Ubuntu Linux Setup Guide

For ThinkStation P520c-P520-P720-P920

Lenovo

Section 1 - BIOS Setup and Preinstallation Steps

The first step before installing Linux is to make sure BIOS is setup correctly. By default, the system BIOS should be set up to handle both UEFI/GPT and Legacy/MBR partitions.

➔ **For NVMe PCIe SSDs**, make sure these drives are set up in PCIE mode (not VMD mode).

- o Boot into BIOS by pressing the function F1 key at the "Lenovo" splash screen.

- o Select the "Advanced" menu option (left) and "Intel VMD technology" (right).

o Disable each "CPU **x** Port **y**".

Enable the VMD(Volume Management Device) technology to support configure PCIE storages to VROC(Virtual RAID on CPU) feature.
Note: Only on same PCIE x16 ports are supported to be configured as one VROC (Virtual Raid on CPU) in Intel(R) RSTe Raid Controller menu.
VMD: configure this slot as VMD (Intel Volume Management Device).
PCIE: configure this slot as general PCI Express port.

CPU 0 Port 1.	Disabled
CPU 0 Port 3.	Disabled
CPU 1 Port 1.	Disabled
CPU 1 Port 2.	Disabled
CPU 1 Port 3.	Disabled

Setup

- Main
- Devices
- Advanced
- Power
- Security
- Startup
- Exit

Previous Values(F2)

Optimized Defaults(F9)

Back (ESC)

Save & Exit (F10)

Lenovo.

UEFI Setup Utility

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o Select F10 to "Save and Exit" BIOS.
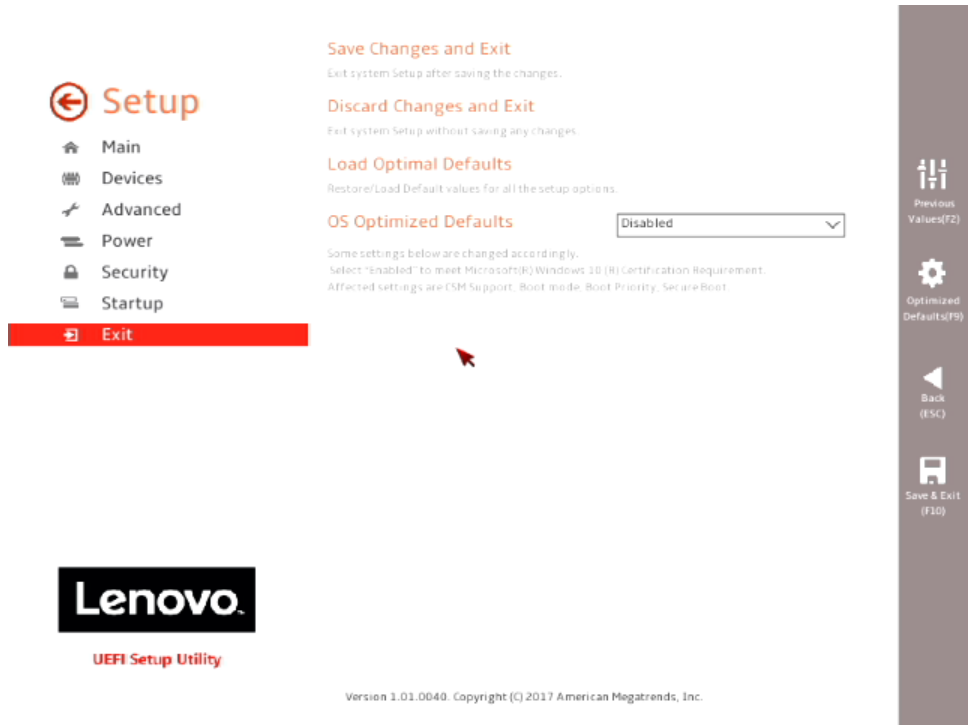
- **For UEFI/GPT installations (recommended)**:

    o Boot into BIOS by pressing the function F1 key at the "Lenovo" splash screen.

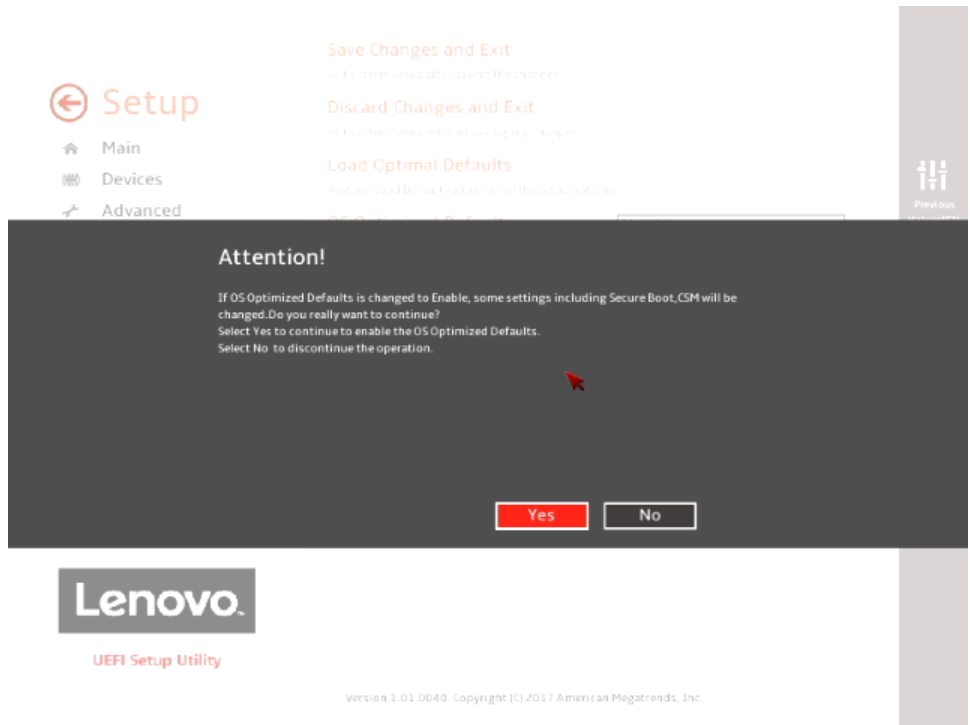   o Select "Setup" from the screen indicated below.

Lenovo™

ThinkStation®

| Setup | Boot | Boot Menu | Embedded Diagnostics | ME Setup or Remote Connection |

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o Select "Exit" menu option (left) and set "OS Optimized Defaults" (right) to "Enabled".

o Select "Yes" at the confirmation screen indicated below.

