Ubuntu Desktop
20.04

LINUX UBUNTU DESKTOP

Install, Configure and Administer one of the most popular open-source Linux Operating System Distribution

Contents

The term “Ubuntu” is a traditional African concept originating from the Bantu languages of southern Africa. It can be described as a way of connecting with others—living in a global community where your actions affect all of humanity. Ubuntu is more than just an operating system: it is a community of people coming together voluntarily to collaborate on an international software project that aims to deliver the best possible user experience.

A brief history of Ubuntu

Ubuntu was conceived in 2004 by Mark Shuttleworth, a successful South African entrepreneur, and his company Canonical. Shuttleworth recognized the power of Linux and open source, but was also aware of weaknesses that prevented mainstream use.

Shuttleworth set out with clear intentions to address these weaknesses and create a system that was easy to use, completely free and could compete with other mainstream operating systems. With the Debian system as a base, Shuttleworth began to build Ubuntu. Using his own funds at first, Debian is the Linux operating system that Ubuntu is based upon.

Ubuntu spread quickly, its community grew rapidly, and soon Ubuntu became the most popular Linux distribution available. With more people working on the project than ever before, its core features and hardware support continue to improve, and Ubuntu has gained the attention of large organizations worldwide.

Shuttleworth has promised that the Ubuntu desktop operating system will always be free. Ubuntu is installed on an estimated 2% of the world’s computers. This equates to tens of millions of users worldwide, and is growing each year. As there is no compulsory registration, the percentage
of Ubuntu users should be treated as an estimate.

The LINUX operating system

LINUX is a member of the Unix family. Unix is one of the oldest types of operating systems, and together with Linux has provided reliability and security for professional applications for almost half a century. Many servers around the world that store
data for popular websites (such as YouTube and Google) run some variant of Linux or Unix. The popular Android system for smartphones is a Linux variant; modern in-car computers usually run on Linux. Even OS X is based on Unix. The Linux kernel is best described as the core—almost the brain
—of the Ubuntu operating system.

The Linux kernel is the controller of the operating system; it is responsible for allocating memory and processor time. It can also be thought of as the program which manages any and all applications on the computer itself.
While modern graphical desktop environments have generally replaced early command line interfaces, the command line can still be a quick and efficient way of performing many tasks.

Linux was designed from the ground up with security and hardware compatibility in mind, and is currently one of the most popular Unix-based operating systems. One of the benefits of Linux is that it is incredibly flexible and can be configured to run on almost any device—from the smallest micro-computers and cellphones to the largest super-computers. Unix was entirely command line-based until graphical user interfaces (guis) emerged in 1973 (in comparison, Apple came out with Mac os ten years later, and Microsoft released Windows 1.0 in 1985).

The early guis were difficult to configure, clunky, and generally only used by seasoned computer programmers. In the past decade, however, graphical user interfaces have grown in usability, reliability, and appearance. Ubuntu is one of many different Linux distributions.

Linux distros (distributions)

- Arch Linux
- CRUX
- Cucumber Linux
- Debian
- Corel Linux
  - Xandros
- Floppix
- G2Linx
- Knoppix
  - BioKnoppix
  - ClusterKnoppix
  - DamnSmallLinux
  - Feather
  - Gnoppix
  - Kanotix
  - Kurumin
  - MEPIS
  - Morphix

  PHLAK
- Linspire, formerly LindowsOS
- Ubuntu
  - BeatrIX
  - MEPIS (since version 6.0)
  - Edubuntu
  - Kubuntu
  - Xubuntu
  - Flubuntu (for FluxBox users)
  - Geubuntu
- Devil-Linux
- Dyne:Bolic
- GenToo
  - Lunar Linux
  - SystemRescue
  - PardUs
- GoboLinux
- IPCop
- IpodLinux
- Linux From Scratch
- Lycoris
- muLinux
- Red Hat
  - Ark linux
  - BLAG
  - Conectiva
  - Fedora
  - Mandrake
    - PCLinuxOS
    - ALTLinux
    - Turkix
  - Red Flag Linux (Chinese)
  - Redhat Enterprise Linux (RHEL)
    - CentOS
    - Whitebox Linux
  - TurboLinux
  - Yellow Dog Linux
- sLackWare
  - Zenwalk Linux formerly MinisLack
  - Amigo Linux
  - BasicLinux
  - DeLi Linux
  - DragOnLinux -- currently inactive
  - PuppyLinux
  - Slax
  - VectorLinux
- SmoothWall
- Source Mage
- SuSE
  - Sun JDS
- Yoper

Top Linux Distributions

Source: https://www.techradar.com/best/best-linux-distros

- Ubuntu
- Elementary OS
- Linux Mint
- openSUSE
- CentOS
- Arch Linux
- Tails
- Kali
- Parrot

Where to get Ubuntu?

The easiest and most common method for getting Ubuntu is to download the Ubuntu dvd image directly from http://www.ubuntu.com/download

Choose how you will install Ubuntu:
Download and install / Try it from a dvd or usb stick

Why Ubuntu?

- Ubuntu is one of the most popular flavors of Linux and is strongly recommended for Linux newbies, as it's extremely accessible.
- New versions of Ubuntu are released every six months, and every other year the developer Canonical releases an LTS (long term support) version of Ubuntu. These guarantee five years of security and general maintenance updates, so you can carry on using your machine without the hassle of running a full upgrade every few months. Standard releases are supported for one year only.
- The current LTS version of Ubuntu uses the Gnome 3 desktop environment, which may be less familiar to Windows and macOS users.
- Ubuntu has also become increasingly integral with cloud computing services, making it not just a good distro for easing beginners into Linux, but also one for those looking to develop their long-term business IT skills.
- Ubuntu will always be free of charge, along with its regular enterprise releases and security updates.
- Ubuntu comes with full commercial support from Canonical and hundreds of companies from across the world.
- Ubuntu provides the best translations and accessibility features that the free software community has to offer.
- Ubuntu's core applications are all free and open source. We want you to use free and open source software, improve it, and pass it on.

Ubuntu versions and system requirements

- ✓ 2 GHz dual-core processor
- ✓ 4 GiB RAM (but 1 GiB can work)
- ✓ 25 GB of hard-drive space
- ✓ VGA capable of 1024×768 screen resolution
- ✓ Either of the two: a CD/DVD drive or a USB port for the installer media
- ✓ Optionally, Internet access is helpful

Kubuntu

Kubuntu offers the KDE Plasma Workspace experience, a good-looking system for home and office use.

Lubuntu

Lubuntu is a light, fast, and modern Ubuntu flavor using LXQt as its default desktop environment. Lubuntu used to use LXDE as its default desktop environment.

Ubuntu Budgie

Ubuntu Budgie provides the Budgie desktop environment which focuses on simplicity and elegance. It provides a traditional desktop metaphor based interface utilising a customisable panel based menu driven system.

Ubuntu Kylin

The Ubuntu Kylin project is tuned to the needs of Chinese users, providing a thoughtful and elegant Chinese experience out-of-the-box.

Ubuntu MATE

Ubuntu MATE expresses the simplicity of a classic desktop environment. Ubuntu MATE is the continuation of the GNOME 2 desktop which was Ubuntu's default desktop until October 2010.

Ubuntu Studio

Ubuntu Studio is a multimedia content creation flavor of Ubuntu, aimed at the audio, video and graphic enthusiast or professional.

Xubuntu

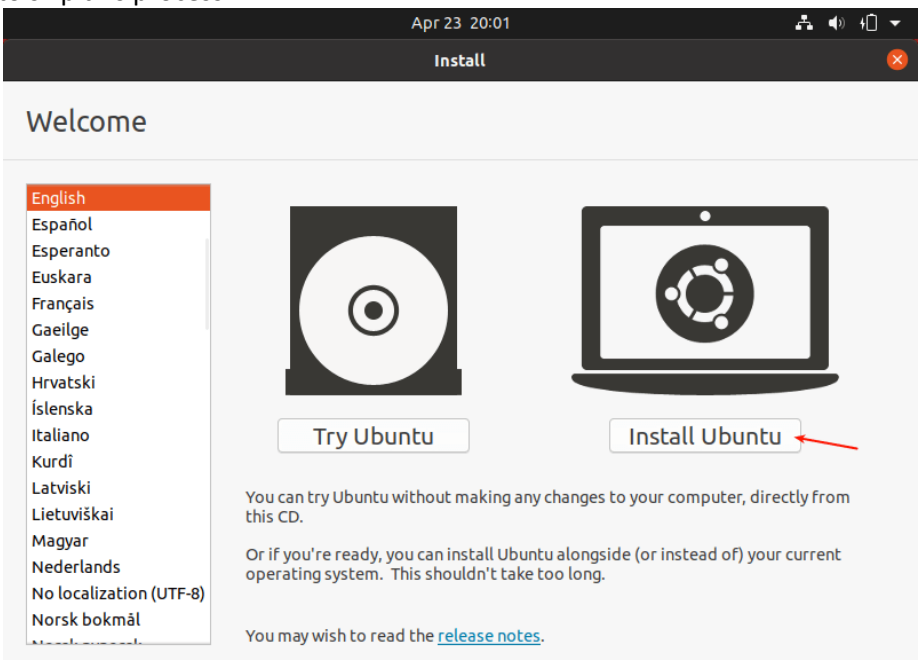
Xubuntu is an elegant and easy to use operating system. Xubuntu comes with Xfce, which is a stable, light and configurable desktop environment.

Installing Ubuntu to your workstation

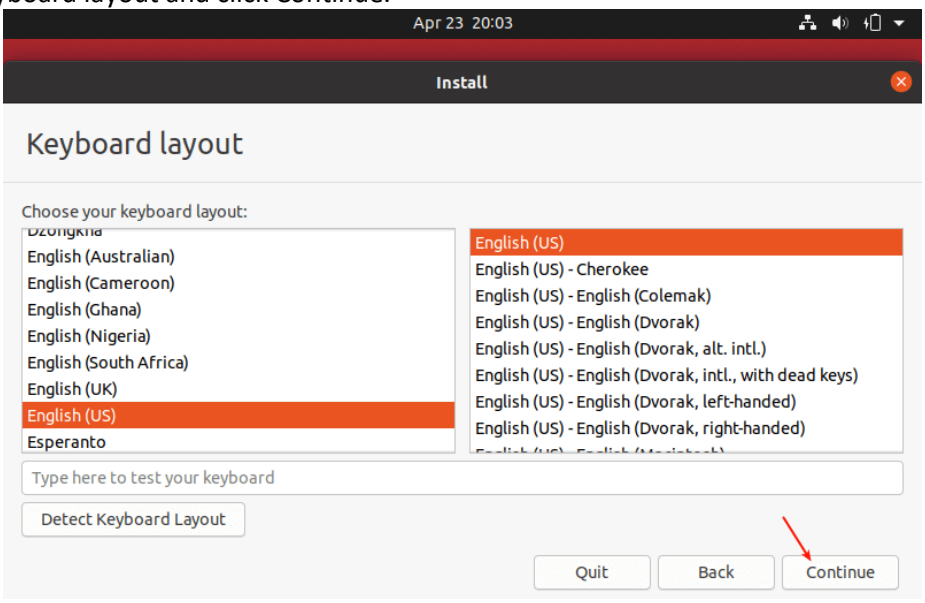
1. Once you have obtained the Ubuntu 20.04 desktop image, create a bootable media using Rufus tool or create a bootable USB drive using LiveUSB Creator called Unetbootin.

2. Next, insert the bootable DVD or USB into the appropriate drive on your machine. Then start the computer and instruct the BIOS by pressing a special function key (F2, F8, F9 or F10, F11, F12) to boot-up from the inserted USB/CD drive.

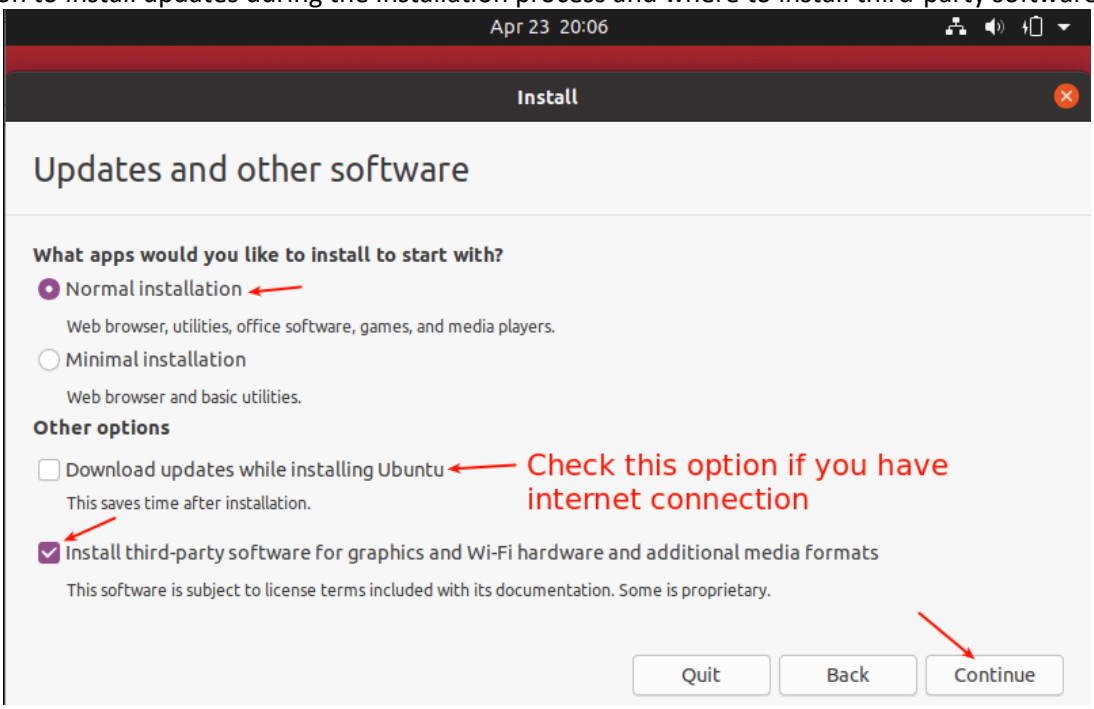
Once the BIOS detects the bootable media, it boots from it. After a successful boot, the installer will check your disk (file system), press Ctrl+C to skip this process.



Next, choose your keyboard layout and click Continue.



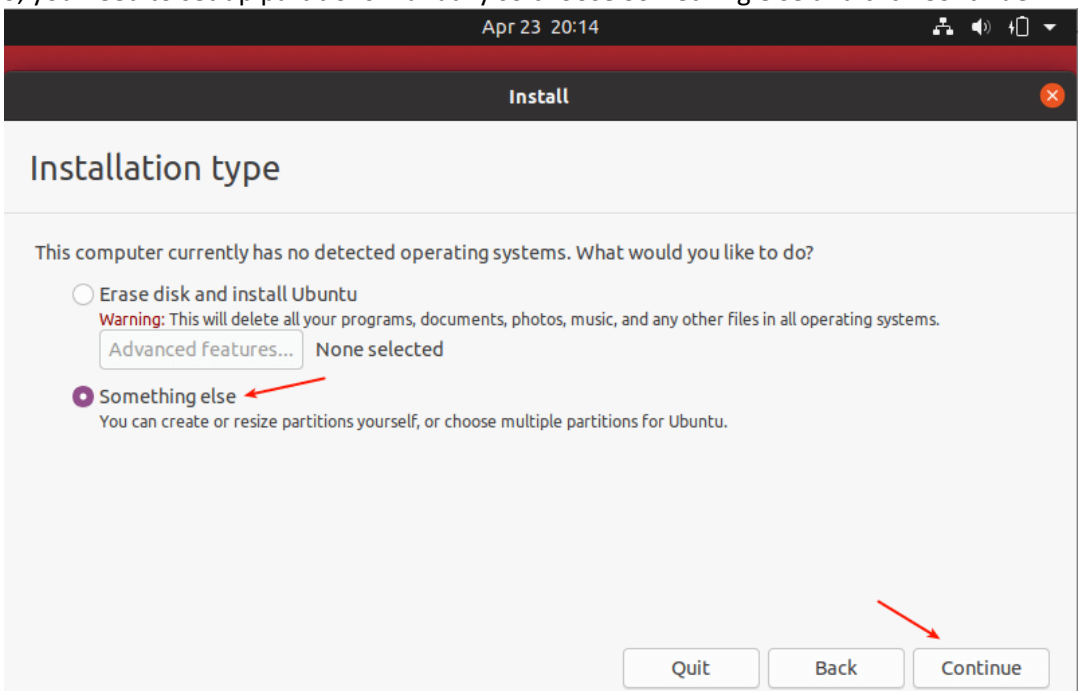
After that, choose the apps you want to install based on the installation type (normal or minimal installation). Also, check the option to install updates during the installation process and where to install third-party software.



Now choose the actual installation type. This is normally the most confusing part, especially for new Linux users. There are two scenarios we will consider here.

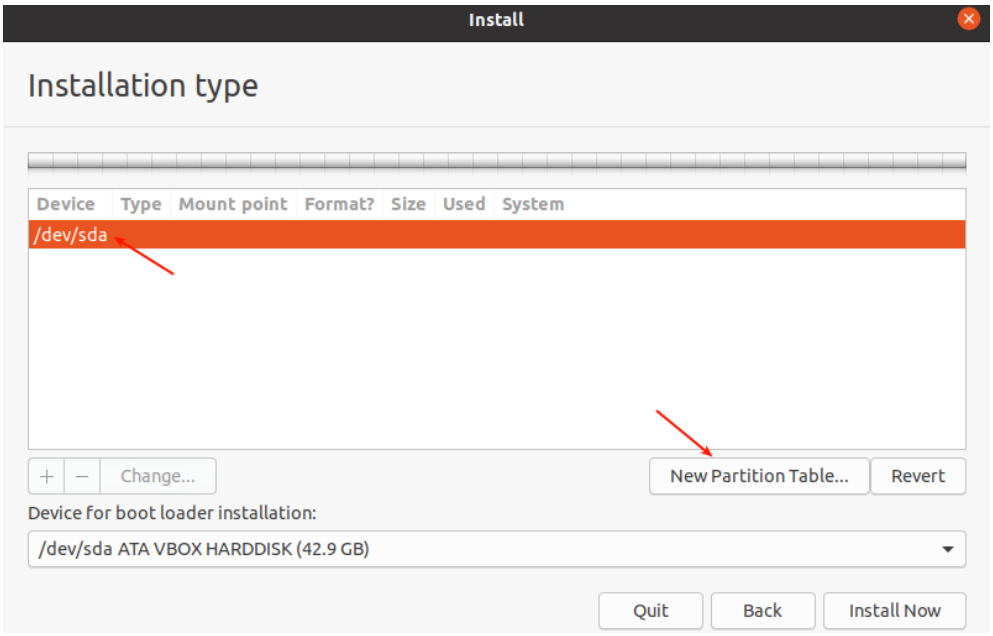
First is using an unpartitioned hard drive with no operating system installed. Then secondly, we will also consider how to install on an already partitioned hard drive (with an existing OS e.g Ubuntu 18.04).

