                     |
+-----+

root@lenovo-ThinkStation-P330:~/home/lenovo/Desktop/L3UD062WS14#
```

- **Step 13:**
 - Reboot the system.

Section 4 – Installing the Network Wireless Driver

The wireless network device offered for the P330 is native to Ubuntu 18.04 LTS; therefore, you will not need to install any additional drivers separately.

Section 5 – Installing the Network LAN Driver

The network LAN device is native to Ubuntu 18.04 LTS; therefore, you will not need to install any additional drivers separately.

Section 6 – Revision History

Version	Date	Author	Changes/Updates
1.0	10/21/2019	Jason Moebs	Initial launch release