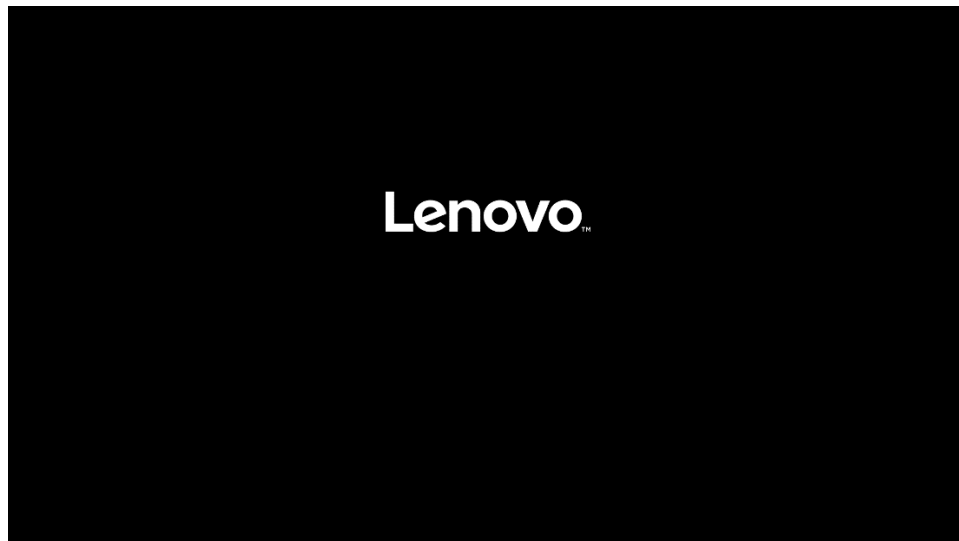o   Select the "Security" menu option (left), then select "Secure Boot" option (right).
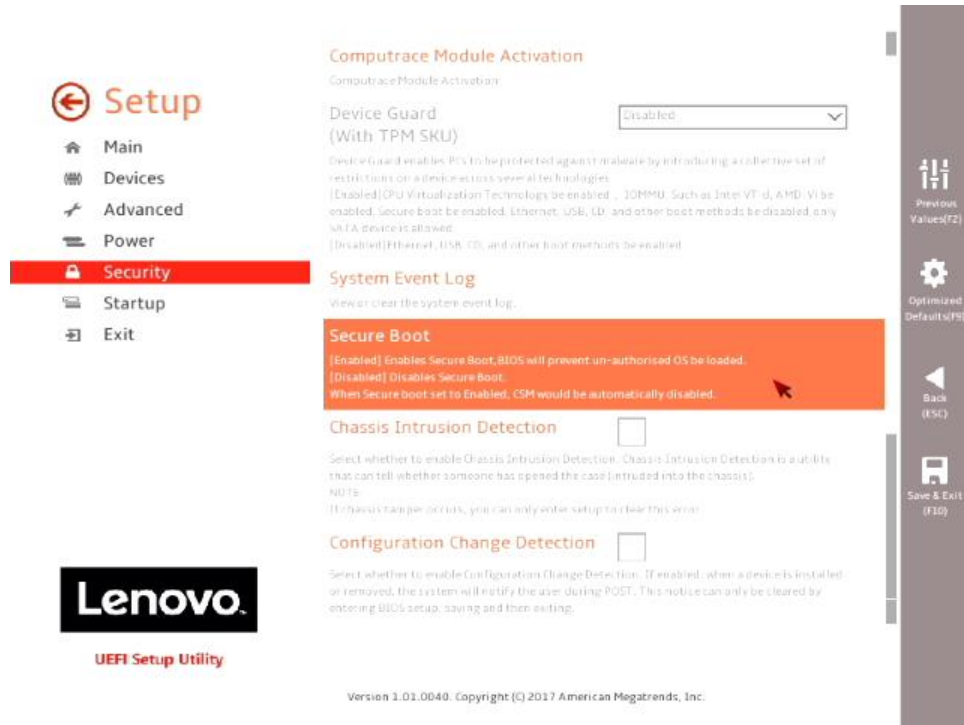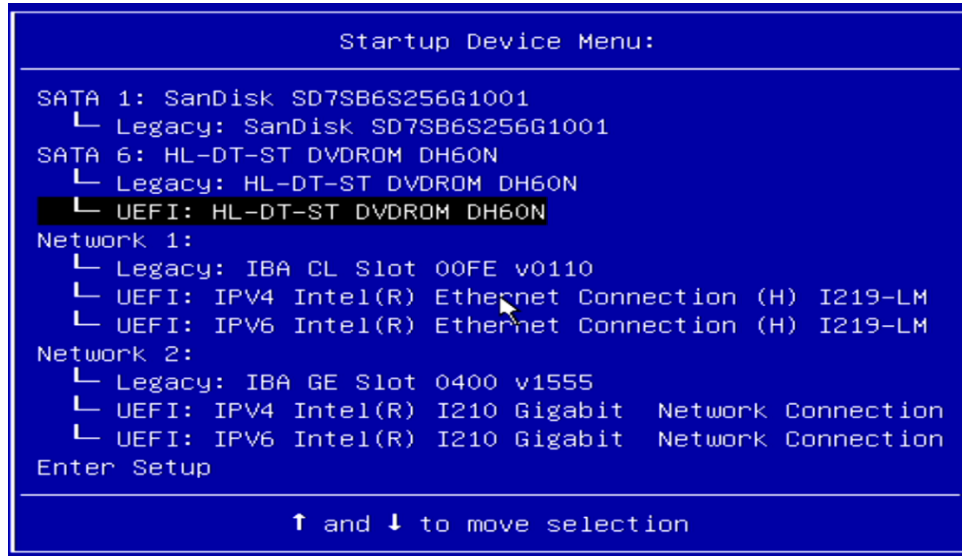

o   Disable "Secure Boot".
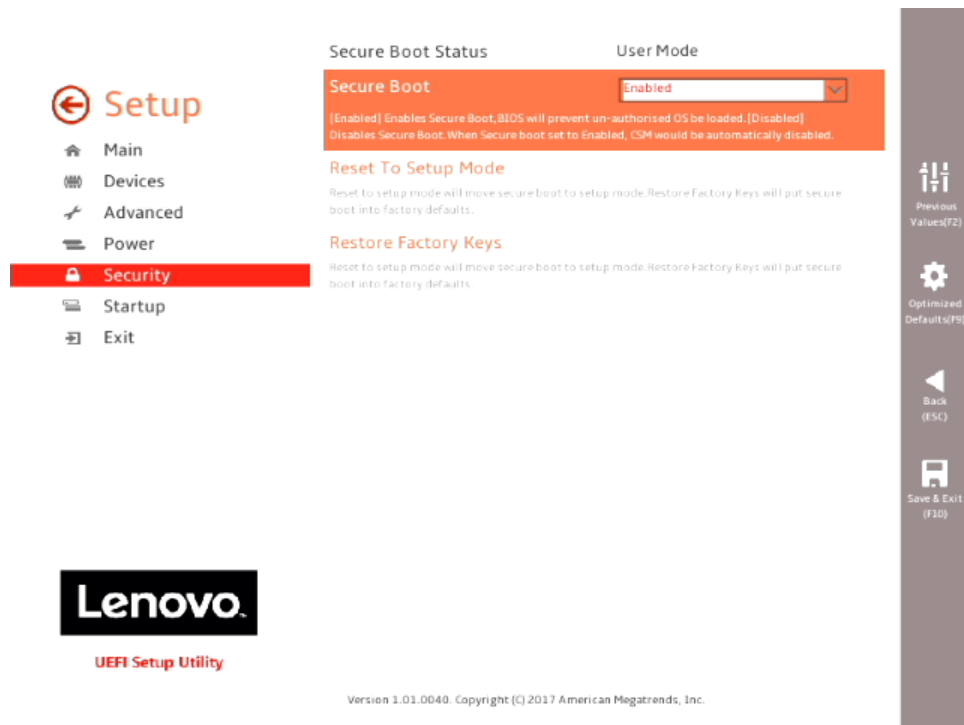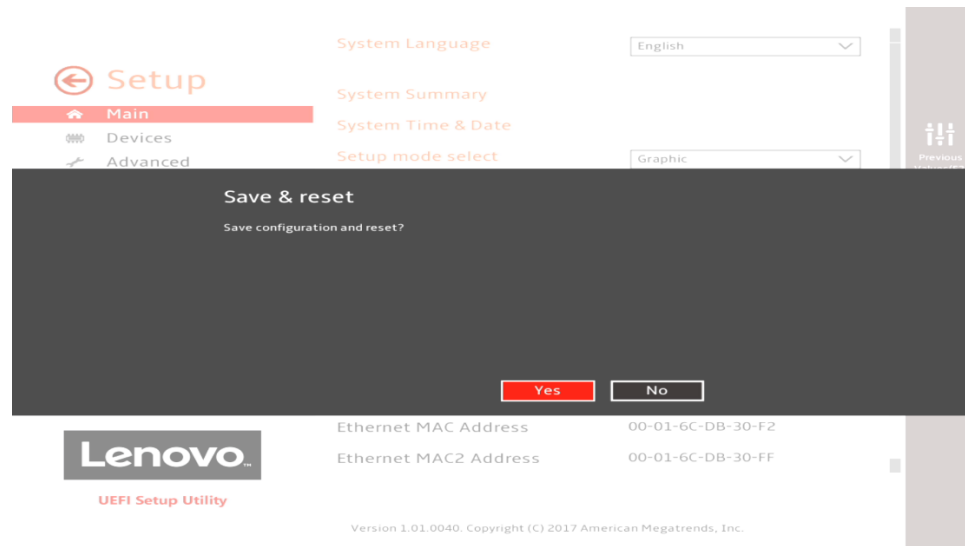
o Select F10 to "Save and Exit" BIOS.