Scenario 1: Using an Unpartitioned Harddrive (without an OS installed)
For this scenario, you need to set up partitions manually so choose Something else and click Continue.

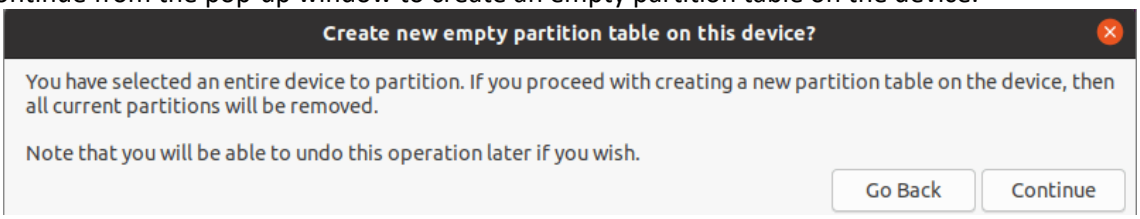


Now you need to partition your hard drive for the installation. Simply select/click on the unpartitioned storage device from the list of available storage devices. Then click New Partition Table.

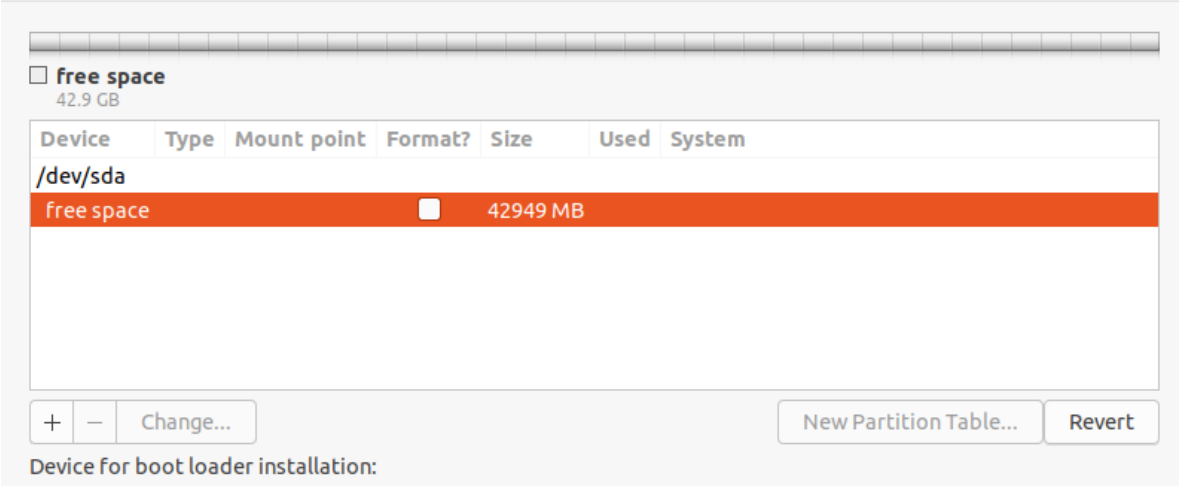
Note that the installer will auto-select the device on which the boot-loader will be installed as shown in the following screenshot.



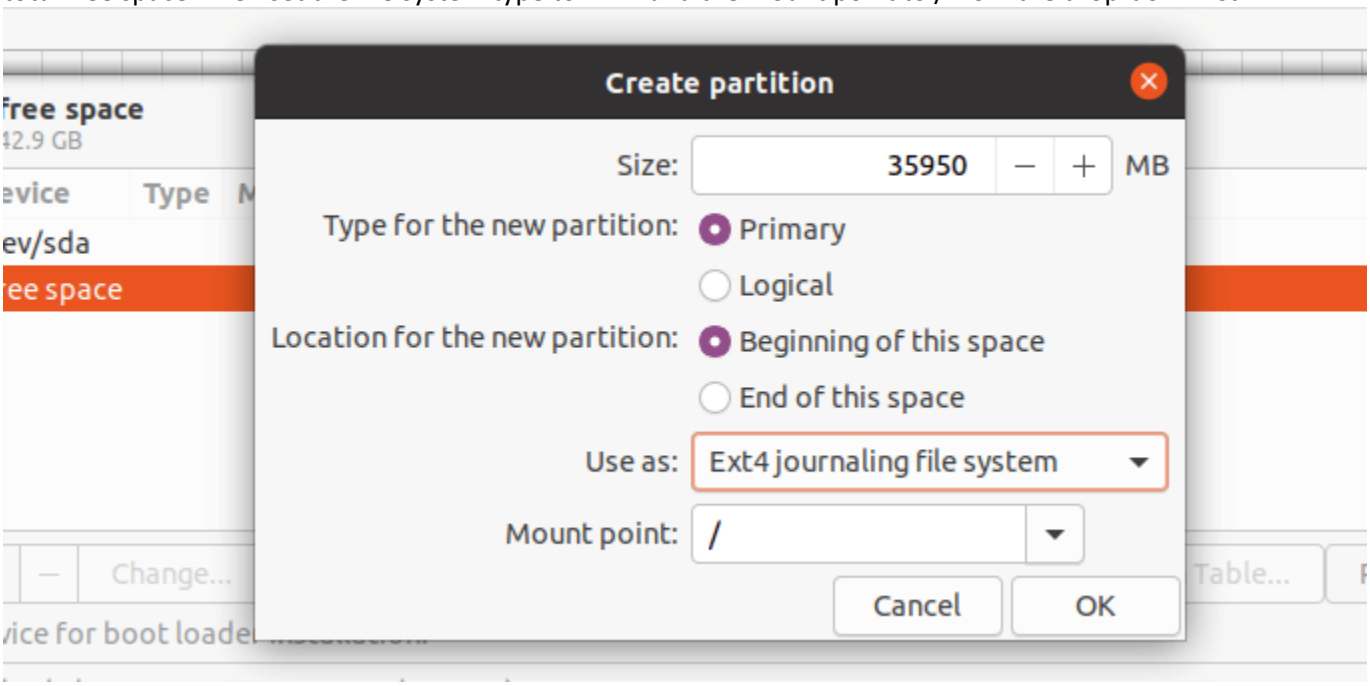
Next, click Continue from the pop-up window to create an empty partition table on the device.



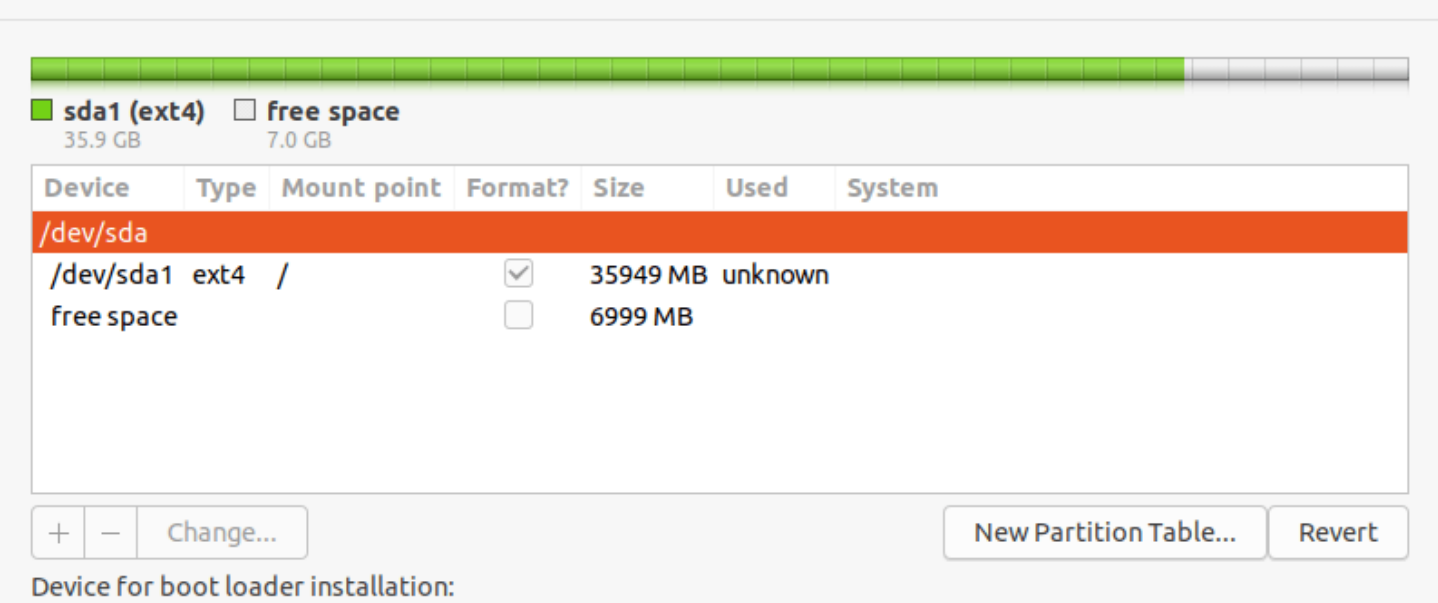
Now you should be able to see the free space created equivalent to the capacity of the hard drive. Double click on the free space to create a partition as described next.



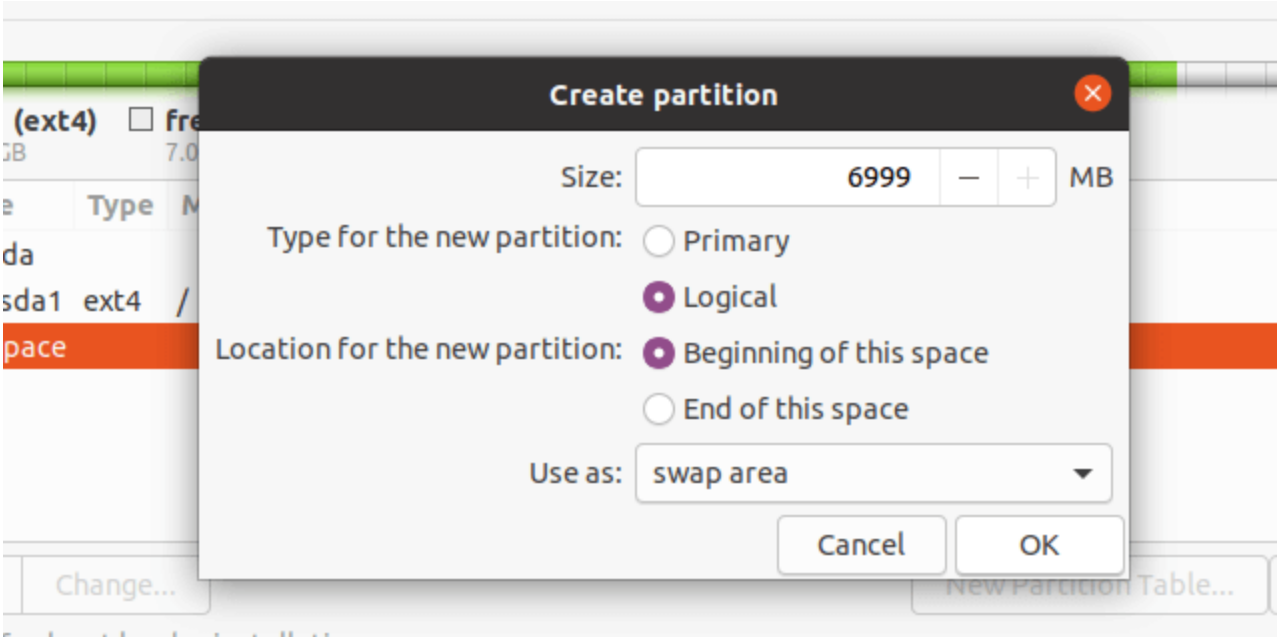
To create a root(/) partition (where the base system files will be installed), enter the size of the new partition out of the total free space. Then set the file system type to EXT4 and the mount point to / from the drop-down list.



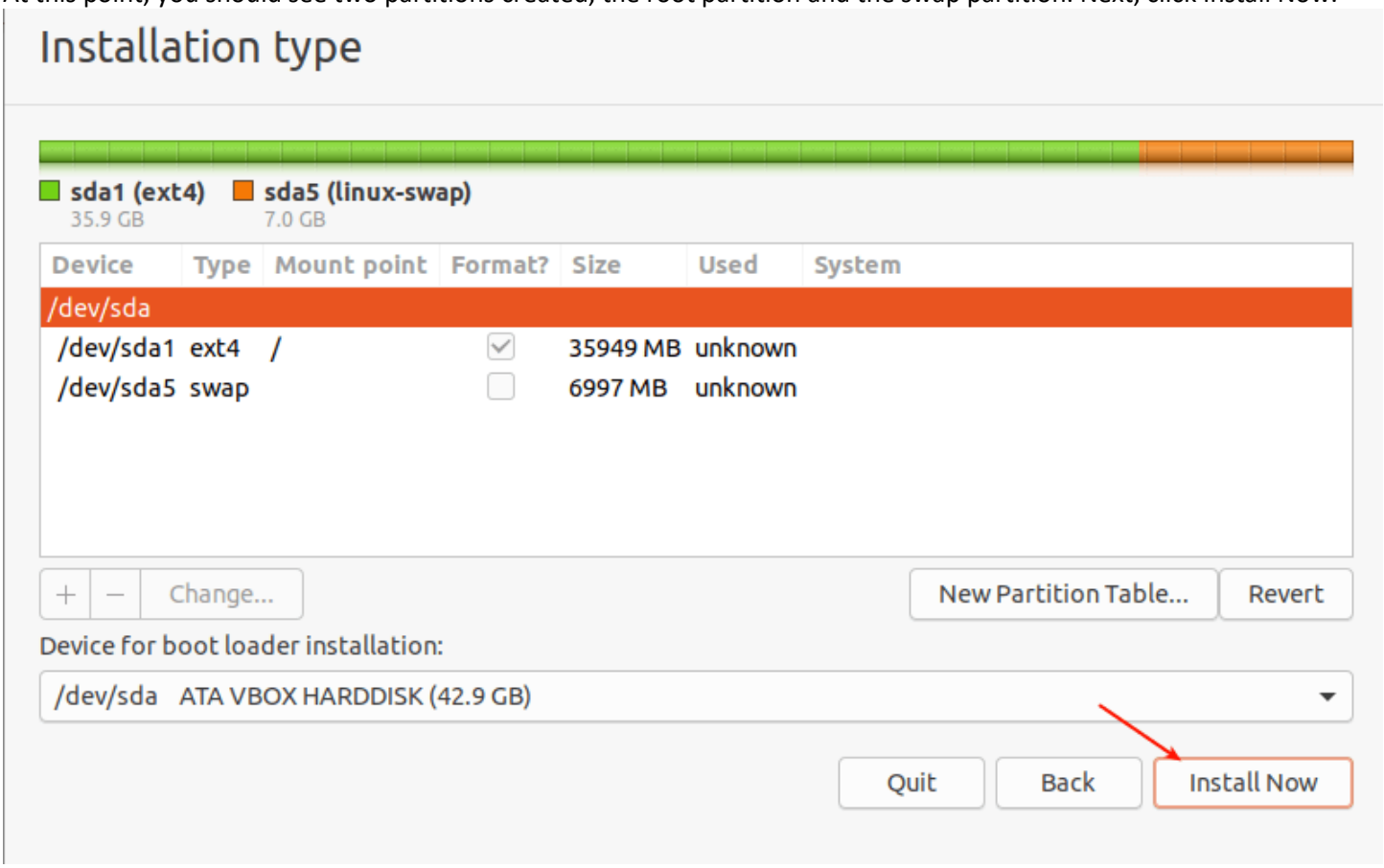
Now the new partition should appear in the list of partition as shown in the next screenshot.



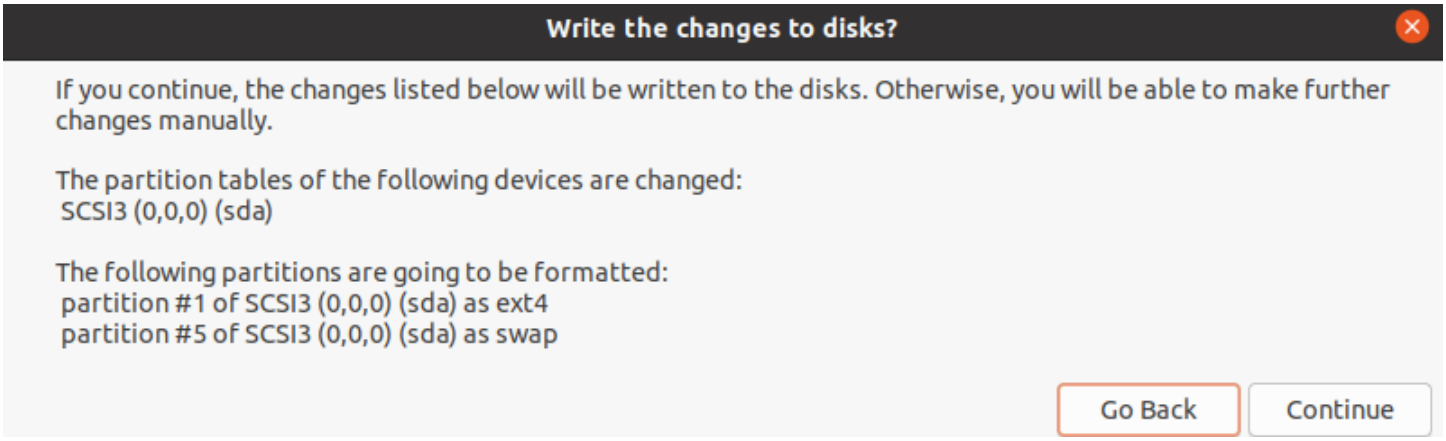
Next, you need to create a swap partition/area. Double click on the current free space to create a new partition to be used as swap area. Then enter the swap partition size and set swap area as shown in the following screenshot.