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

o Power on the system and press the F12 function key whenever the following Lenovo splash screen appears:

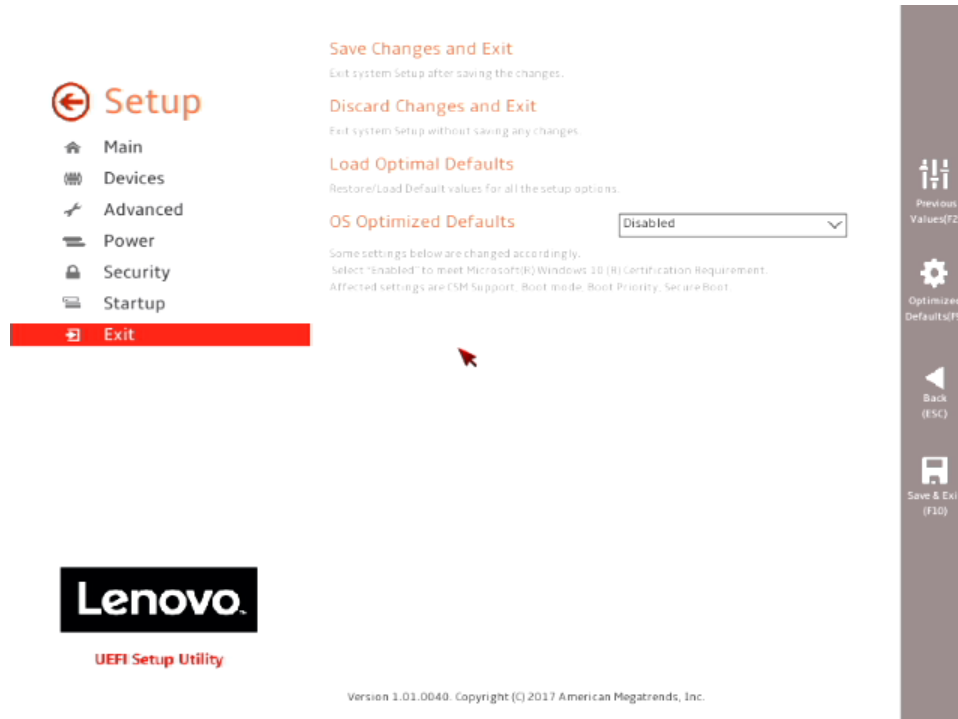o   Select the Linux bootable installation media "UEFI" option from the F12 boot menu list.


```
                    Startup Device Menu:

SATA 1: SanDisk SD7SB6S256G1001
    └ Legacy: SanDisk SD7SB6S256G1001
SATA 6: HL-DT-ST DVDROM DH60N
    └ Legacy: HL-DT-ST DVDROM DH60N
    └ UEFI: HL-DT-ST DVDROM DH60N
Network 1:
    └ Legacy: IBA CL Slot 00FE v0110
    └ UEFI: IPV4 Intel(R) Ethernet Connection (H) I219-LM
    └ UEFI: IPV6 Intel(R) Ethernet Connection (H) I219-LM
Network 2:
    └ Legacy: IBA GE Slot 0400 v1555
    └ UEFI: IPV4 Intel(R) I210 Gigabit  Network Connection
    └ UEFI: IPV6 Intel(R) I210 Gigabit  Network Connection
Enter Setup

         ↑ and ↓ to move selection
```

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

  o Boot into BIOS by pressing the function F1 key at the "Lenovo" splash screen.

  o Select "Setup" from the screen indicated below.

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  o Select "Exit" menu option (left) and set "OS Optimized Defaults" (right) to "Disabled".

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o   Select "Startup" menu option (left) and "CSM Configuration" (right).

o   Select the "Storage" option ROM and set the pull-down menu to "Legacy".

o   Select F10 to "Save and Exit" BIOS.

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

o   Power on the system and press the F12 function key whenever the following
Lenovo splash screen appears:

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


```
                    Startup Device Menu:

SATA 1: SanDisk SD7SB6S256G1001
    └ Legacy: SanDisk SD7SB6S256G1001
SATA 6: HL-DT-ST DVDROM DH60N
    └ Legacy: HL-DT-ST DVDROM DH60N
        └ UEFI: HL-DT-ST DVDROM DH60N
Network 1:
    └ Legacy: IBA CL Slot 00FE v0110
        └ UEFI: IPV4 Intel(R) Ethernet Connection (H) I219-LM
        └ UEFI: IPV6 Intel(R) Ethernet Connection (H) I219-LM
Network 2:
    └ Legacy: IBA GE Slot 0400 v1555
        └ UEFI: IPV4 Intel(R) I210 Gigabit  Network Connection
        └ UEFI: IPV6 Intel(R) I210 Gigabit  Network Connection
Enter Setup

            ↑ and ↓ to move selection
```
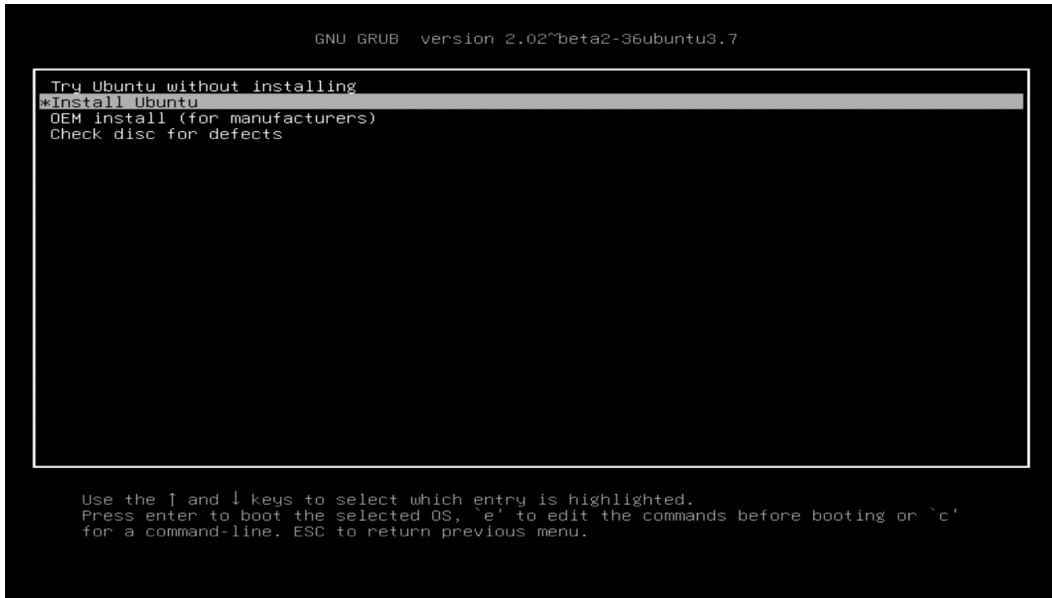
Section 2 – Installing Ubuntu 16.04 LTS

Please refer to the following instructions and screenshots on how to install Ubuntu 16.04 LTS on the ThinkStation P520c, P520, P720, and P920 workstations.

- Highlight the "*Install Ubuntu*" from the Installer menu and press Enter.
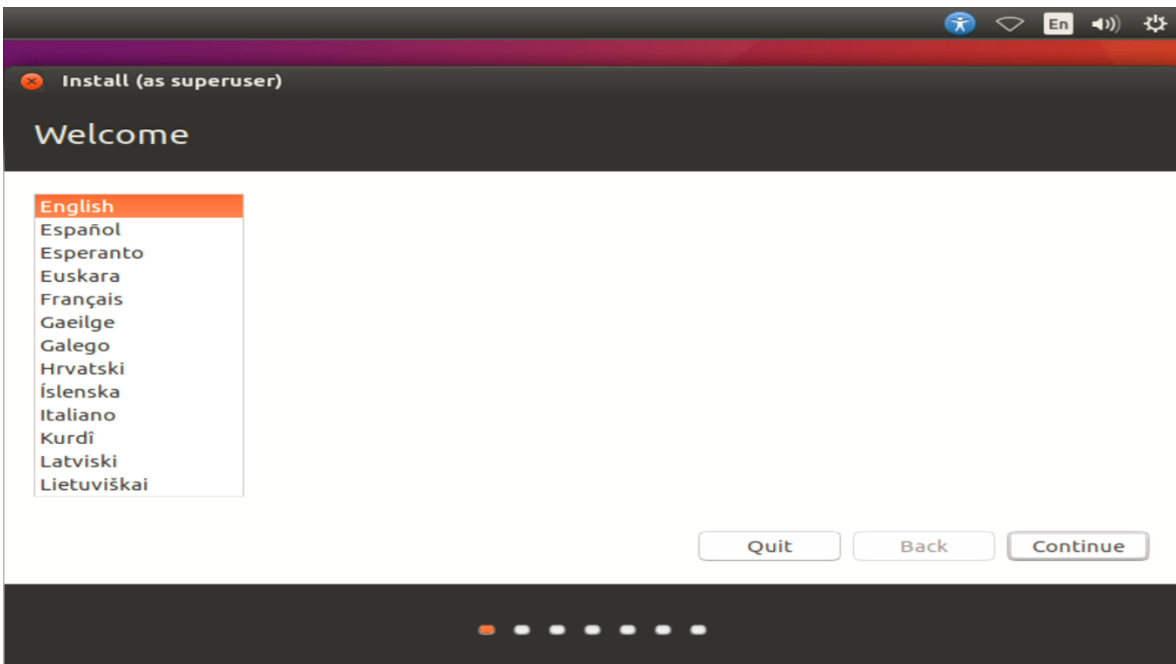
```
                    GNU GRUB   version 2.02~beta2-36ubuntu3.7

 ┌──────────────────────────────────────────────────────────────────────────┐
 │  Try Ubuntu without installing                                             │
 │ *Install Ubuntu                                                            │
 │  OEM install (for manufacturers)                                           │
 │  Check disc for defects                                                    │
 │                                                                            │
 │                                                                            │
 │                                                                            │
 │                                                                            │
 │                                                                            │
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 │                                                                            │
 │                                                                            │
 └──────────────────────────────────────────────────────────────────────────┘

       Use the ↑ and ↓ keys to select which entry is highlighted.
       Press enter to boot the selected OS, `e' to edit the commands before booting or `c'
       for a command-line. ESC to return previous menu.
```

- With Intel Kaby-Lake CPU's, the following warning message may appear.

```
[    5.432856] BERT: Can't request iomem region <000000008f2d0018-000000008f2d002b>.
[    5.506533] nouveau 0000:01:00.0: unknown chipset (137000a1)
_
```

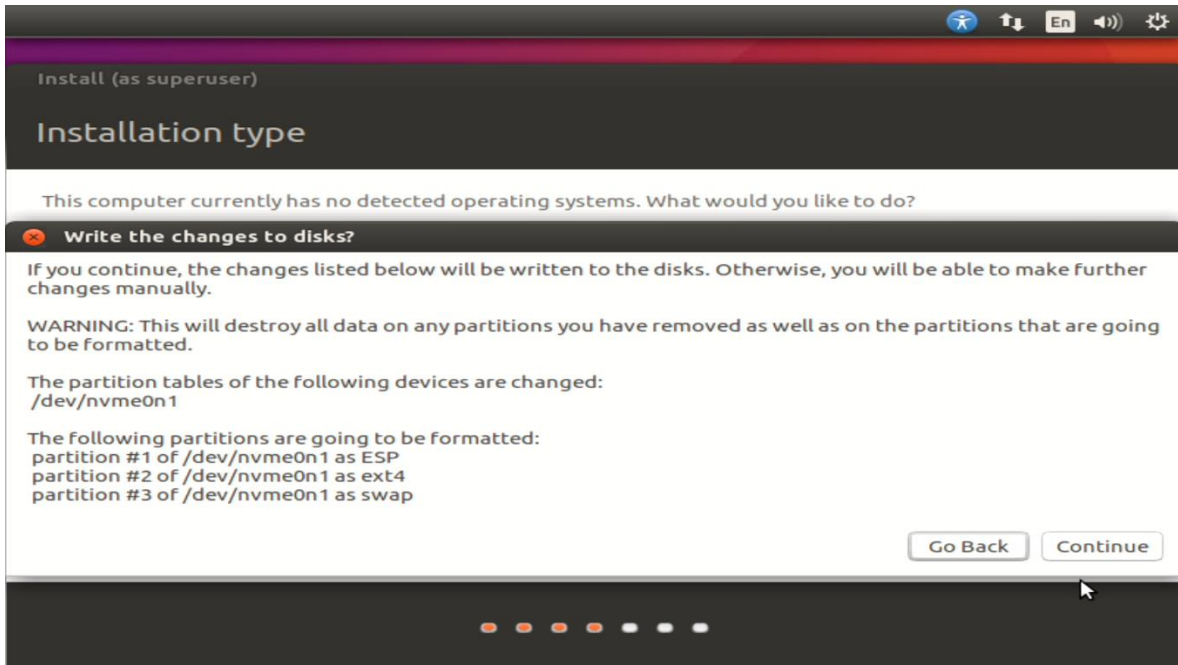- Select the language to use during the installation process.