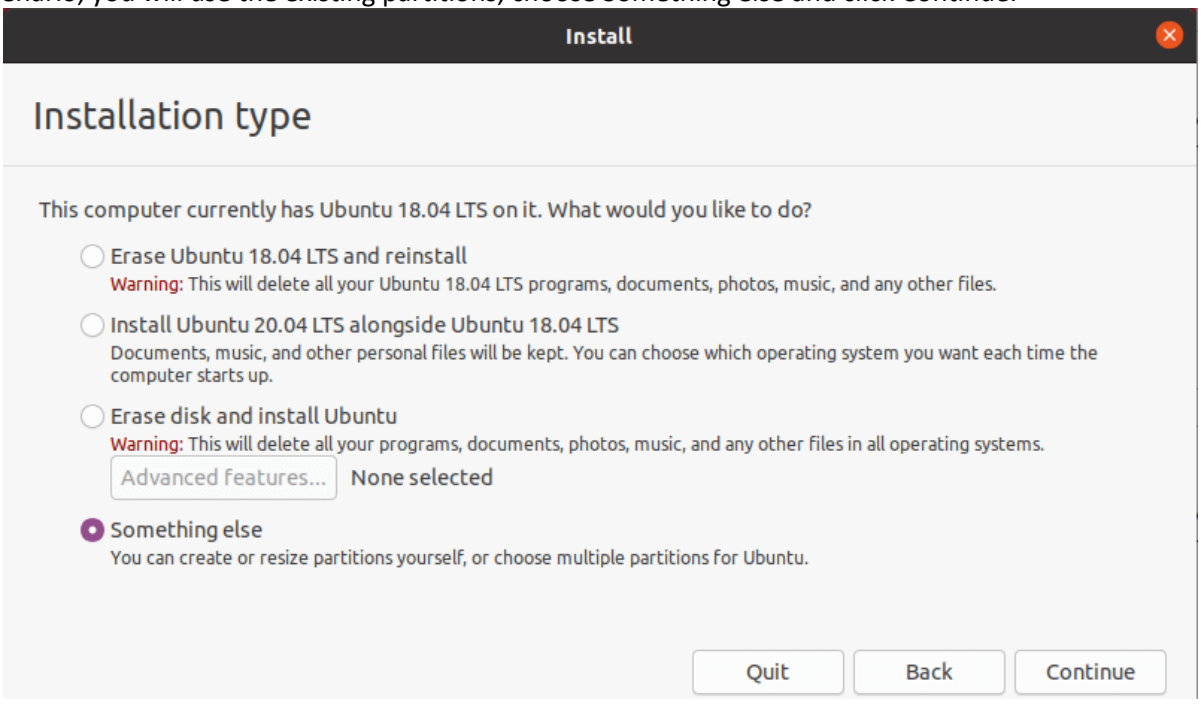
At this point, you should see two partitions created, the root partition and the swap partition. Next, click Install Now.



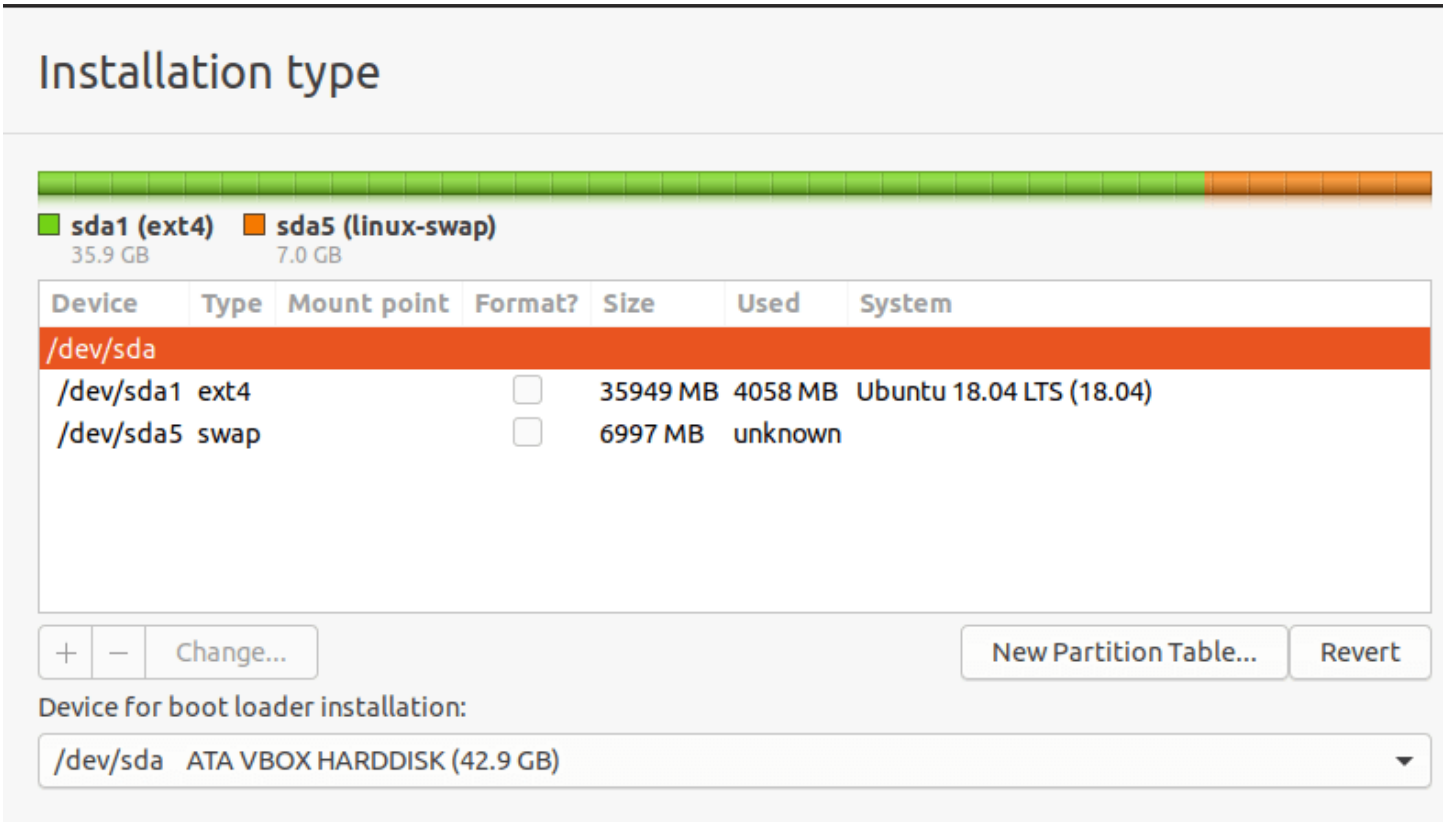
You will be prompted to permit the installer to write the recent changes concerning partitioning to disk.
Click Continue to proceed.



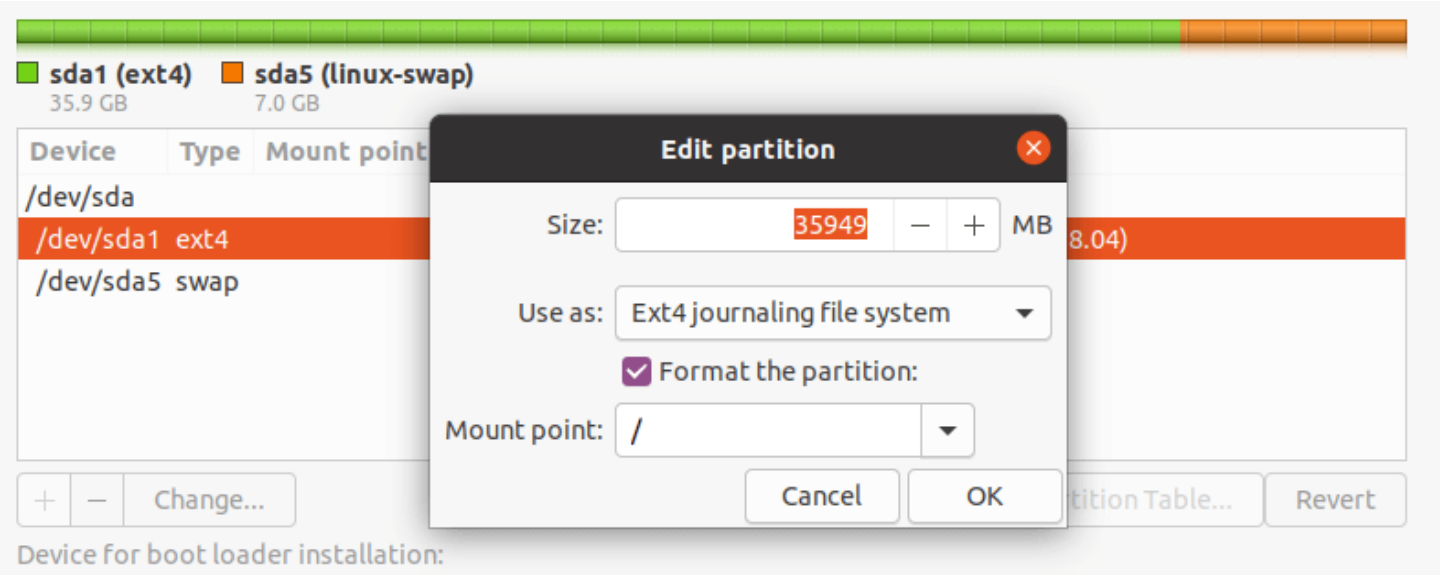
Scenario 2: Using an Already Partitioned Harddrive (with an existing OS installed)
For this scenario, you will use the existing partitions, choose Something else and click Continue.



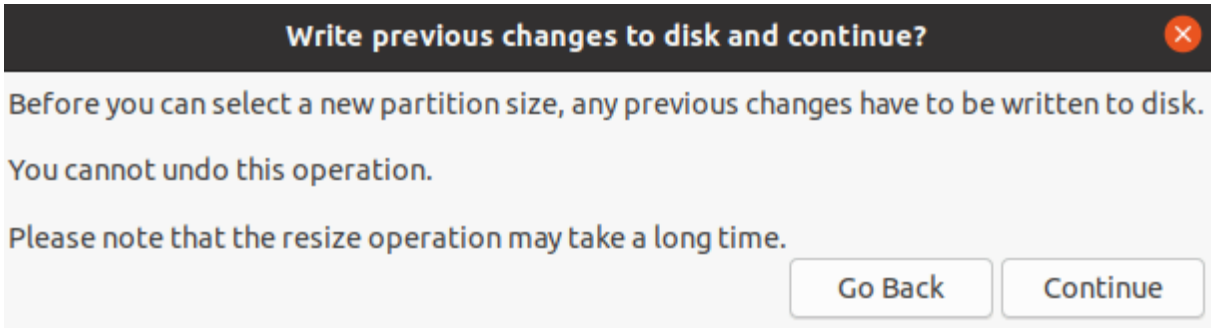
Then you should see your existing partitions for example, as shown in the following screenshot. Double click on the partition with the previous OS installation, Ubuntu 18.04 in our case.



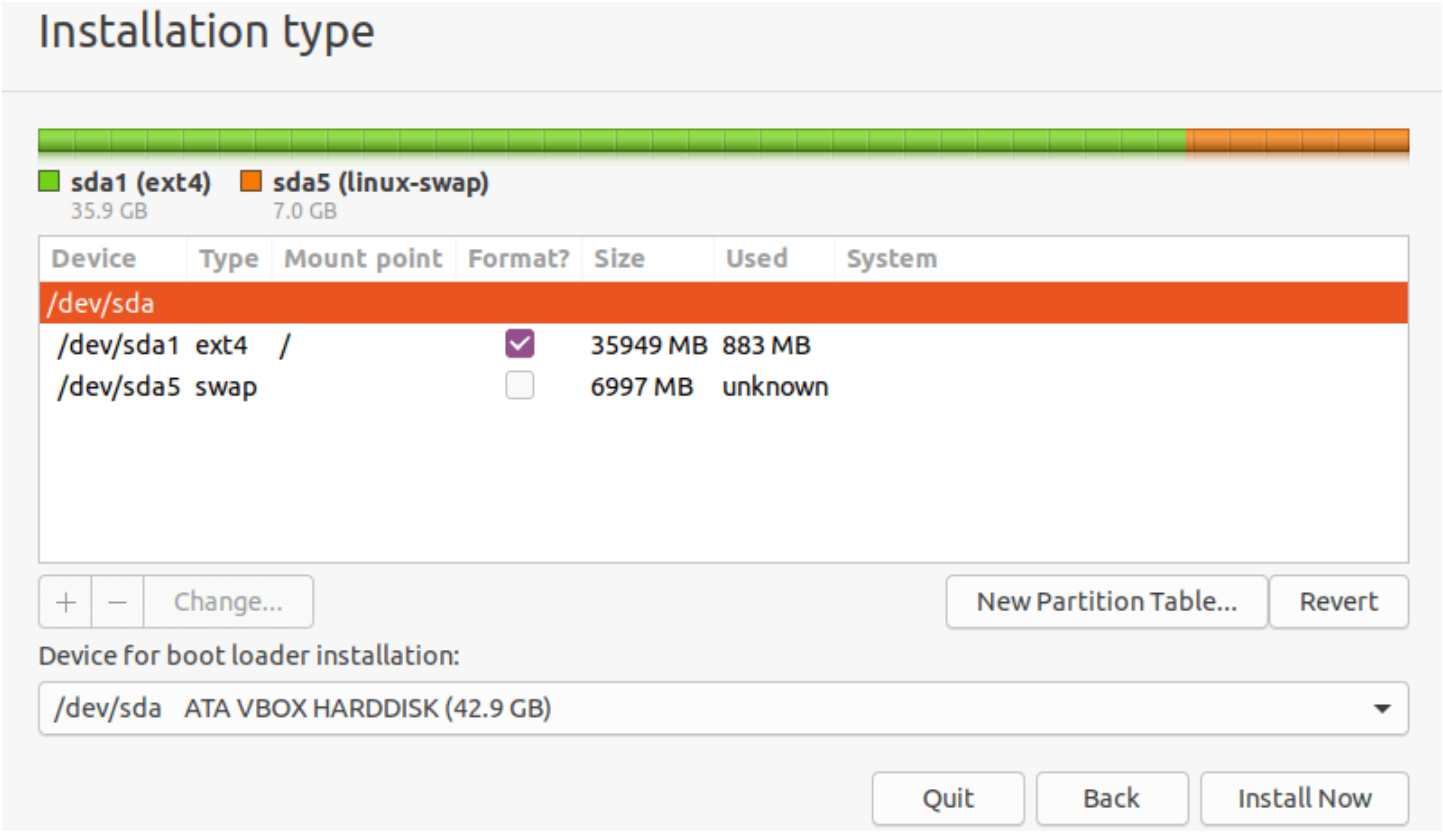
Next, edit the partition and set the file system size, file system type to Ext4, and then check the format option and set the mount point to root(/).



Accept the changes in the hard drive partition table, in the next pop-up window by clicking Continue.



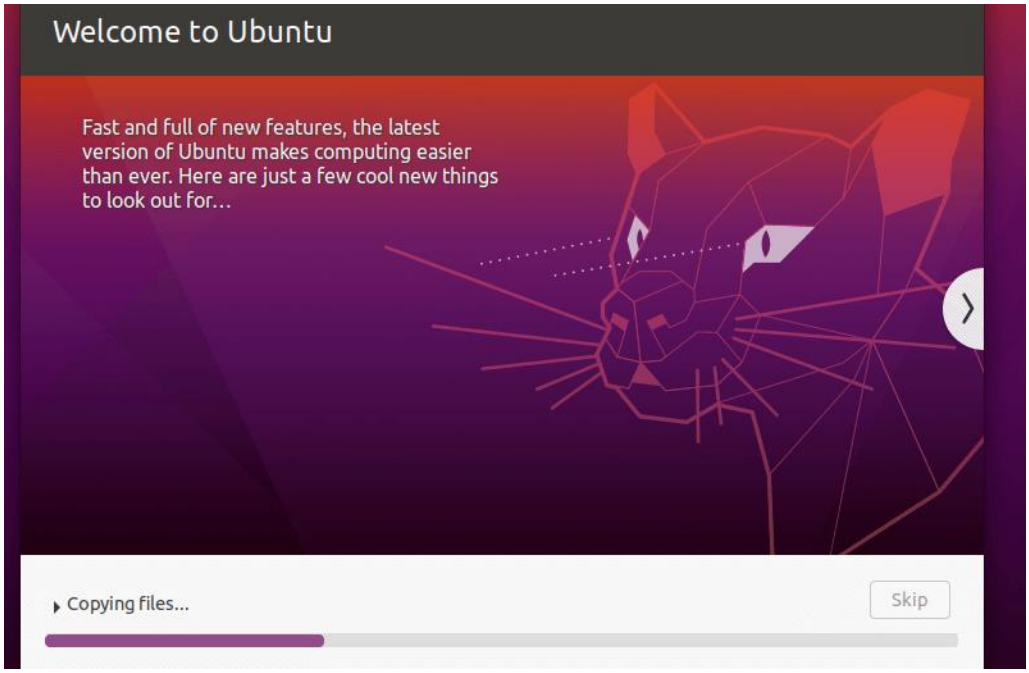
Now you should have a root and swap partition as shown in the following screenshot. Note that the swap partition will be auto-detected by the installer. So click Install Now to proceed.



Next, select your location and click Continue.