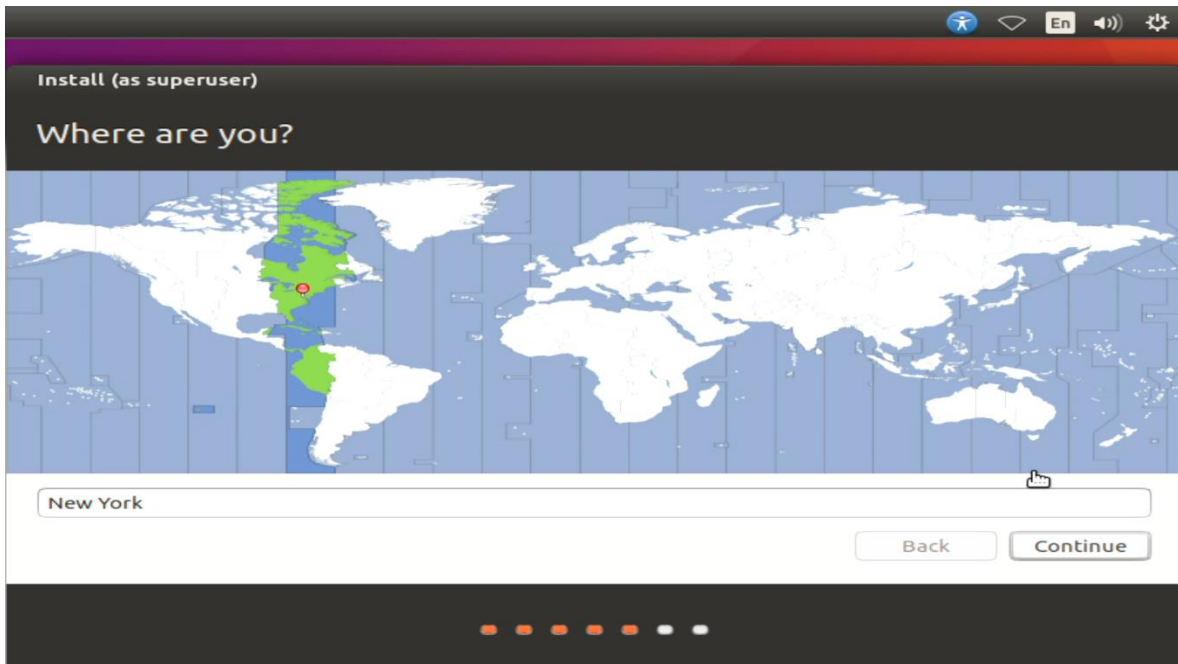- *Optional*: Select options to install updates automatically and select "Continue".
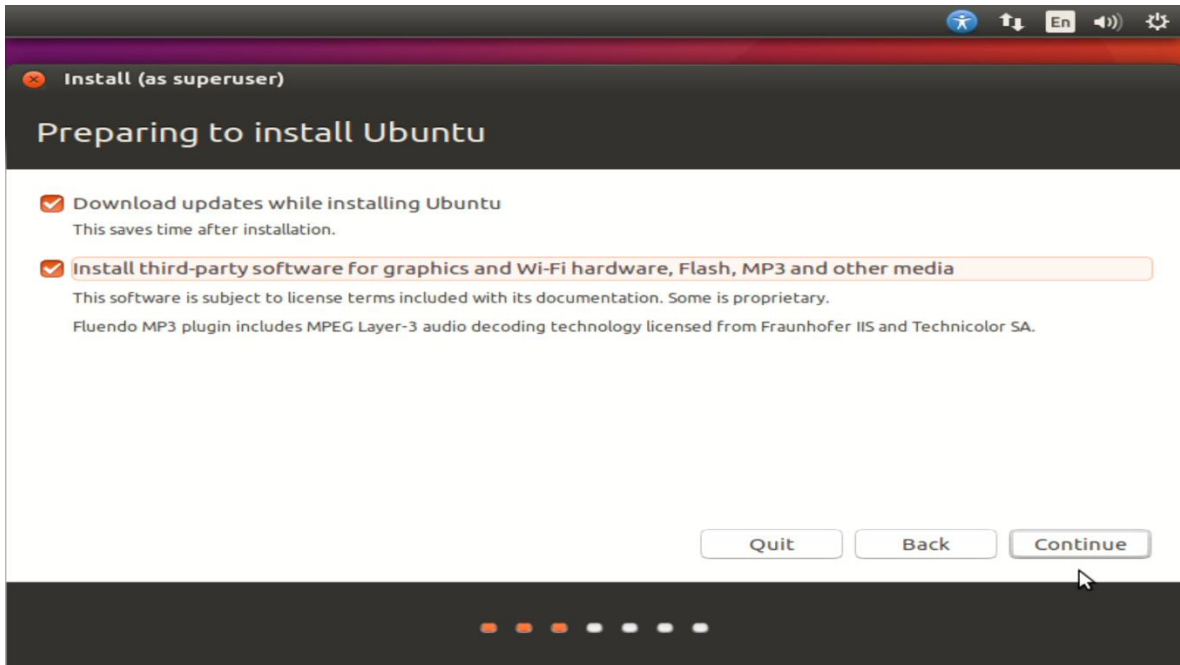
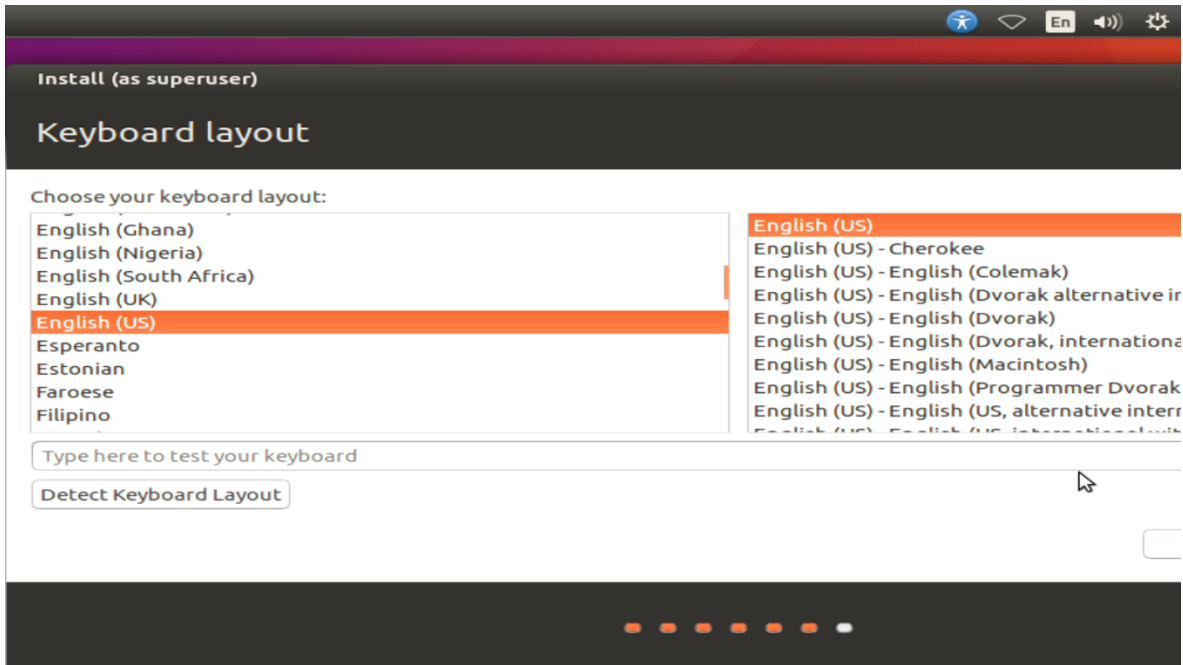- Select "*Erase disk and install Ubuntu*" option and "Install Now".
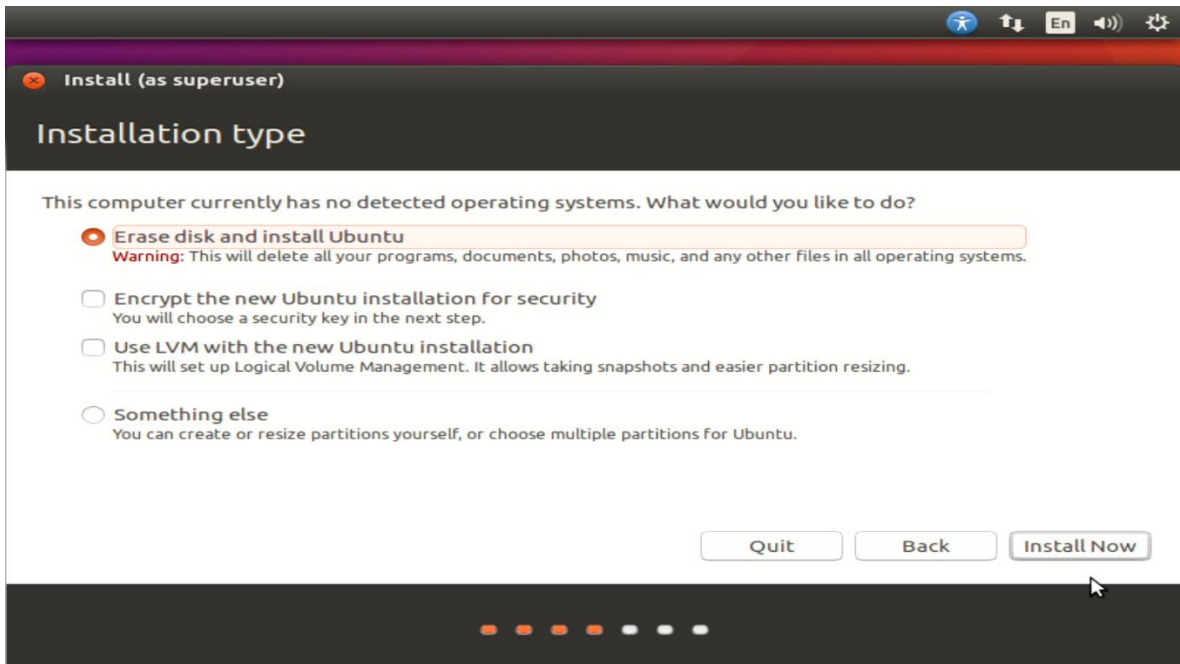
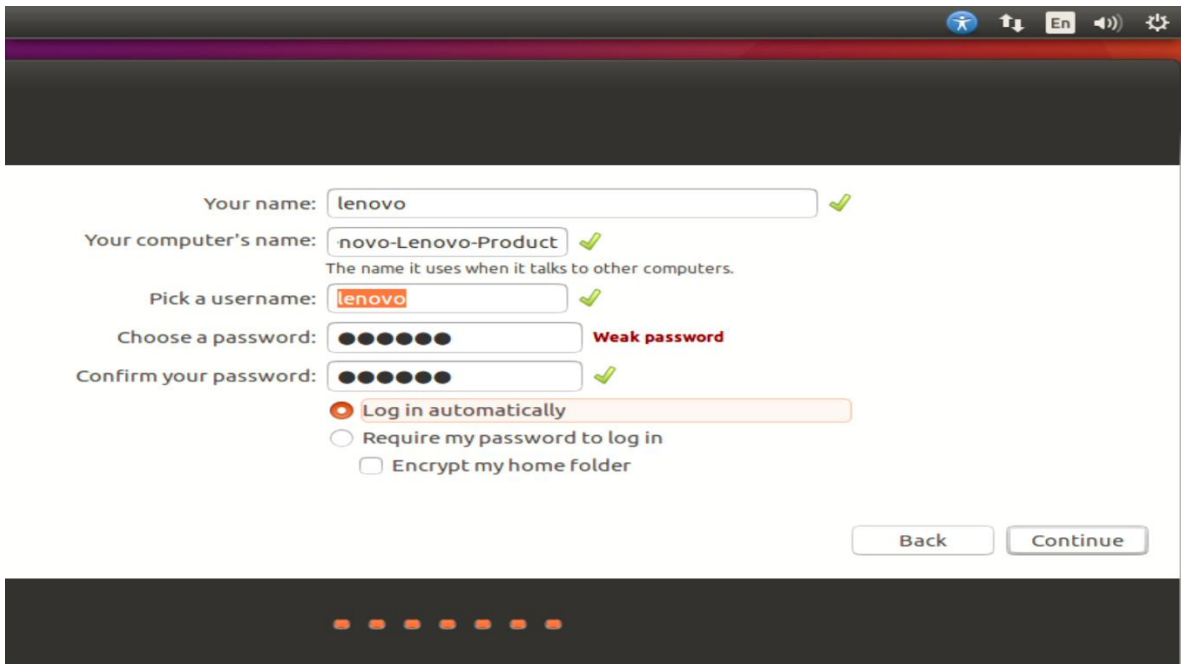- Select "Continue" to confirm making changes to the disk.