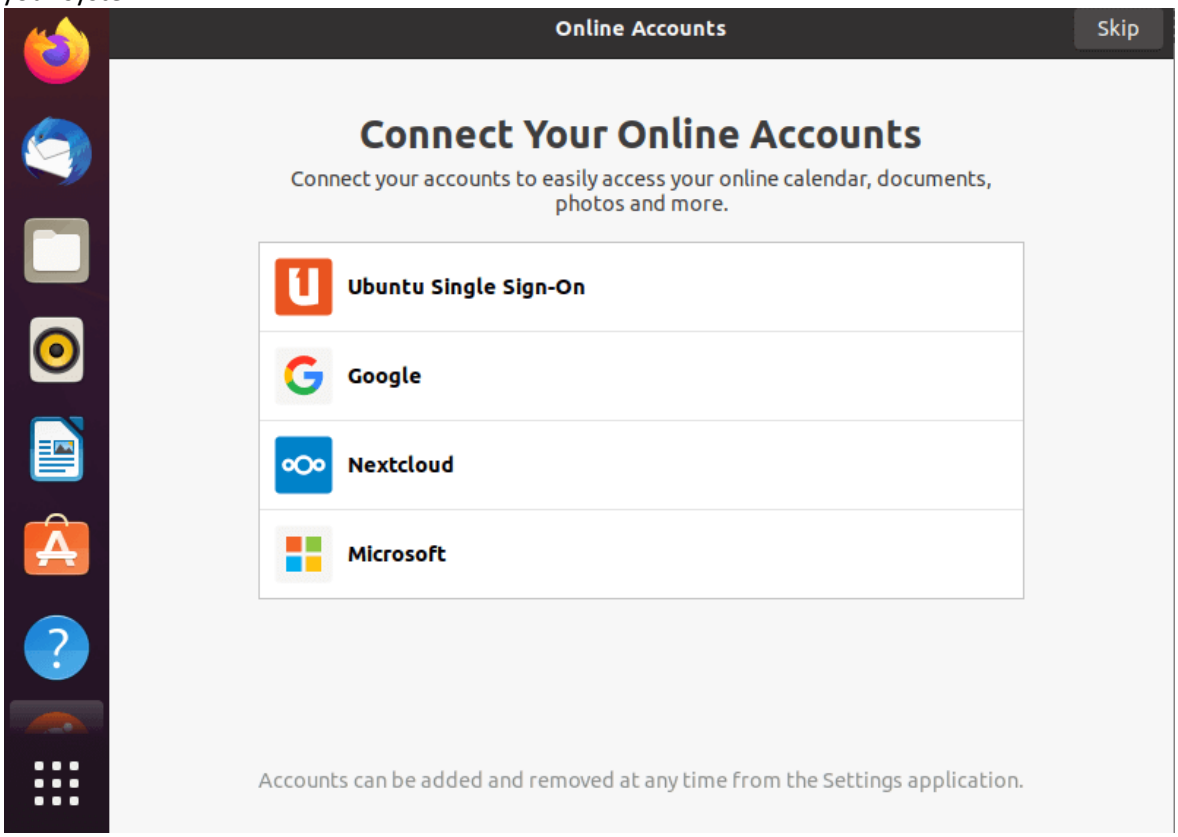
Then provide your user details for system account creation. Enter your full name, computer name and username, and a strong, secure. Then click Continue.

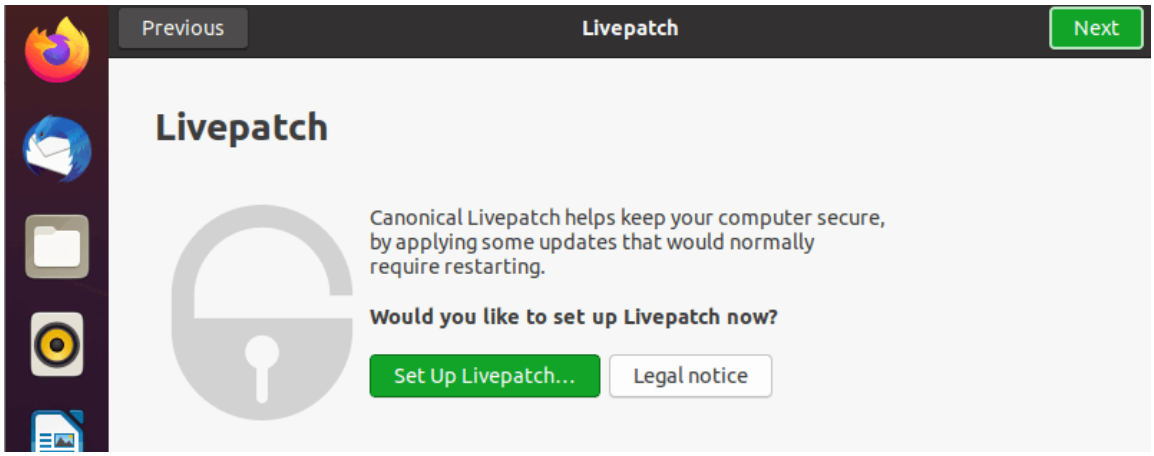
Now the actual base system installation will begin as shown in the following screenshot. Wait for it to finish.



Once the system installation is complete, reboot your system by clicking Restart Now. Remember to remove the installation media, otherwise, the system will still boot from it. Login after rebooting.

After login, follow the on-screen instructions to connect to online accounts (or skip), set up Livepatch (or click Next), accept the option to send usage information to Canonical (or click Next), then one you see Ready to go, click Done to start using your system.





To check your installed version details, open terminal and type the ff command:

```
$ cat /etc/lsb-release
```

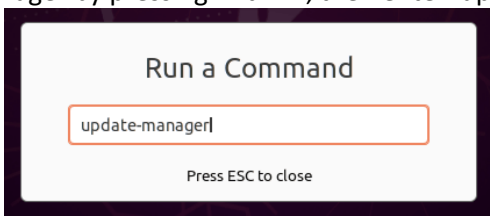
Post-installation tasks

Things to Do After Installing Ubuntu 20.04 LTS (Focal Fossa)

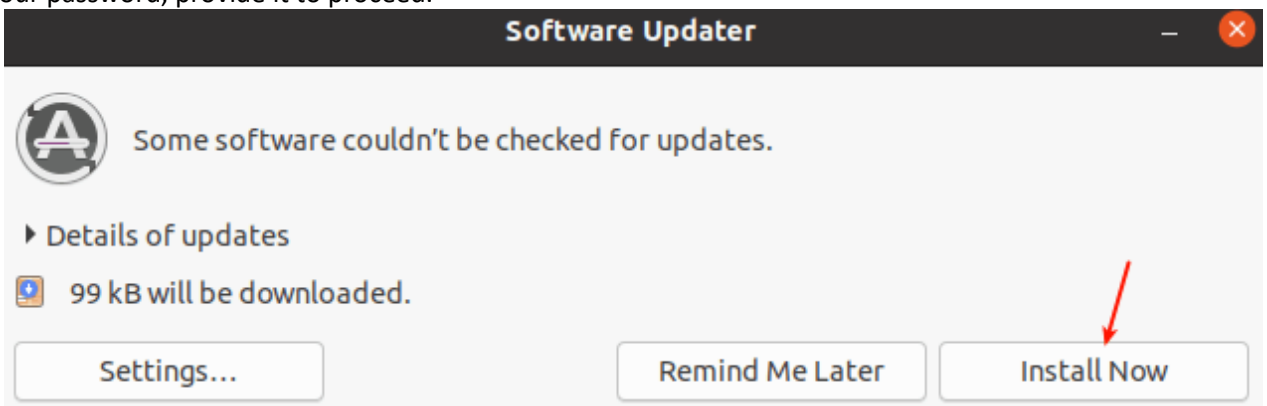
Check and Install Package Updates

The first step is to check and install updates to keep your computer's software up to date. This is the single most important task you need to do to protect your system.

To install updates, open the Update Manager by pressing 'Alt+F2', then enter 'update-manager' and hit Enter.



After the Update Manager opens up, if there are updates to be installed, you can review and select pending updates and also check for new updates. Click the 'Install Updates' button to upgrade the selected packages, you will be prompted to enter your password, provide it to proceed.



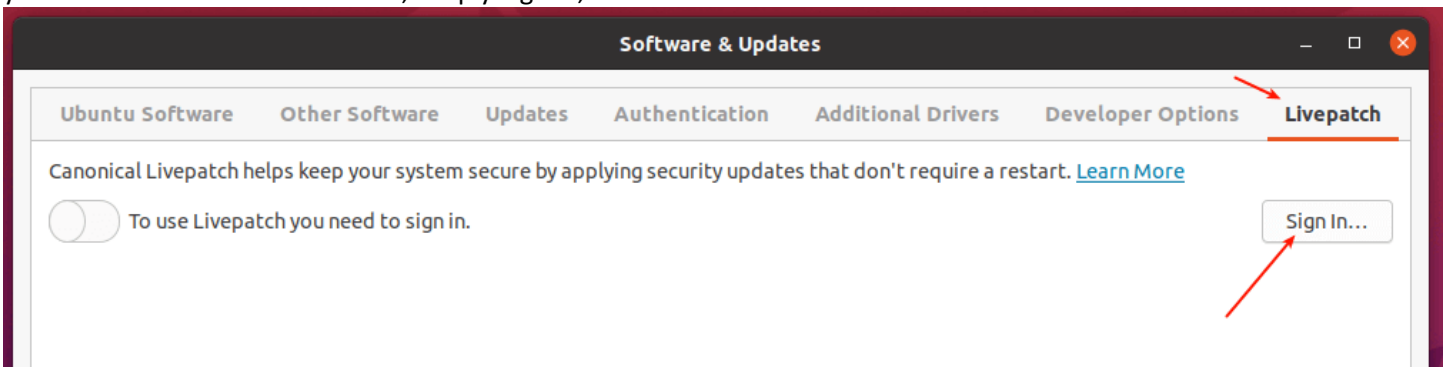
Alternatively, open a terminal window and simply run the following commands.

```
$ sudo apt-get update && sudo apt-get dist-upgrade
```

Set Up Livepatch

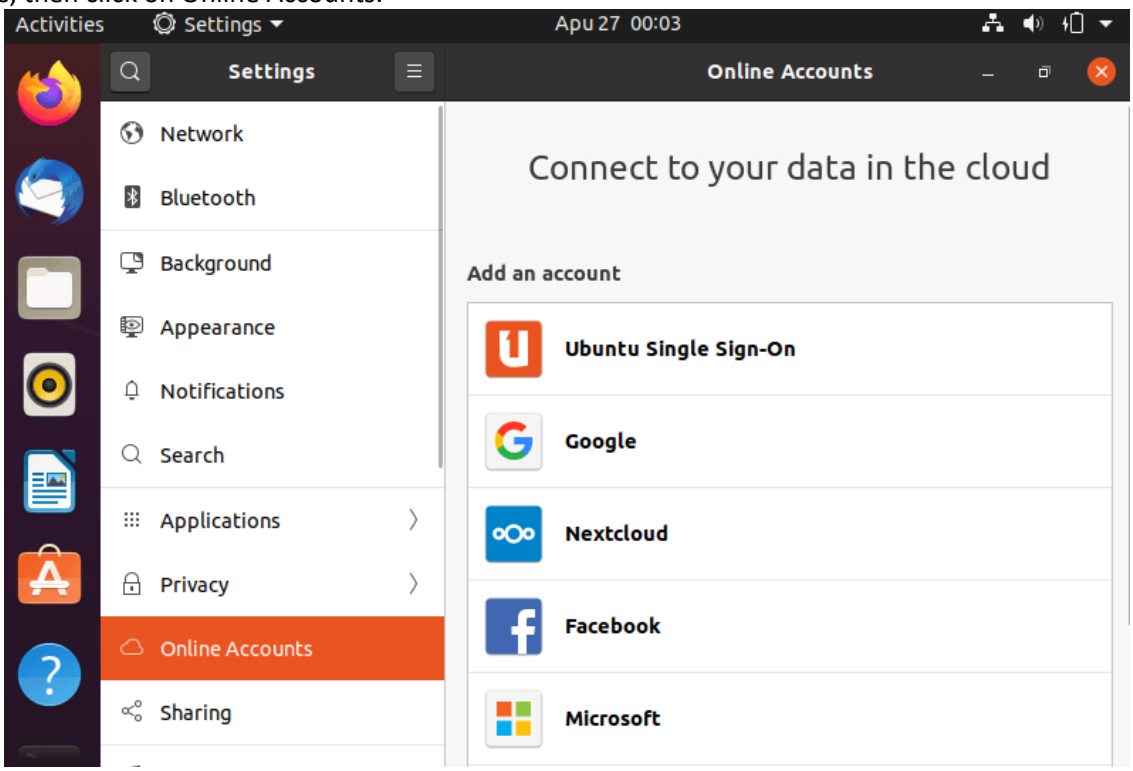
Livepatch (or Canonical Livepatch Service) enables Ubuntu users to apply critical kernel patches without rebooting. This also helps to keep your system secure by applying security updates without a system restart. It is free for personal use with up to 3 machines. To enable it, all you need is an Ubuntu One account.

Go to Activities, search for Livepatch and open it, or simply open Software & Updates and click on the Livepatch tab. If you have an Ubuntu One account, simply Sign in, otherwise create one.



Connect to Online Accounts

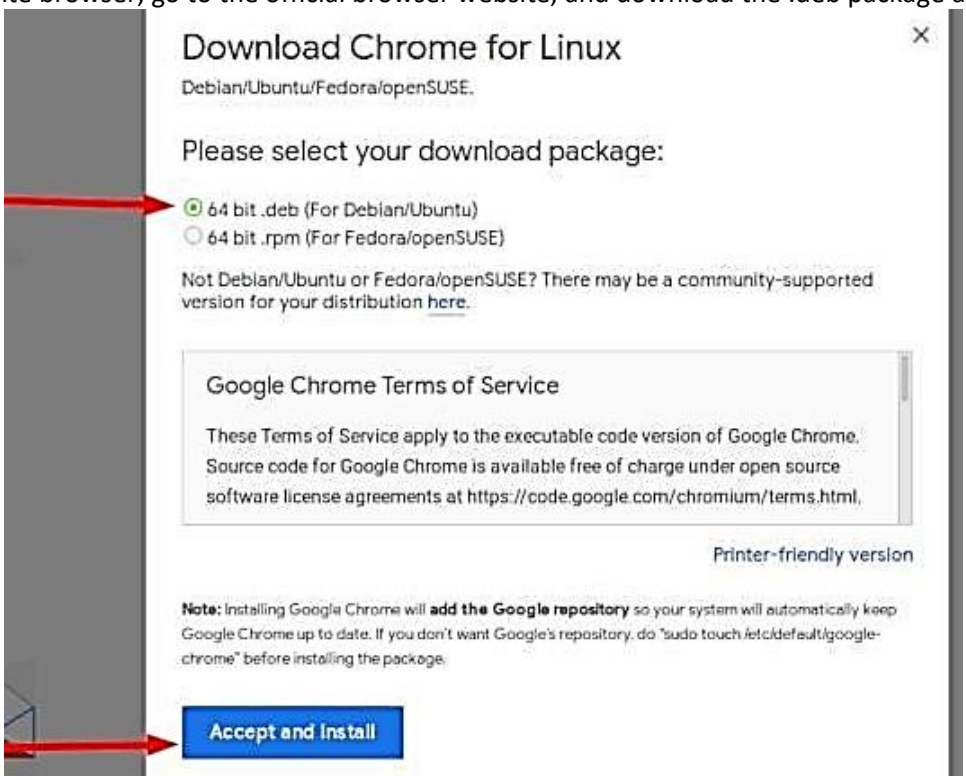
Next, sign in to your online accounts to enable you to connect to your data in the cloud. Go to Activities, search and open Settings, then click on Online Accounts.



Install Your Favorite Browser

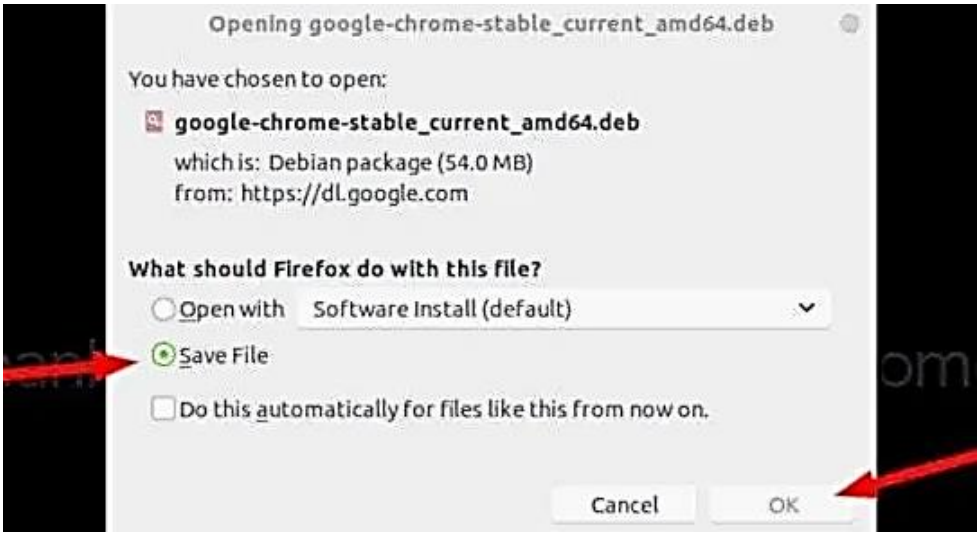
The primary means of surfing the internet is by using a browser. Mozilla Firefox (a lightweight and feature-rich browser) is the default web browser in Ubuntu. However, Ubuntu supports several other browsers including Chromium, Chrome, Opera, Konqueror, and many more.

To install your favorite browser, go to the official browser website, and download the .deb package and install it.

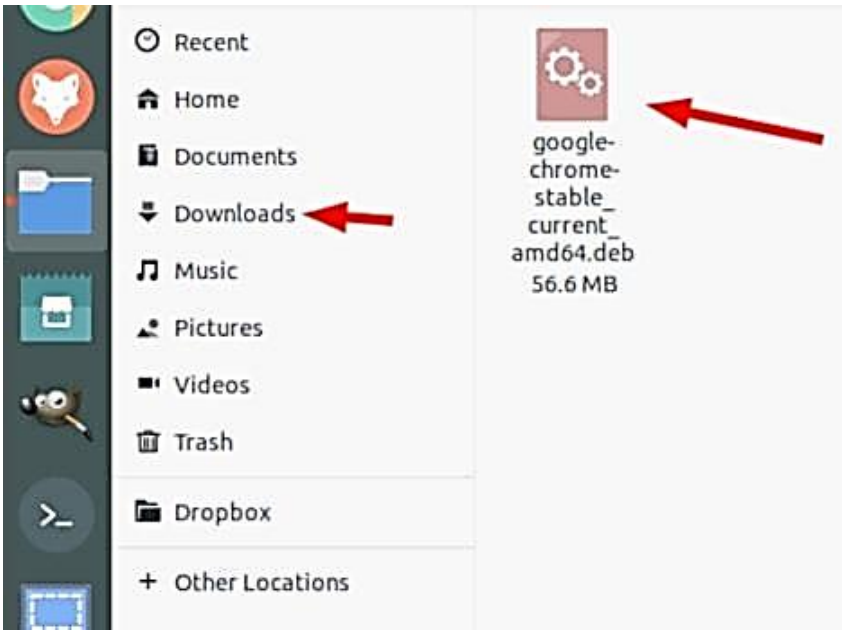


In the next screen, you should opt for saving the file to the computer instead of opening it in software center for installation.

If you don't do that and there were some issues from the software center, you'll have to download the deb file again. It's better to download and save the file itself.

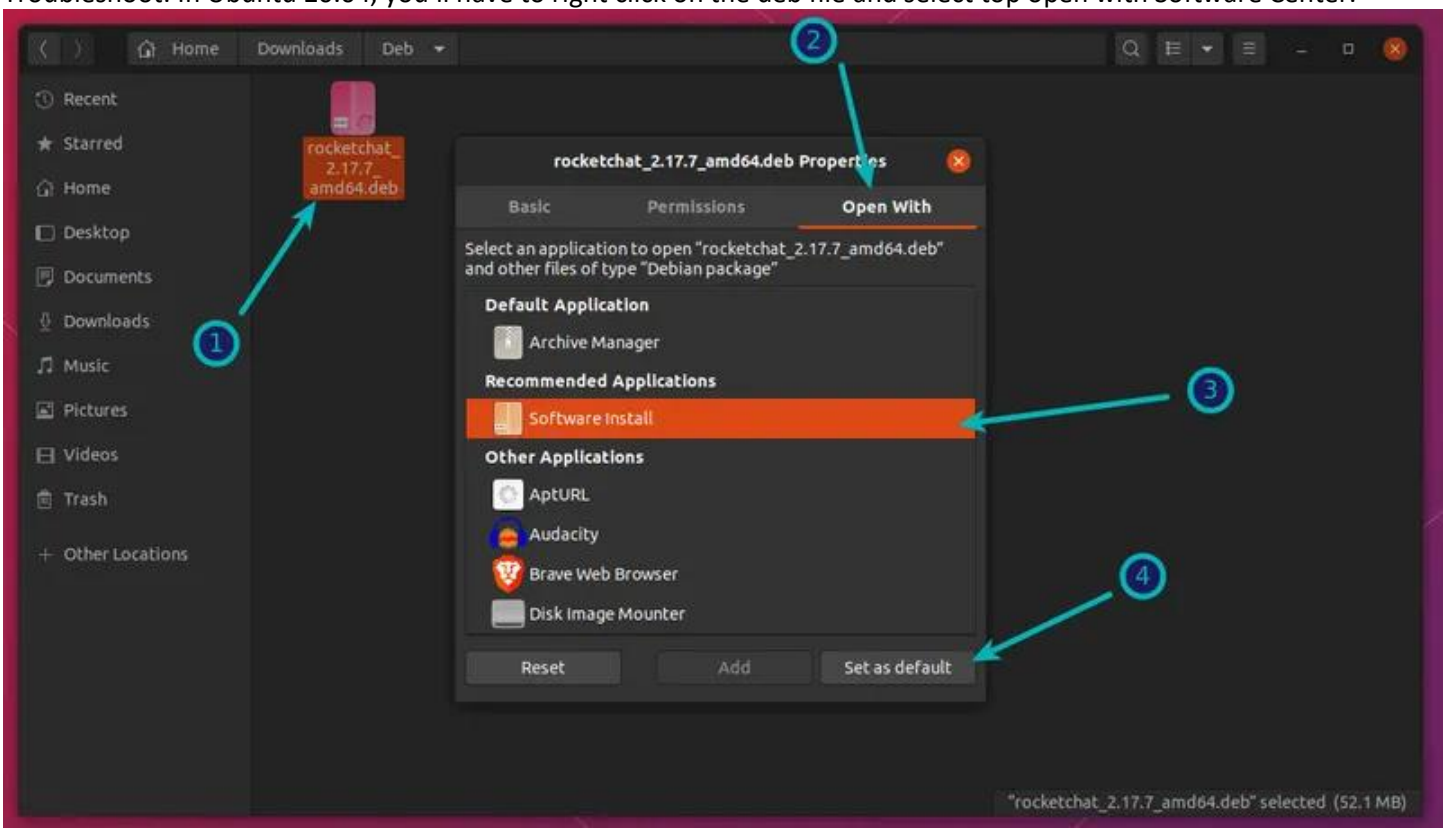


Your downloaded deb file should be in the Downloads folder. Installing deb files is super easy. Go to this folder and double click on the deb file. You can think of these deb files as those exe files in Windows.



It will then open Ubuntu's software center and you should see an option for installing Google Chrome now. Hit on the install button.

Troubleshoot: In Ubuntu 20.04, you'll have to right click on the deb file and select top open with Software Center.



It will ask for your password before starting the installation. You should enter your account's password. It should take less than a minute for completing the Google Chrome installation. You should see a remove option now which indicates that the software is installed.

Once you have installed Chrome on Ubuntu, you can search for it in the menu. Simply press the Windows key and start typing chrome.

Install VLC Media Player

VLC is a simple yet powerful and widely-used multimedia player and framework that plays most if not all multimedia files. It also plays DVDs, Audio CDs, VCDs as well as numerous streaming protocols.

It is distributed as a snapcraft for Ubuntu and many other Linux distributions. To install it, open a terminal window and run the following command.

```
$ sudo snap install vlc
```

Install Media Codecs

The Ubuntu maintainers want to include only free and open-source software, closed-source packages such as media codecs for common audio and video files such as MP3, AVI, MPEG4, and so on, are not provided by default in a standard installation.

To install them, you need to install the ubuntu-restricted-extras meta-package by running the following command.

```
$ sudo apt install ubuntu-restricted-extras
```

Install GNOME Tweaks

GNOME Tweaks is a simple graphical interface for advanced GNOME 3 settings. It enables you to easily customize your desktop. Although it is designed for the GNOME Shell, you can use it in other desktops.

```
$ sudo apt install gnome-tweaks
```

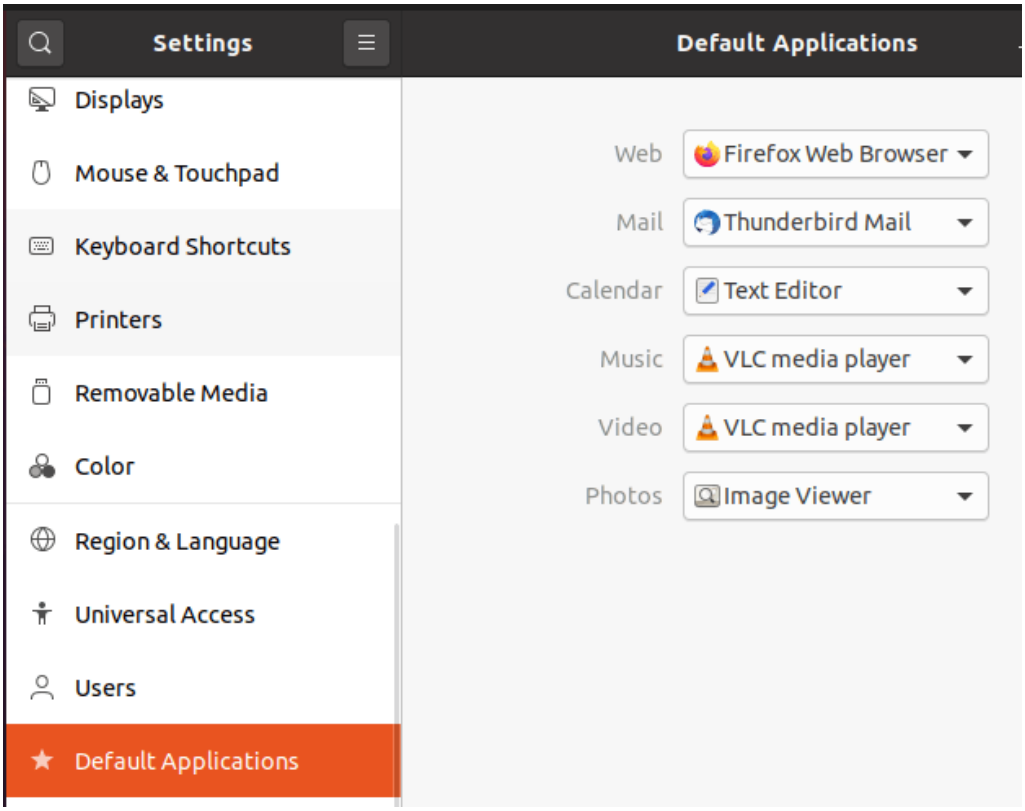
Install Additional Archive Utilities

Ubuntu ships with tar, zip and unzip archiving utilities by default. To support different archive files that you can use on Ubuntu, you need to install other additional archiving utilities such as rar, unrar, p7zip-full, and p7zip-rar as shown.

```
$ sudo apt install rar unrar p7zip-full p7zip-rar
```

Select Default Applications

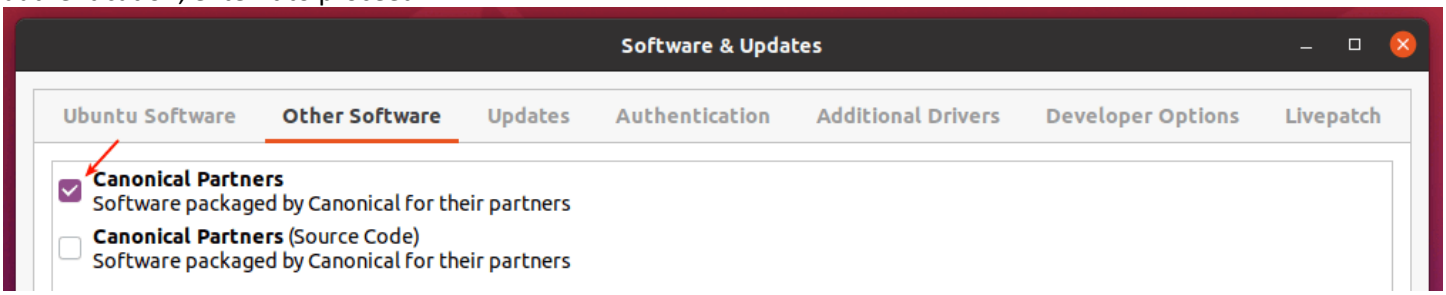
In any desktop operating system, once you double-click a file in the file manager, it will be opened with the default application for that file type. To configure the default applications to open a file type in Ubuntu 20.04, go to Settings, then click Default Applications, and select them from the drop-down menu for each category.



Enable the Canonical Partners Repository

The Canonical Partner repository offers some proprietary applications such as Adobe Flash Plugin, that are closed-source but don't cost any money to use. To enable it, open Software & Updates, once it launches, click on the Other Software tab.

Then check the first option as highlighted in the following screenshot. You will be prompted to enter your password for authentication, enter it to proceed.



Install Wine for Running Windows Apps

If you intend to run Windows applications in Ubuntu 20.04, then you need to install Wine – is an open-source implementation of the Windows API on top of X and POSIX-compliant operating systems, such as Linux, BSD, and macOS. It allows you to integrate and run Windows application cleanly, on Linux desktops by translating Windows API calls into POSIX calls on-the-fly.

To install Wine, run this command.

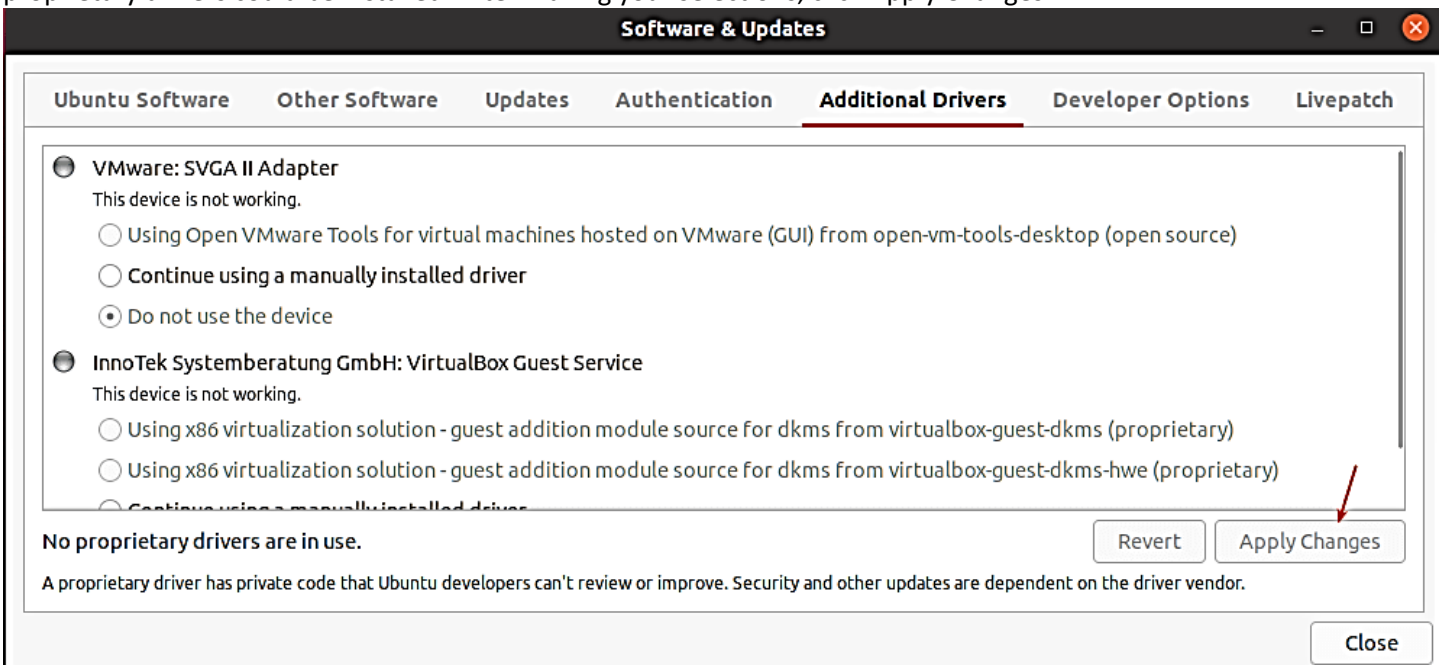
```
$ sudo apt install wine winetricks
```

Install Additional Proprietary Graphics Drivers

Although Ubuntu provides open-source graphics drivers, proprietary graphics drivers perform orders of magnitude better than open-source graphics drivers.

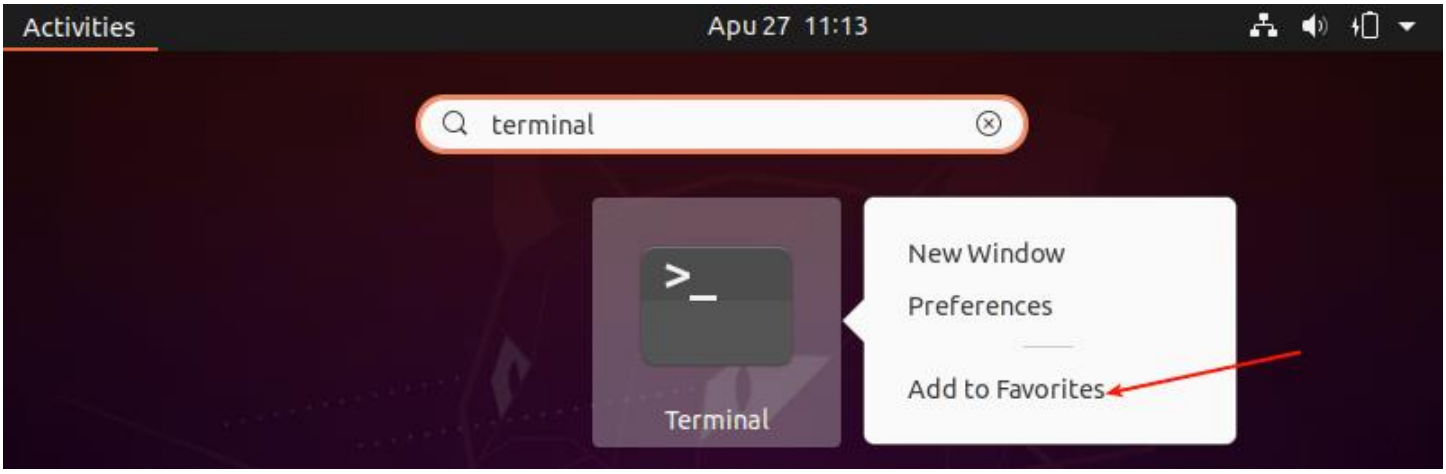
Unlike in earlier versions of Ubuntu, in Ubuntu 20.04, it is much easier to install proprietary graphics drivers without the need to enable third-party repositories or web downloads. Simply go to Software & Updates, then click on Additional Drivers.

First, the system will search for available drivers, when the search is complete, the list box will list each device for which proprietary drivers could be installed. After making your selections, click Apply Changes.



Add Your Favorite Apps to the Dock

To add your favorite applications to the Ubuntu Dock (which is situated on the left side of your desktop by default), click on the Activities overview, search for the application you want e.g terminal, then right-click on it and select Add to Favorites.



Install Laptop Power Saving Tools

If you are using a laptop, then you might want to install Laptop Mode Tools, a simple and configurable laptop power-saving tool for Linux systems. It helps to extend your laptop's battery life in so many ways. It also allows you to tweak some other power-related settings using a configuration file.

```
$ sudo apt install laptop-mode-tools
```

Install Timeshift

Timeshift is a useful backup utility that creates incremental snapshots of the file system at regular intervals. These snapshots can be used to restore your system to an earlier working state in case of disaster

```
$ sudo add-apt-repository -y ppa:teejee2008/ppa
$ sudo apt-get update
$ sudo apt-get install timeshift
```

Try Different Desktop Environments

Ubuntu distribution is not only restricted to Gnome, but it can also be used with different desktop environments such as cinnamon, mate, KDE and others.

To install cinnamon you can use the following command.