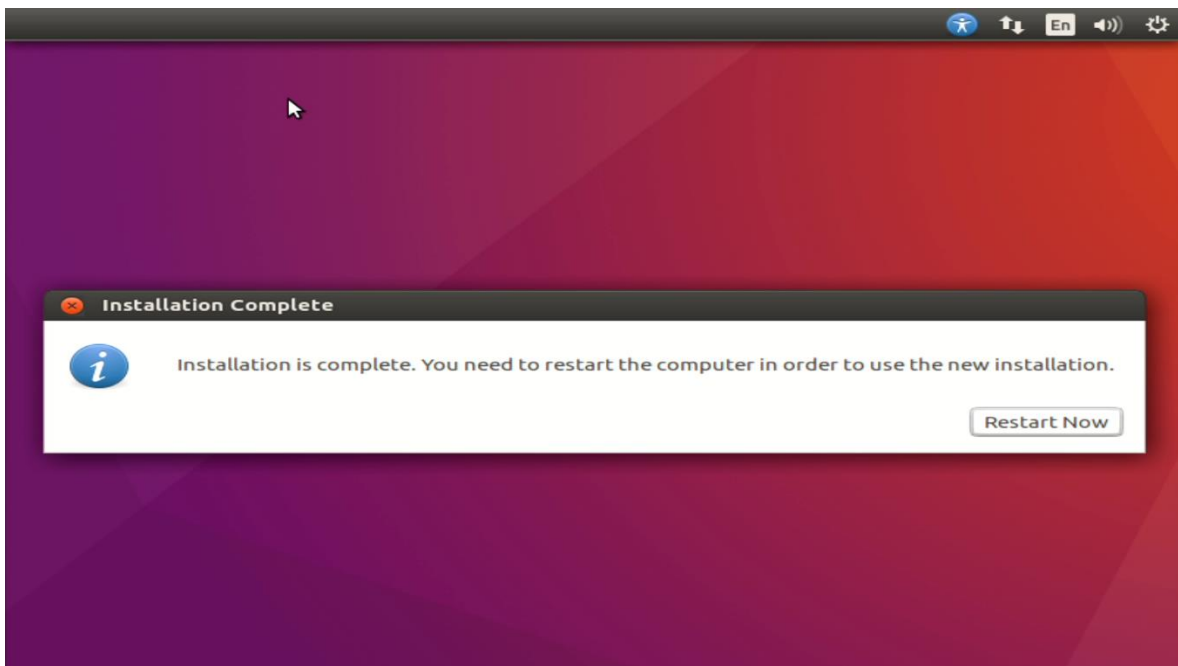- Select your location from the map.

- Select your keyboard layout.