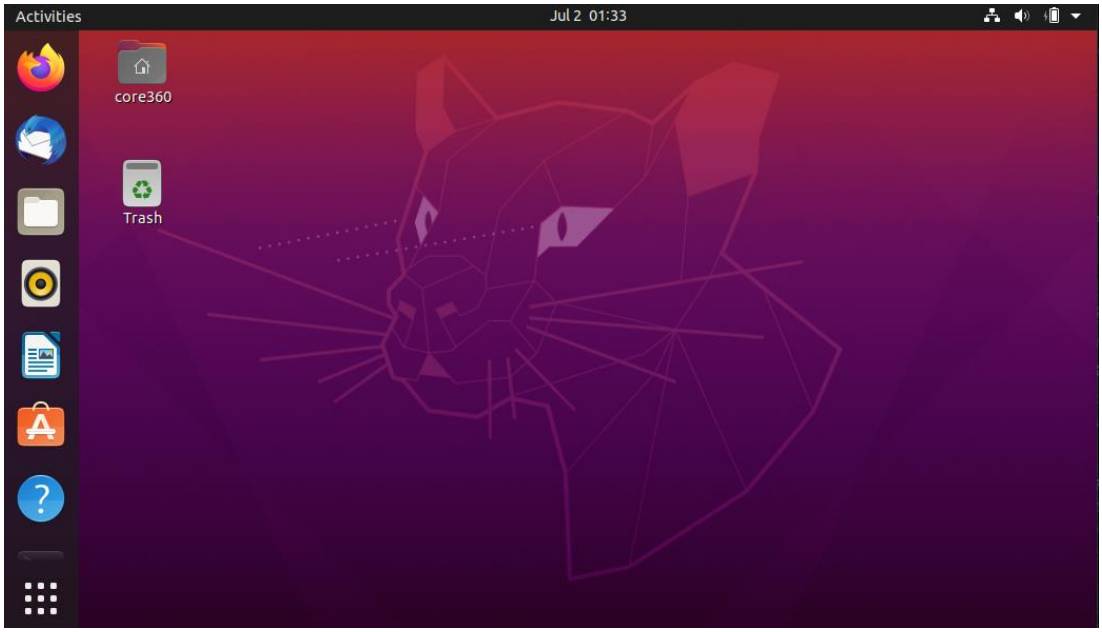
```
$ sudo apt-get install cinnamon-desktop-environment
```

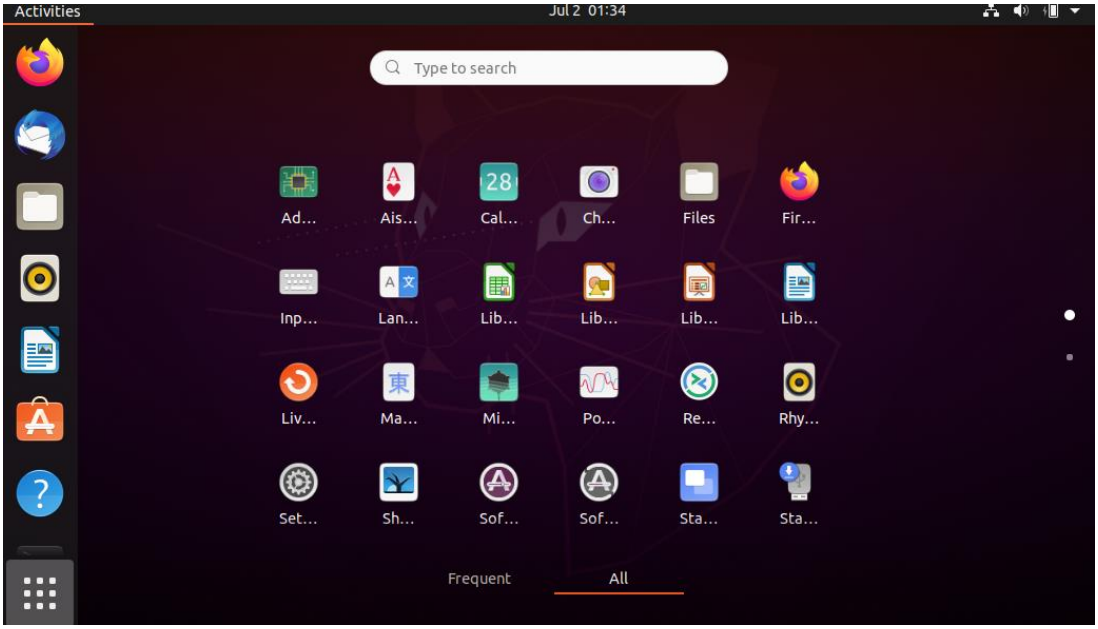
To install MATE, use the following command.

```
$ sudo apt-get install ubuntu-mate-desktop
```

Familiarization with the Ubuntu GNOME Desktop Environment

When you install **Ubuntu 20.04** it will come with the **default** GNOME 3.36 **desktop**.





Browsing files on your computer

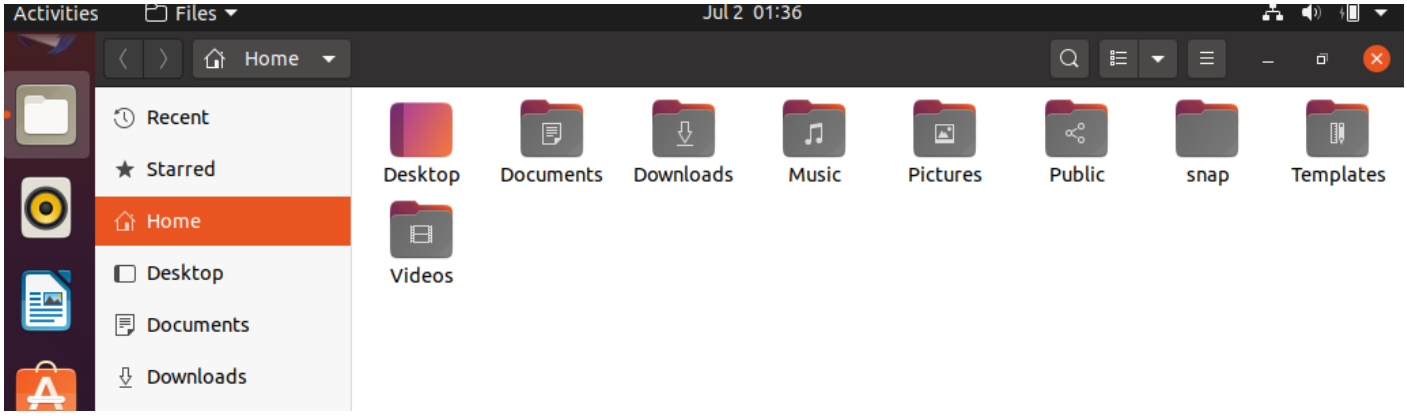
There are two ways to locate files on your computer—search for them or access them directly from their directory. You can search for a file using the Dash or the Files file manager. You can also use the Dash or Files file manager to access commonly used directories (such as Documents, Music, Downloads) as well as the most recently accessed files.

Your home directory

The home directory is used to store all of your personal files (rather than system files, such as applications). In Ubuntu, by default, the contents of your home directory are accessible for and can be read by other users who have an account on your PC.

The name of your home directory matches your login name and is created when your user account is created. When opening your personal directory, you will see a collection of several directories, including Desktop (which contains any files that are visible on the desktop), Documents, Downloads, Music, Pictures, Public, Templates, and Videos. These directories are created automatically during the installation process. You can add more files and directories as needed.

Files manager



Note: The left pane of the file browser has shortcuts to commonly used directories. You can also bookmark a directory through the menu bar by choosing

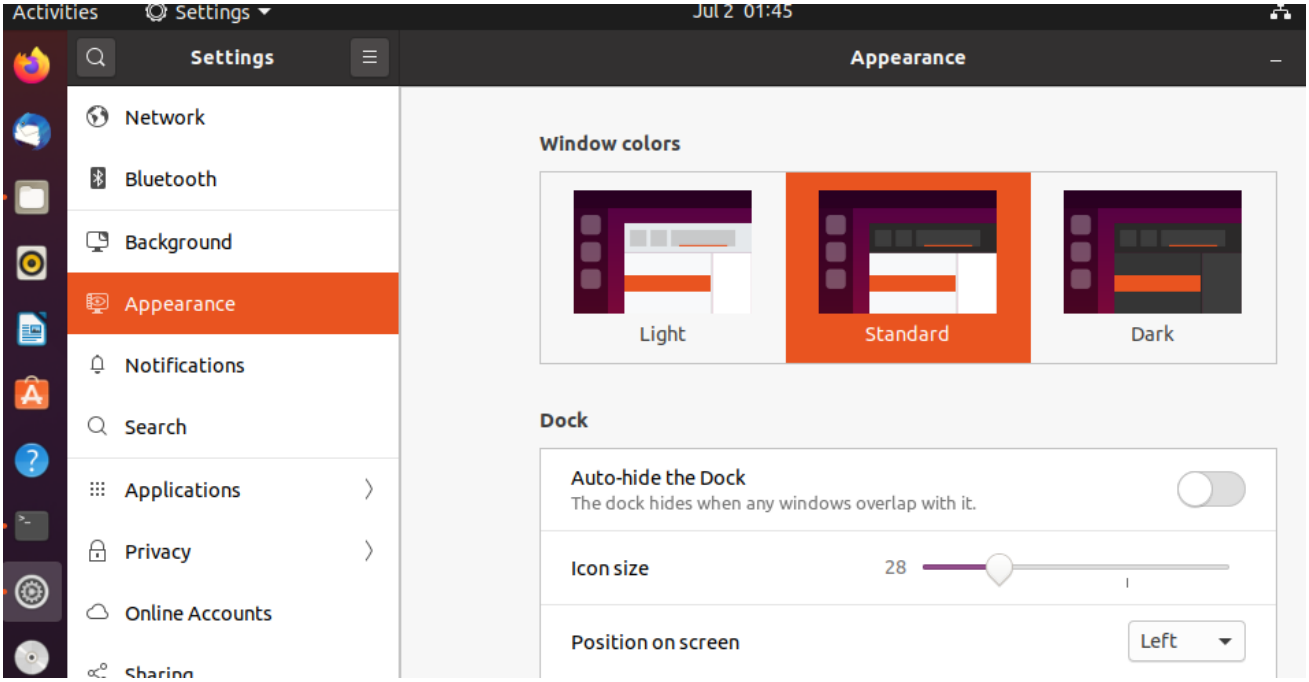
Bookmarks ‣ Bookmark this Location.

- ✓ Opening files
- ✓ Creating new directories
- ✓ Hidden files and directories

If you wish to hide certain directories or files, place a dot (.) in front of the name (e.g., ".Personal Finances"). In some cases, it is impossible to hide files and directories without prefixing them with a dot.

You can easily view hidden files by clicking View ‣ Show Hidden Files or by pressing Ctrl+H. Hiding files with a dot (.) is not a security measure—it is simply a way to help you organize your files.

Customizing your desktop



Session options

When you have finished working on your computer, you can choose to log out, suspend, Lock/Switch Account, restart, or shut down through the Session Indicator on the far right side of the top panel.

Note: You can lock your screen quickly by using the keyboard shortcut Ctrl+Alt+L.

Working with Ubuntu

Applications you might need

Office Suites
In Ubuntu you may choose among many office suites. The most popular suite is LibreOffice (formerly OpenOffice). Included in the suite:

- Writer: word processor
- Calc: spreadsheet
- Impress: presentation manager
- Draw: drawing program
- Base: database
- Math: equation editor

The LibreOffice Suite comes pre-installed with Ubuntu by default. Note that Base is not installed by default but can be installed through Ubuntu Software.

Other office productivity applications that you might want to try out are KOffice, Gnome Office (for older Ubuntu versions), Gnumeric (spreadsheet application), Kexi (database application), and so on.

Email Applications
One very popular email application is Mozilla Thunderbird, which is also available for Windows. Thunderbird is the default email application in Ubuntu. Other options include Evolution and KMail.

Web Browsers
The default web browser in Ubuntu is Firefox. Other browsers you may want to try out include Epiphany, Midori, Chromium, Opera*, and Google Chrome*.

PDF Readers
Evince is the default pdf reader in Ubuntu. Others include Okular and Adobe Reader*.

Multimedia Players
For multimedia, Ubuntu users have a wide variety of options for high quality players. While VLC is a perennial favorite among videophiles, the classic and user-friendly Totem is the default media player in Ubuntu. Other media players, most of which can be installed through Ubuntu Software, are: Media Player, SMPlayer, Parole Media Player, mpv Media Player, Tomahawk,
Internet DJ Console, KMPlayer, Banshee (an all-round media player), and Kaffeine (KDE).

Music Players and Podcatchers
There are several options for listening to music with Ubuntu: Rhythmbox (installed by default), Amarok, Audacity (also a sound editor), Miro (also a video player), VLC, and so on. These applications allow you to listen

to music and to your favorite podcasts. Amarok is similar to Winamp. Miro may be of use especially to those who watch video podcasts and tv shows
from the Internet. VLC is well known for its ability to play a very wide range of multimedia file formats.

CD/DVD Burning
There are several popular disk burning applications such as Gnome-baker, Brasero, SimpleBurn, cd burner, Xfburn, and K3b. These CD/DVD creation tools are powerful and offer user-friendly interfaces and numerous features.

Photo Management
The default image viewer application in Ubuntu is the Gnome Image viewer also known as Eye of Gnome of eog.

Graphics Editors
gimp is a very powerful graphics editor. You can create your own graphics, taper your photographs, and modify your pictures. Another useful Graphics Editor is Inkscape, which allows you to create and edit Scalable Vector Graphics images. Both gimp and Inkscape can be installed through Ubuntu Software.

Network Settings and Getting Online

Ubuntu can connect to the Internet using a wired, wireless, or dialup connection. Networking in Ubuntu is by default managed with the NetworkManager utility. NetworkManager allows you to turn network connections on or off, manage wired and wireless networks, and make other network connections, such as dialup, mobile broadband, and vpns. You can access NetworkManager by using its icon found in the top panel.

This icon may look different depending on your current connection state. Clicking this icon will reveal a list of available network connections. The current connections (if any) will have the word “disconnect” underneath. You can click on “disconnect” to manually disconnect from that network. This menu also allows you to view technical details about your current
connection or edit all connection settings.

Activity: Setting up IP Configuration

Browsing the web

Once you have connected to the Internet, you should be able to browse the web. Mozilla Firefox is the default application for this in Ubuntu.

Hardware

a. Using your devices and Hardware identification

There are various ways to identify your hardware in Ubuntu. The easiest would be to install an application from the Ubuntu Software application, called **Sysinfo**.

Keeping in line with Ubuntu’s philosophy, the drivers that are used by default for powering graphics devices are open source. This means that the drivers can be modified by the Ubuntu developers and problems with them can be fixed. However, in some cases a proprietary driver (restricted driver) provided by the company may

provide better performance or features that are not present in the open source driver. In other cases, your particular device may not be supported by any open source drivers yet. In those scenarios, you may want to install the restricted driver provided by the manufacturer.

For both philosophical and practical reasons, Ubuntu does not install restricted drivers by default but allows the user to make an informed choice. Remember that restricted drivers, unlike the open source drivers for your device, are not maintained by Ubuntu. Problems caused by those drivers will be resolved only when the manufacturer wishes to address them.

To see if restricted drivers are available for your system, go to System Settings, then open Software and Updates and go to the Additional Drivers tab. If a driver is provided by the company for your particular device, it will be listed there. You can choose the proprietary driver for your graphics card, then click on the Apply Changes button to enable the driver.

b. Displays

The majority of graphics cards are manufactured by three well-known companies: Intel, amd/ati, and nvidia Corp. Ubuntu comes with support for graphics devices manufactured by the above companies, and many others, out of the box. That means you don't have to find and install any drivers yourself, Ubuntu takes care of it all.

To set or check your screen resolution, go to
System Settings ‣ Displays

c. Connecting and using your printer

Ubuntu supports most new printers. You can add, remove, and change printer properties by navigating to System Settings ‣ Printers. You can also search for Printers from the Dash search bar. Opening Printers will display the "Printers-localhost" window. You can add a printer by clicking on the Add Printer button.

In the left hand pane of the "New Printer" window any printers that you can install will be listed. Select the printer that you would like to install and click Forward. You can now specify the printer name, description and location.

To add a network printer, make sure that your printer is connected to your network either with an Ethernet cable or via wireless, and that it is turned on. You can add a printer by opening Printers, and then clicking the Add button. The "New Printer" window will open. Click on the small triangle next to Network Printer.

If your printer is found automatically it will appear under Network Printer. Click the printer name and then click Forward. In the text fields you can now specify the printer name, description and location.

You can also add your network printer by entering the ip address of the printer. Select "Find Network Printer," enter the ip address of the printer in the box that reads Host: and press the Find button. Ubuntu will find the printer and add it. Most printers are detected by Ubuntu automatically. If Ubuntu cannot detect the printer automatically, it will ask you to enter the make and model number of the printer.

d. Sound

Ubuntu usually detects the audio hardware automatically during installation. Audio in Ubuntu is provided by a sound server named PulseAudio. The audio preferences are easily configurable with the help of a very easy to use gui which comes preinstalled with Ubuntu.

e. Using a webcam

Webcams often come built into laptops and netbooks. Some desktops, such as Apple iMacs, have webcams built into their displays. If you purchase a webcam because your computer doesn't have its own, it will most likely have a usb connection. To use a usb webcam, plug it into any empty usb port of your desktop.

Almost all new webcams are detected by Ubuntu automatically. You can configure webcams for individual applications such as Skype and Empathy from the application's setup menu. For webcams which do not work right away with Ubuntu, visit https://wiki.ubuntu.com/Webcam for help.

There are several applications which are useful if you have a webcam. Cheese can capture pictures with your webcam and VLC media player can capture video from your webcam. You can install these from the Ubuntu Software application.

f. Scanning text and images

Scanning a document or an image is very simple in Ubuntu. Scanning is handled by the application Simple Scan. Most of the time, Ubuntu will simply detect your scanner and you should just be able to use it. To scan a document, follow these steps:
1. Place what you want to scan on the scanner.
2. Click to open the Dash and enter scan.
3. Click on Simple Scan.
4. Click to choose between Text or Photo from Document ‣ Scan ‣ Text.
5. Click Scan.
6. Click the Paper Icon to add another page.
7. Click Save to save.

You can save the scanned documents and pictures in jpeg. You can also save in pdf format to enable opening in Acrobat Reader. To do that, add the extension .pdf at the end of the filename.

g. Keyboard and mouse

Keyboard

The keyboard is likely to be one of the main ways that you interact with your computer. Unfortunately not all keyboards are uniform in design; they can differ by country, by language or appearance. In Ubuntu 16.04, the default language set for the keyboard now appears as an applet menu right next to the Network Manager icon. Clicking on the keyboard applet menu
will show you what is the default language set for the keyboard and also enable you to access three options:
1. Character Map
2. Keyboard Layout
3. Text Entry Settings….

Mouse and Touchpad

A mouse is another mode of input and goes hand in hand with the keyboard. Ubuntu supports all types of plug and play mice, including touchpads and trackballs. If you are planning to use a mouse with your laptop, just plug it in and Ubuntu will recognize it instantly. There is a settings menu under

System Settings ‣ Mouse and Touchpad

where you can change the mouse settings such as double-click speed, pointer speed and left handed or right handed clicks. If you are using touchpad on your laptop/netbook you can also increase the sensitivity of your touchpad. You can also enable horizontal, edge scrolling and two finger scrolling on your laptop/netbook.

h. Other devices

USB

USB ports are available as standard on almost all computers available now. They are used to connect a multitude of devices to your computer. These could include portable hard drives, flash drives, removable cd/dvd/Blu-ray drives, printers, scanners and mobile phones.