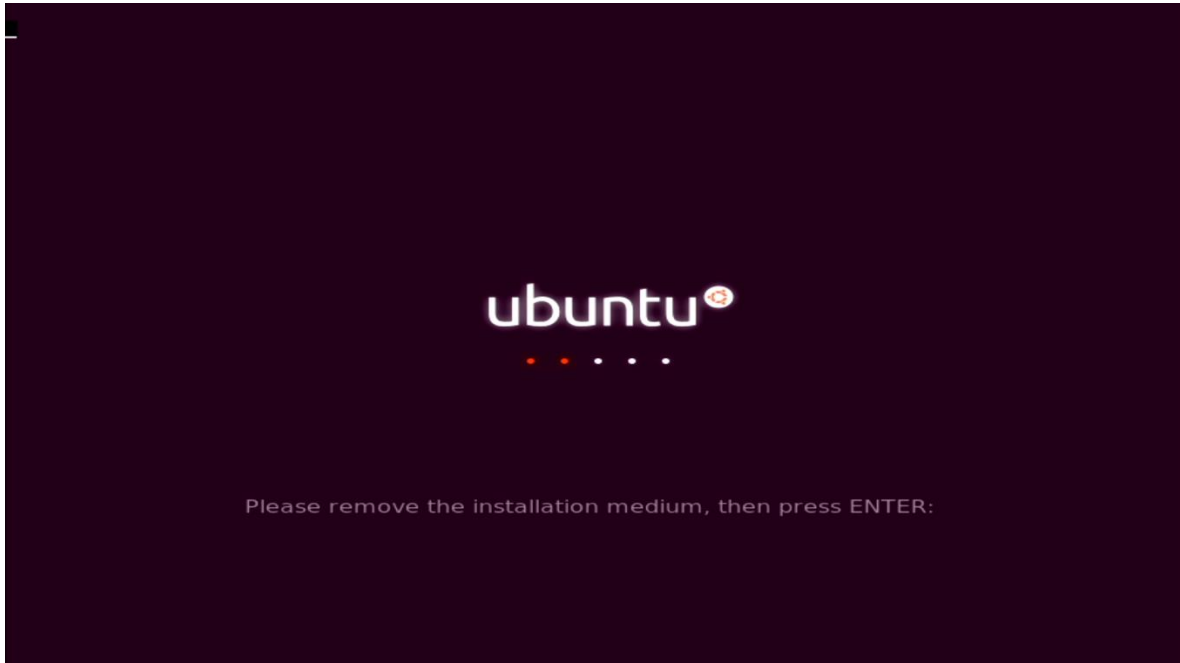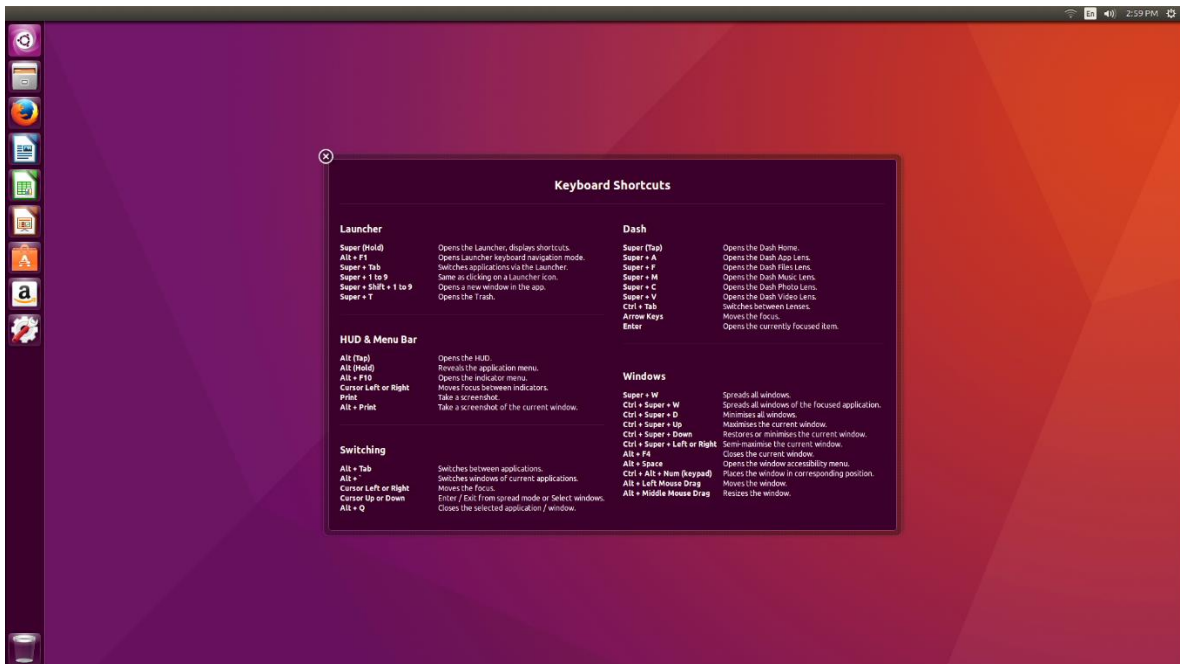- Enter a Username and Password and select "Continue".

- Installing Ubuntu.

- Installation Complete. Select "Restart Now".

- Remove installation media and press ENTER.

- 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**:

  o Download the Nvidia graphics driver from the Lenovo Support Website.
    http://pcsupport.lenovo.com/us/en/products/WORKSTATIONS/THINKSTATION-P-SERIES-WORKSTATIONS/THINKSTATION-P320/downloads/DS121444

- **Step 2:**

  o Blacklist the Linux Nouveau driver.
    - Edit /etc/modprobe.d/blacklist.conf and add the line "**blacklist nouveau**".
    - Run the command from a terminal window: ***update-initramfs –u***
    - Reboot the system.

- **Step 3**:

  o Press "Ctrl-Alt-F2", login as root and stop the x-server by running "**service lightdm stop**".

- **Step 4**:

  o Browse to the directory location to where the Nvidia driver installer is located.

- **Step 5**:

  o Run the Nvidia installer.

```
root@lenovo-Lenovo-Product:/home/lenovo/Desktop# ls
NVIDIA-Linux-x86_64-375.61.run
root@lenovo-Lenovo-Product:/home/lenovo/Desktop# ./NVIDIA-Linux-x86_64-375.61.run
```

- **Step 6**:

  o Accept the Nvidia driver license.

- **Step 7**:

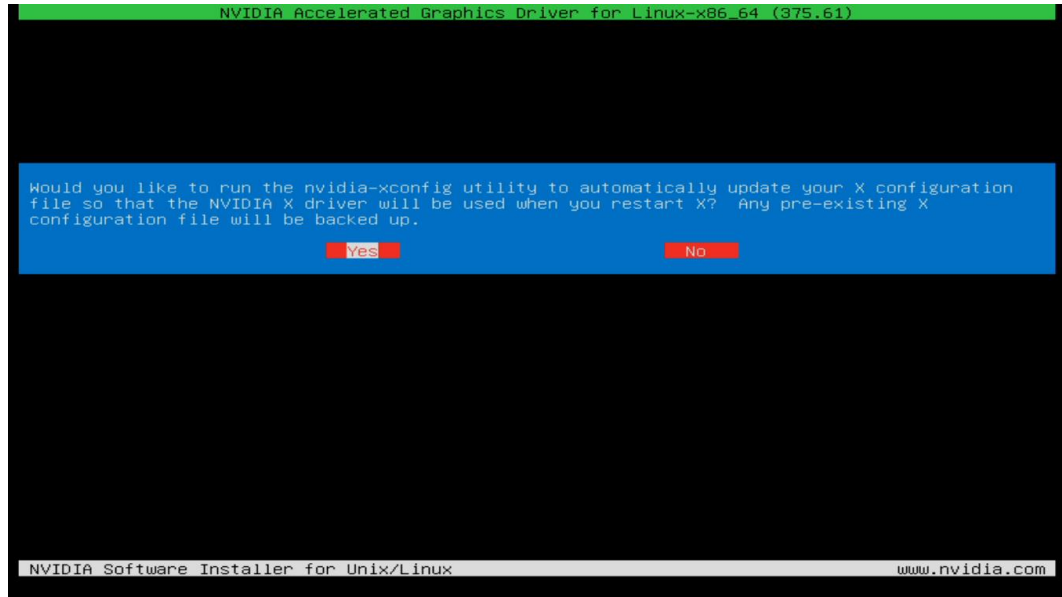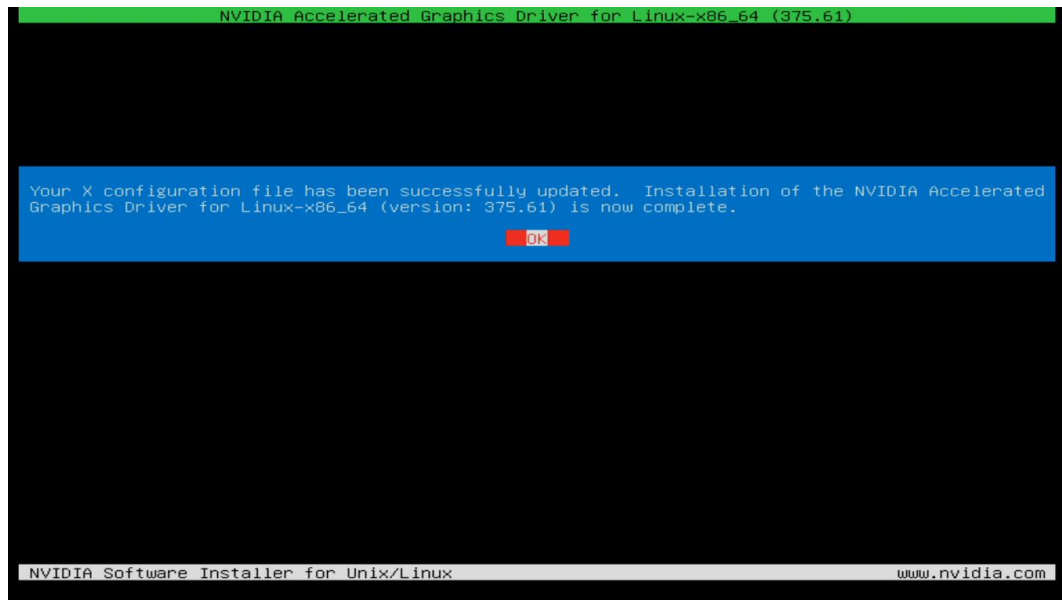 o Continue the installation.
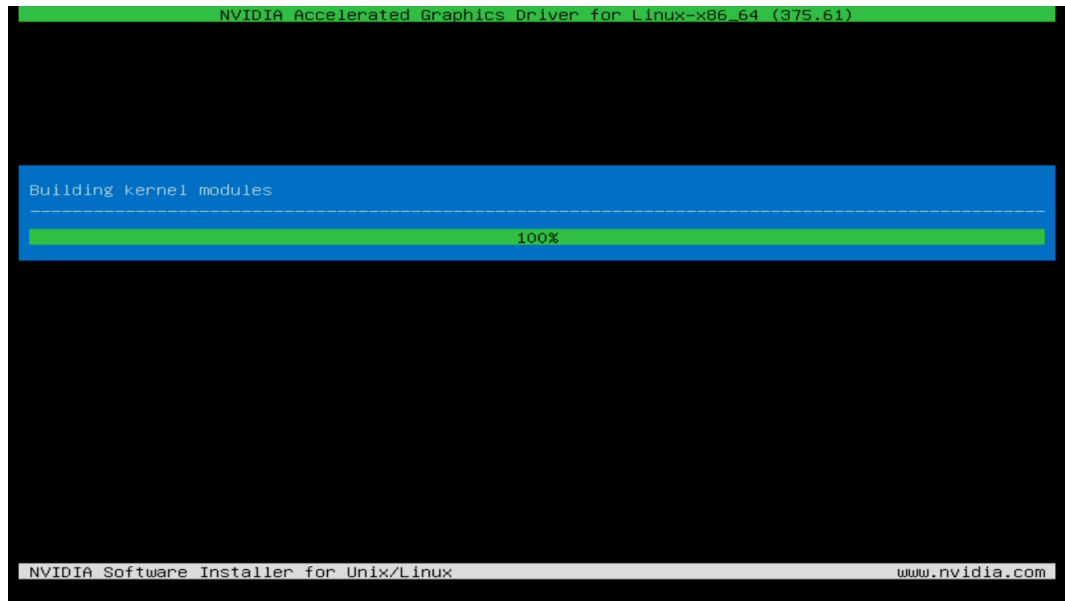
- **Step 8**:

  o Select "OK".
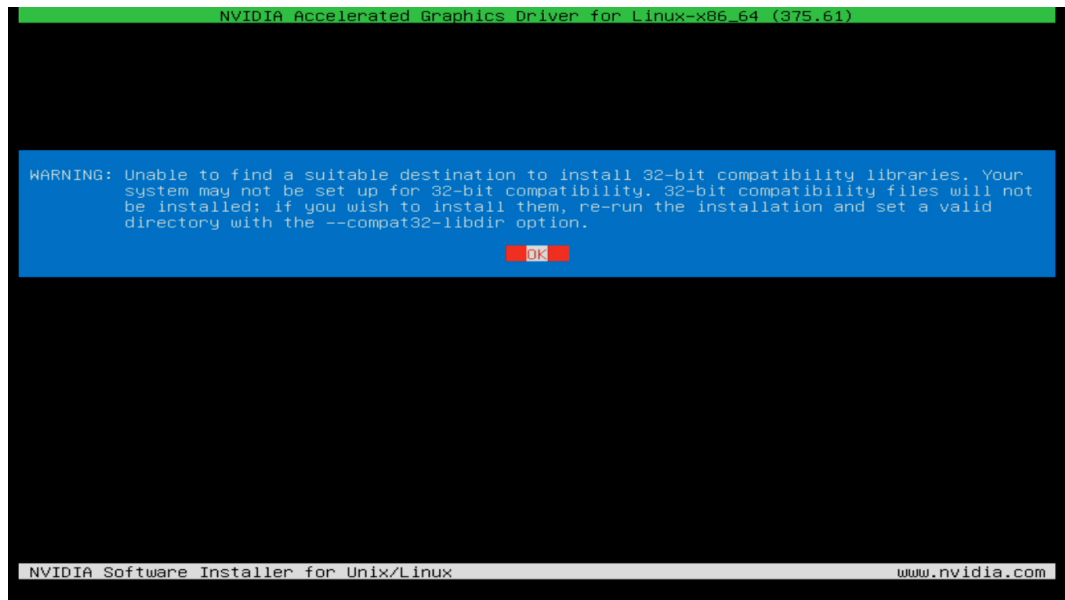
- **Step 9**:

  o Select "Yes" to update the X-configuration file.

- **Step 10**:

  o Driver installation complete.

- **Step 11**:

  - Verify the Nvidia driver is loaded by running "nvidia-smi".

- **Step 12**:

  - Reboot the system.

- **Step 13**:

  - Verify the Nvidia driver is loaded properly from within X-windows.

Section 4 – Installing the Network Wireless Driver

The wireless network device offered for the P320 is native to Ubuntu 16.04 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 16.04 LTS; therefore, you will not need to install any additional drivers separately.