When connected, flash drives and portable hard drives are automatically detected—the file manager will open and display the contents of the drive. You can then use the drives for copying data to and from the computer.

All new cameras, camcorders and mobile phone sd cards are automatically detected by Ubuntu. These sd cards have different types of data, so a window will appear with a drop-down menu to choose between video, audio import and the file manager—you can choose your desired action from this menu.

Firewire

Firewire is a connection on some computers that allows you to transfer data from devices. This port is generally used by camcorders and digital cameras.

If you want to import video from your camcorder you can do so by connecting your camcorder to the Firewire port. You will need to install a program called Kino which is available in Ubuntu Software.

Bluetooth

Bluetooth is a wireless technology that is widely used by different types of devices to connect to each other. It is common to see a mouse or a keyboard that supports Bluetooth. You can also find gps devices, mobile phones, headsets, music players and many other devices that can connect to your
desktops or laptop and let you transfer data, listen to music, or play games as an example.

If your computer has Bluetooth support then you should be able to see a Bluetooth icon on the top panel, usually on the left side of the volume icon. If you click on the Bluetooth icon it will open a drop down menu with choices to Turn on/off Bluetooth, to Turn on/off visibility of the device, setup access to a Bluetooth device and also access Bluetooth settings.

The Bluetooth preferences can also be accessed from
System Settings ‣ Bluetooth

If you want to connect (pair) a new device—for example, to have a mobile phone send pictures or videos to your computer—click on the Bluetooth icon on the top panel and select Setup new device….

Software Management

a. Software management in Ubuntu

Ubuntu and various other Linux variants use a collection of software tools called a package management system, or package manager. A package manager is a collection of tools that make installing, deleting, upgrading, and configuring software easy. A package management system has a database of software called a repository where individual software is arranged into a collection called a package. These packages, apart from the software, contain important information about the software itself, such as the software's name, description, version, name of the vendor, and a list of various dependencies upon which the software relies for proper installation.

Most other operating systems require a user to purchase commercial software (online or through a physical store) or search the Internet for a free alternative (if one is available). The correct installation file must then be verified for integrity, downloaded, and located on the computer, followed by the user proceeding through a number of installation prompts and options. A package management system removes the user interaction from these steps and automates most, if not all, of the installation process.

Ubuntu comes with a package management system called Advanced Packaging Tool or apt.

By default, Ubuntu provides a centralized point with two different ways to browse the repositories for searching, installing, and removing software.

- The Ubuntu Software application
- Command line apt-get

Ubuntu Software makes searching, installing, and/or removing applications easy and convenient; it is most often the application management system used by both beginning and expert Ubuntu users. We highly recommend Ubuntu Software for searching, installing, and removing applications, although you can still use the command-line application apt-get or install and use the advanced application Synaptic Package Manager. Since software in Ubuntu is delivered in the form of packages, software installation becomes a one-click, one-step process when using the Ubuntu Software application.

b. Using the Ubuntu Software Center

In Ubuntu, the quickest and easiest way to find and install new applications is through Ubuntu Software. Ubuntu Software is your very own store-front and gives you instant access to thousands of great applications. Some of these applications are free to download whereas others are available commercially. Each application within Ubuntu Software comes with ratings and reviews making it easier for you to decide which of the applications you want to install.

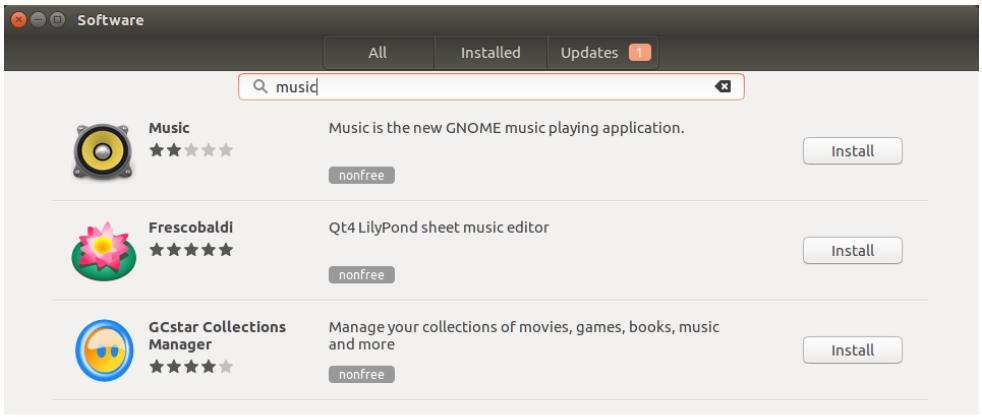
To start Ubuntu Software, click on its icon in the Launcher, or click on the Dash and search for Ubuntu Software.

Note: In Ubuntu 16.04, Ubuntu Software Center is replaced by GNOME Software which has been renamed as Ubuntu Software. Ubuntu Software Center can still be installed optionally via Ubuntu Software.

Installing software

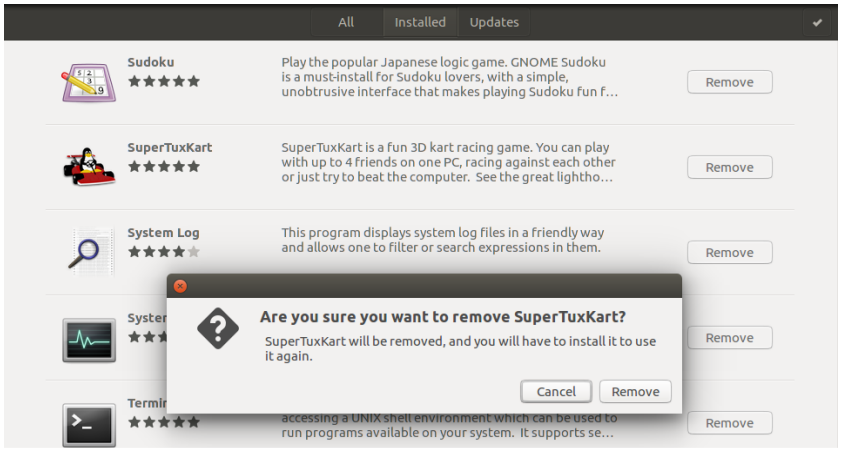
Once you have found an application you would like to try, installing it is just one click away. To install software:

1. Click the Install button.
2. After clicking Install, enter your password into the authentication window.
3. Wait until the package is finished installing.



Removing software

Removing applications is very similar to installing software. First, find the installed software in Ubuntu Software. You can click on the Installed button to see all installed software listed in alphabetic order. Scroll down to the application you wish to remove, then click on the Remove button.

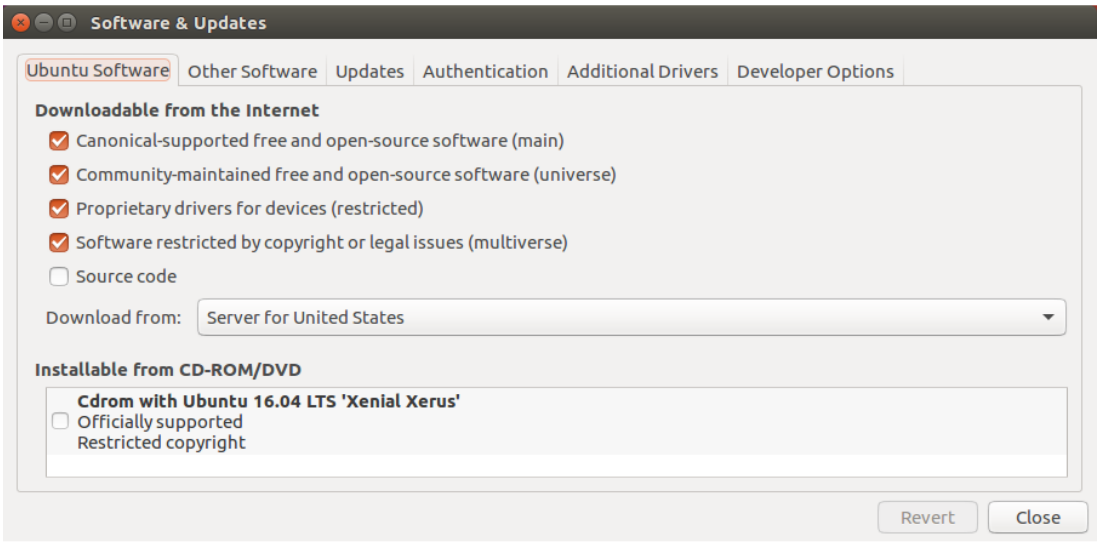


c. Managing additional software

Although Ubuntu Software provides a large library of applications from which to choose, you may be interested in a particular application not available in these repositories. It is important to understand alternative methods for accessing and installing software in Ubuntu, such as downloading an installation file manually from the Internet, or adding extra repositories.

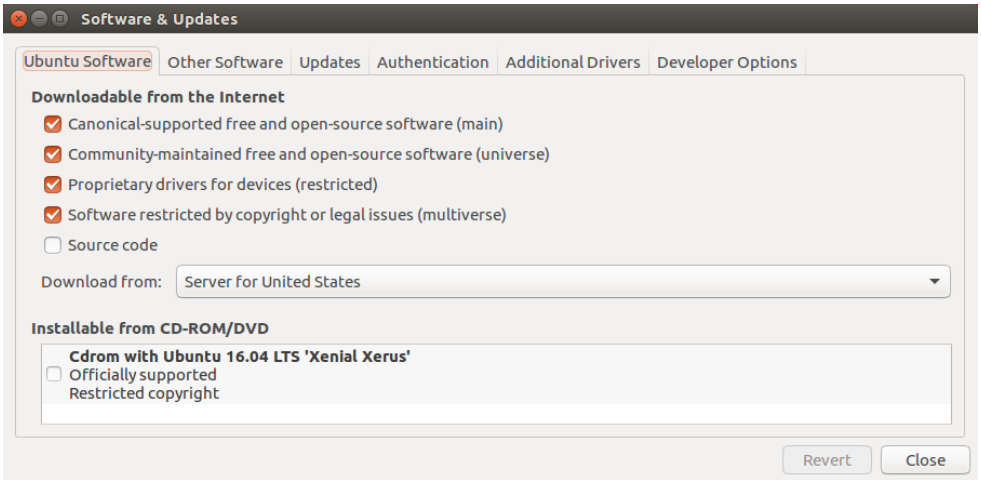
Software Sources

Ubuntu Software lists only those applications that are available in your enabled repositories. Repositories can be added or removed through the Software & Updates application. To open Software & Updates, simply open System Settings and click on Software & Updates in the System section.



Managing the official repositories

When you open Software & Updates, you will see the Ubuntu Software tab where the first four options are enabled by default.



Canonical-supported free and open-source software (main)
This repository contains all the open-source packages maintained by Canonical.

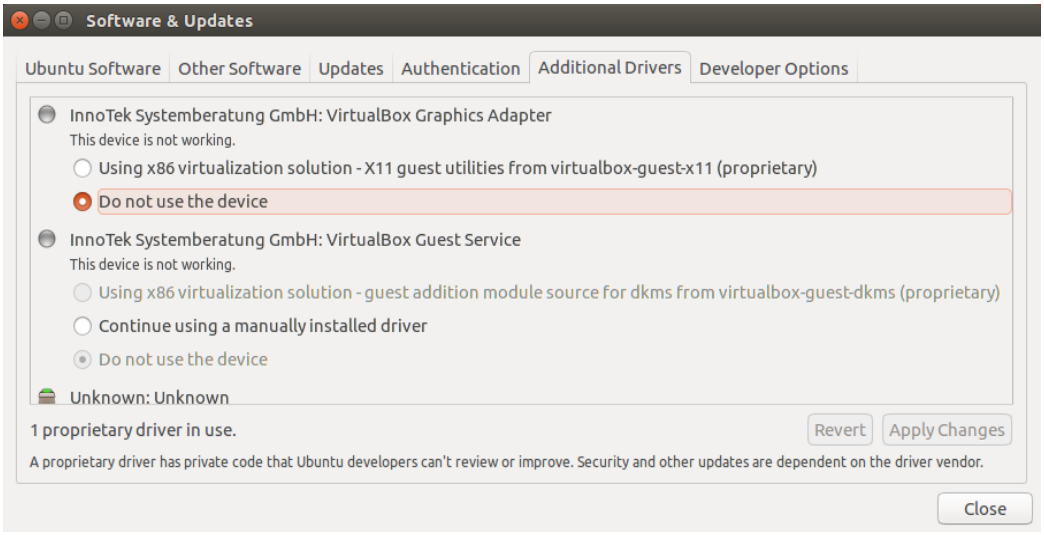
Community-maintained free and open-source software (universe)
This repository contains all the open-source packages developed and maintained by the Ubuntu community.

Proprietary drivers for devices (restricted)
This repository contains proprietary drivers which may be required to utilize the full capabilities of some of your devices or hardware.

Software restricted by copyright or legal issues (multiverse)
This repository contains software possibly protected from use in some states or countries by copyright or licensing laws. By using this repository, you assume responsibility for the usage of any packages that you install.

Source code
This repository contains the source code used to build software packages from some of the other repositories. Building applications from source is an advanced process for creating packages, and usually only concerns developers. The Source code option should not be selected
unless you have experience with building applications from source.

Note: Drivers can be installed or removed via the Additional Drivers application.



d. Manual software installation

Although Ubuntu has extensive software available, you may want to manually install a software package not available in the repositories. If no ppa (Personal Package Archive) , additional third-party repositories to your list of software sources, exists for the software, you will need to install it manually. Before you choose to do so, make sure you trust the package and its maintainer.

Packages in Ubuntu have a .deb extension.

Double-clicking a package will open an overview page in Ubuntu Software which will give you more information about that package. The overview provides technical information about that package, a website link (if applicable), and the option to install. Clicking Install will install the package just like any other installation in Ubuntu Software.

e. Updates and upgrades

Ubuntu also allows you to decide how to manage package updates through the Updates tab in the Software & Updates window.

Ubuntu updates

In this section, you are able to specify the kinds of updates you wish to install on your system. The type of update usually depends upon your preferences with regards to system stability versus having access to the latest developments.

Important security updates

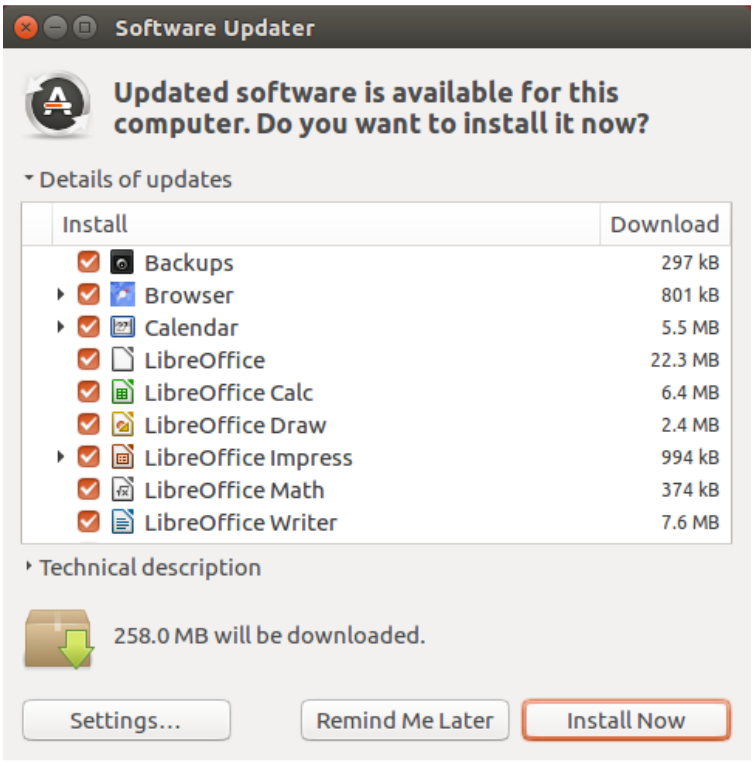
These updates are highly recommended to ensure your system remains as secure as possible. These updates are enabled by default.

Recommended updates

These updates are not as important in keeping your system secure. Rather, updates listed in this section will keep your software updated with the most recent bug fixes or minor updates that have been tested and approved. This option is also enabled by default.

Unsupported updates

These are updates that have not yet been fully tested and reviewed by Canonical. Some bugs may occur when using these updates, and so this option is also not enabled by default.



Automatic updates

The middle section of this window allows you to customize how your system manages updates, such as the frequency with which it checks for new packages, as well as whether it should install important updates right away (without asking for your permission), download them only, or just notify you about them.

Release upgrade

At the bottom of the Updates tab in the Software & Updates window, you will see a dropdown box labeled Notify me of a new Ubuntu version:. This option allows you to tell Ubuntu how you would like to handle release updates.

This dropdown box contains the following options for notification:

Never

Choose this option if you would rather not be notified about any new Ubuntu releases.

For any new version

Choose this option if you always want to have the latest Ubuntu release, regardless of whether it is a long-term support release or not. This option is recommended for normal home users.

For long-term support versions

Choose this option if you need a release that will be more stable and have support for a longer time. If you use Ubuntu for business purposes, you may want to consider selecting this option.

Canonical will release a new version of the Ubuntu operating system every six months. Almost every release is a normal release. However, every fourth release—or every 2 years—Canonical releases a long-term support (lts) version of the operating system. Long-term support releases are intended to be the most stable releases available and are supported for a longer period of time. Ubuntu 16.04 is an LTS release. Ubuntu 16.10 will be a normal release.

Advanced Topics

Introduction to the terminal

You can perform most day-to-day activities without ever needing to open the terminal. However, the terminal is a powerful and invaluable tool that can be used to perform many useful tasks you might not be able to accomplish with a GUI. For example:

‣ Troubleshooting any difficulties that may arise when using Ubuntu sometimes requires you to use the terminal.
‣ A command-line interface is sometimes a faster way to accomplish a task. For example, it is often easier to perform operations on many files concurrently using the terminal.
‣ Learning the command-line interface is the first step towards more advanced troubleshooting, system administration, and software development skills. If you are interested in becoming a developer or an advanced Ubuntu user, knowledge of the command-line is essential.

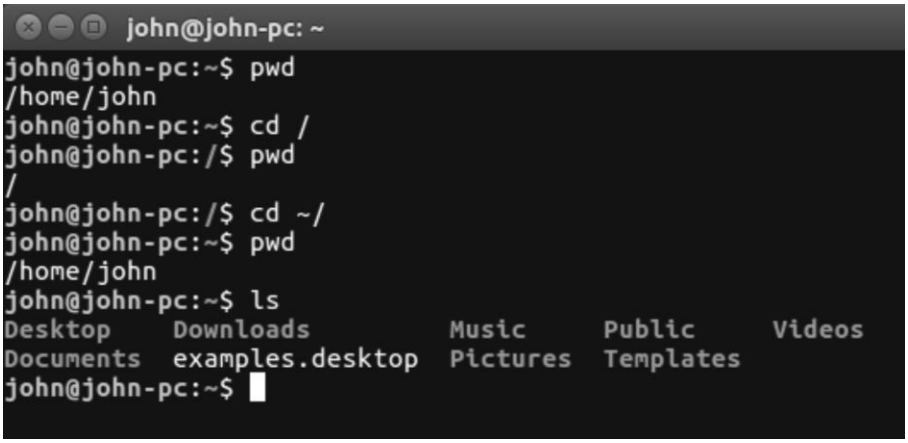
Opening the terminal
You can open the terminal by clicking Dash then searching for word “term”. You’ll see an application named terminal. Click on this application to open a terminal. Alternatively, you can open the terminal by hitting Ctrl+Alt+T simultaneously.

The terminal gives you access to what is called a shell. When you type a command in the terminal, the shell interprets this command, resulting in the desired action. Different types of shells accept slightly different commands.

The most popular is called “bash,” and is the default shell in Ubuntu. When the terminal window opens, it will be largely blank with the exception of some text at the top left of the screen, followed by a blinking block, known as a cursor. This text is your prompt—it displays, by default, your login name and your computer’s name, followed by the current directory.

The tilde (~) means that the current directory is your home directory. Finally, the blinking block is called the cursor—this marks where text will be entered as you type.

To test a terminal command, type pwd and press Enter. The terminal should display /home/yourusername. This text is called the “output.” You have just used the pwd (print working directory) command, which outputs (displays) the current directory.



Running basic terminal commands

1. sudo
This SuperUserDo is the most important command Linux newbies will use. Every single command that needs root's permission, need this sudo command. You can use sudo before each command that requires root permissions -
$ sudo su

2. ls (list)
Just like the other, you often want to see anything in your directory. With list command, the terminal will show you all the files and folders of the directory that you're working in. Let's say I'm in the /home folder and I want to see the directories & files in /home.
/home$ ls

ls in /home returns the following -
imad lost+found

3. cd
Changing directory (cd) is the main command that always be in use in terminal. It's one of the most Linux basic commands. Using this is easy. Just type the name of the folder you want to go in from your current directory. If you want to go up just do it by giving double dots (..) as the parameter.

Let's say I'm in /home directory and I want to move in usr directory which is always in the /home. Here is how I can use cd commands -
/home $ cd usr

Returns:
/home/usr $

4. mkdir
Just changing directory is still incomplete. Sometimes you want to create a new folder or subfolder. You can use mkdir command to do that. Just give your folder name after mkdir command in your terminal.
~$ mkdir folderName

5. cp

copy-and-paste is the important task we need to do to organize our files. Using cp will help you to copy-and-paste the file from terminal. First, you determine the file you want to copy and type the destination location to paste the file.
$ cp source destination

Note: If you're copying files into the directory that requires root permission for any new file, then you'll need to use sudo command.

6. rm
rm is a command to remove your file or even your directory. You can use -f if the file need root permission to be removed. And also you can use -r to do recursive removal to remove your folder.
$ rm myfile.txt

7. apt-get
This command differs distro-by-distro. In Debian based Linux distributions, to install, remove and upgrade any package we've Advanced Packaging Tool (APT) package manager. The apt-get command will help you installing the software you need to run in your Linux. It is a powerful command-line tool which can perform installation, upgrade, and even removing your software.

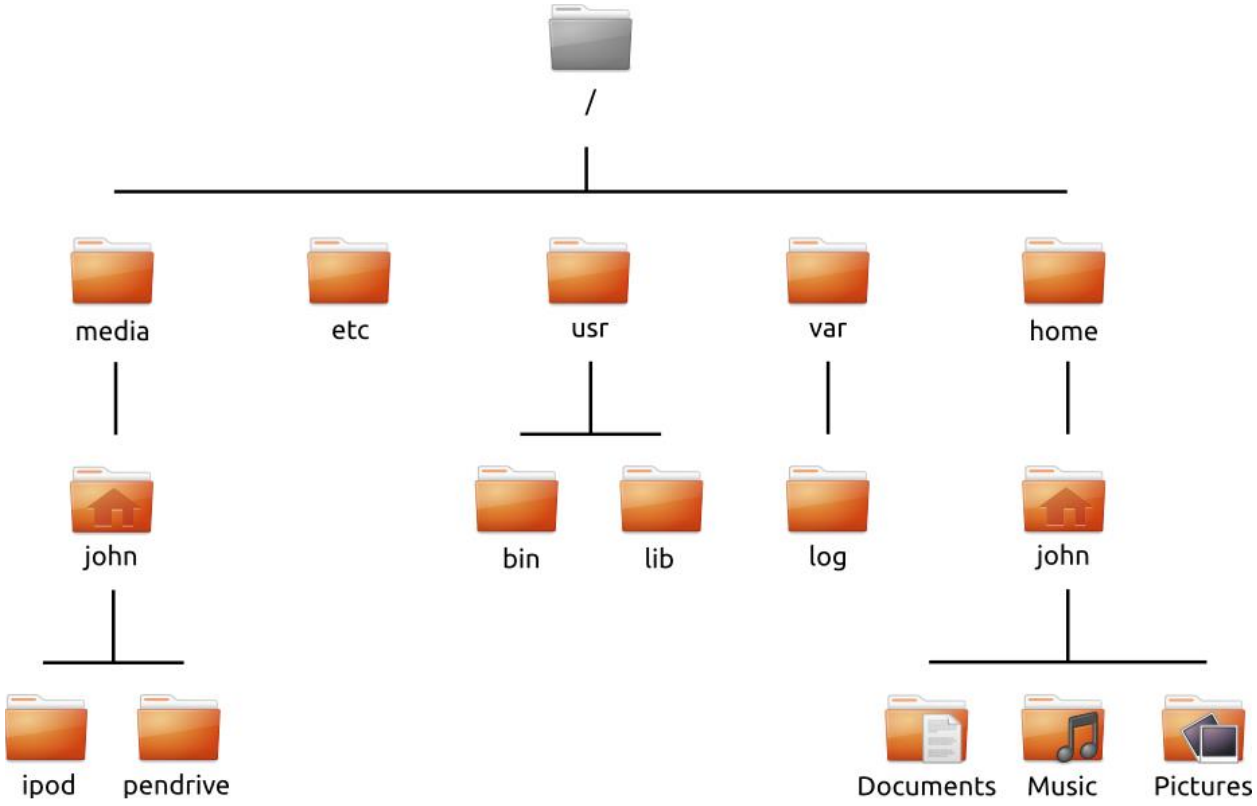
In other distributions, such as Fedora, Centos there are different package managers. Fedora used to have yum but now it has dnf.
$ sudo apt-get update
$ sudo dnf update

8. grep
You need to find a file but you don't remember its exact location or the path. grep will help you to solve this problem. You can use the grep command to help finding the file based on given keywords.
$ grep user /etc/passwd

9. cat
As a user, you often need to view some of text or code from your script. Again, one of the Linux basic commands is cat command. It will show you the text inside your file.
$ cat CMakeLists.txt

10. poweroff
And the last one is poweroff. Sometimes you need to poweroff directly from your terminal. This command will do the task. Don't forget to add sudo at the beginning of the command since it needs root permission to execute poweroff.
$ sudo poweroff

Ubuntu file system structure



<u>Below the root directory are the following essential directories:</u>

/bin and /sbin	Many essential system applications (equivalent to C:\Windows).
/etc	System-wide configuration files.
/home	Each user will have a subdirectory to store personal files (for example, /home/yourusername) which is equivalent to C:\Users or C:\Documents and Settings in Microsoft Windows.
/lib	Library files, similar to .dll files on Windows.
/media	Removable media (cd-roms and usb drives) will be mounted in this directory.
/root	This contains the root user's files (not to be confused with the root directory).
/usr	Pronounced "user," it contains most program files (not to be confused with each user's home directory). This is equivalent to C:\Program Files in Microsoft Windows.
/var/log	Contains log files written by many applications.

Every directory has a path. The path is a directory's full name—it describes a way to navigate the directory from anywhere in the system.

For example, the directory /home/yourusername/Desktop contains all the files that are on your Ubuntu desktop. It can be broken down into a handful of key pieces:

- /—indicates that the path starts at the root directory
- home/—from the root directory, the path goes into the home directory
- yourusername/—from the home directory, the path goes into the yourusername directory
- Desktop—from the yourusername directory, the path ends up in the Desktop directory

Every directory in Ubuntu has a complete path that starts with the / (the root directory) and ends in the directory's own name.

Directories and files that begin with a period are hidden. These are usually only visible with a special command or by selecting a specific option.

In the Files file manager, you can show hidden files and directories by selecting the Show Hidden Files option in the View menu. Hidden files can also be shown by simply pressing Ctrl+H in the Files file manager. If you are using the terminal, then you would type **ls -a** and press Enter to see the hidden files and directories. There are many hidden directories in your home folder used to store program preferences. For example, /home/yourusername/.thunderbird stores preferences used by the Thunderbird mail application.

Mounting and unmounting removable devices

Any time you add storage media to your computer—an internal or external hard drive, a usb flash drive, a cd-rom—it needs to be mounted before it is accessible. Mounting a device means to associate a directory name with the device, allowing you to navigate to the directory to access the device's files.

When a device, such as a usb flash drive or a media player, is mounted in Ubuntu, a folder is automatically created for it in the media/yourusername directory, and you are given the appropriate permissions to be able to read and write to the device.

Most file managers will automatically add a shortcut to the mounted device in the side bar of your home folder or as a shortcut directly on the desktop so that the device is easily accessible. You shouldn't have to physically navigate to the media directory in Ubuntu unless you choose to do so from the command line.

When you've finished using a device, you can unmount it. Unmounting a device disassociates the device from its directory, allowing you to eject it. If you disconnect or remove a storage device before unmounting it, you may lose data.

Securing Ubuntu

Ubuntu is secure by default for a number of reasons:

- Ubuntu clearly distinguishes between normal users and administrative users.
- Software for Ubuntu is kept in a secure online repository containing no false or malicious software.
- Open-source software like Ubuntu allows security flaws to be easily detected.
- Security patches for open-source software like Ubuntu are often released quickly.
- Many viruses designed to primarily target Windows-based systems do not affect Ubuntu systems.

Basic security concepts

a. Permissions

In Ubuntu, files and folders can be set up so that only specific users can view, modify, or run them. For instance, you might wish to share an important file with other users, but do not want those users to be able to edit the file. Ubuntu controls access to files on your computer through a system of "permissions." Permissions are settings configured to control exactly how files on your computer are accessed and used.

b. Passwords

You should use a strong password to increase the security of your computer. Your password should not contain names, common words, or common phrases. By default, the minimum length of a password in Ubuntu is four characters. We recommend a password with more than the minimum number of characters. A password with a minimum of eight characters which includes both upper and lower case letters, numbers, and symbols is considered strong.

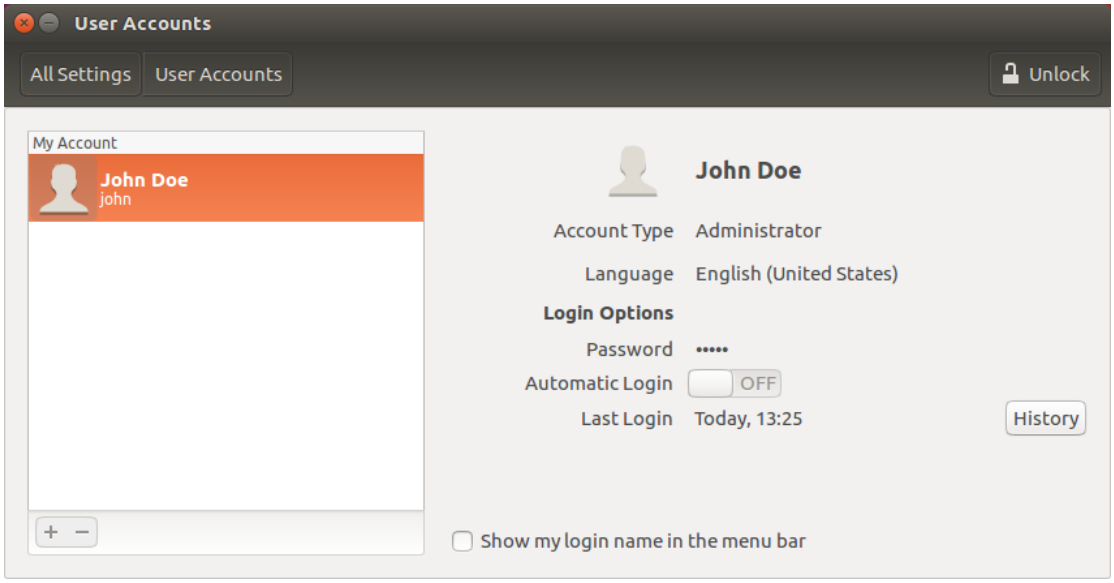
c. Users and groups

User accounts

When Ubuntu is installed, it is automatically configured for use by a single user. If more than one person will use the computer, each person should have his or her own user account. This way, each user can have separate settings, documents, and other files. If necessary, you can also protect files from being viewed or modified by users without administrative privileges.

Like most operating systems, Ubuntu allows you to create separate user accounts for each person. Ubuntu also supports user groups, which allows you to administer permissions for multiple users at the same time.

Every user in Ubuntu is a member of at least one group. At a bare minimum, the user of the computer has permissions in a group with the same name as the user. A user can also be a member of additional groups. You can configure some files and folders to be accessible only by a user and a group. By default, a user's files are only accessible by that user, and system files are only accessible by the root user.



Managing users

If the account you are using is an administrator account, you can manage users and groups using the Users and Groups administration application. To find this application, click

Session Indicator ‣ System Settings… ‣ User Accounts.

Then click the Unlock button and enter your password to unlock the user settings. Next, select the user that you want to modify from the list. Then click on the element that you want to change.

Adding a user

Click the + button underneath the list of the current user accounts. A window will appear with three fields. The Account Type field contains a list of user account types. Take care in determining what type of account to assign a user.

An Administrator has full access to all areas of Ubuntu, whereas the Standard account type is more limited. The Full Name field contains a friendly display name. The Username field is for the actual username. As you enter the user's full name, the Username field will automatically fill with a lowercase, no space version of the user's full name. If you prefer to use a different username for this user, highlight the existing username and type in the username of your choice. Once all fields are filled in, click Add.

The new user will be added to the list of user accounts. New accounts are disabled by default. To enable an account, click the Account disabled field next to the Password label. A new window will appear allowing you to set the password for the new user.

At the top of the new window is a dropdown menu next to the label Action. By default, the "set a password now" option will be automatically selected. You may also choose "log in without a password", however, this is not advised as the account will be available to anyone. The final option, "enable this account" is available once a password has been set. Using this option allows an administrator to enable or disable an account without losing the password.

Ubuntu provides a way to create a secure password by clicking the gears button located inside of the New password field. A random sequence of numbers, letters, and symbols will be entered into this field. You can also simply enter a password of your choosing by entering it into the New password field. Then, re-enter this same password into the space next to Confirm password.

Modifying a user

Click on the name of a user in the list of users, then click on the text entry next to any of the following options:

- Account type:
- Language:
- Password:
- Automatic Login:

You may also change the username by clicking on the username at the top and entering a new name.

Deleting a user
Select a user from the list and click (-). Ubuntu will deactivate the user's account, and you can choose whether to remove the user's home folder or leave it in place. If a user is removed and the user's files remain, the only user who can access the files are the root user—also known as the superuser—or anyone associated with the file's group.

Managing groups
Group management is accomplished through the command line (Terminal) or by adding third-party applications. You will find more information in the section below titled "Using the command line".

Adding a group
To add a group, type **sudo addgroup groupname** and press Enter, replacing groupname with the name of the group you wish to add. For example, **sudo addgroup ubuntuusers** will add the group ubuntuusers to the list of groups.

Modifying a group
To alter the users in an existing group, type **sudo adduser username groupname** to add a user, or **sudo deluser username groupname** to remove a user, and press Enter, replacing username and groupname in these commands with the actual user and group name with which you're working.

Deleting a group
To delete a group, type **sudo delgroup groupname** and press Enter, replacing groupname with the name of the group you wish to delete.

Applying groups to files and folders
To change the group associated with a file or folder, open the Files file manager and navigate to the appropriate file or folder. Then, either select the menu Files and choose Properties, or right-click on the file or folder and select Properties. In the Properties dialog window, click on the Permissions tab and select the desired group from the Groups drop-down list. Then close the window.

Using the command line
You can also modify user and group settings via the command line, but we recommend you use the graphical method above unless you have a good reason to use the command line.

d. System updates

Good security happens with an up-to-date system. Ubuntu provides free software and security updates. You should apply these updates regularly.

e. Firewall

A firewall is an application that protects your computer against unauthorized access by people on the Internet or your local network. Firewalls block connections to your computer from unknown sources. This helps prevent security breaches.

Uncomplicated Firewall (ufw) is the standard firewall configuration program in Ubuntu. It runs from the command line, but a program called Gufw allows you to use it with a graphical user interface gui.

Once Gufw is installed, start Gufw by clicking
Dash ‣ Applications ‣Firewall configuration.

To enable the firewall, select the Enable option. By default, all incoming connections are denied. This setting should be suitable for most users.

If you are running server software on your Ubuntu system (such as a web server, or an ftp server), then you will need to open the ports these services use. If you have no need to run any server applications or services, you will likely not need to open any additional ports. To open a port click on the Add button. For most purposes, the Preconfigured tab is sufficient. Select Allow from the first box and then select the program or service required.

The Simple tab can be used to allow access on a single port, and the Advanced tab can be used to allow access on a range of ports.

f. Encryption

You may wish to protect your sensitive personal data—for instance, financial records—by encrypting it. Encrypting a file or folder essentially "locks" that file or folder by encoding it with an algorithm that keeps it scrambled until it is properly decoded with a password. Encrypting your personal data ensures that no one can open your personal folders or read your private data without your authorization through the use of a private key.

Home folder
When installing Ubuntu, it is possible to encrypt a user's home folder during Ubuntu OS installation.

Private folder
If you have not chosen to encrypt a user's entire home folder, it is possible to encrypt a single folder—called Private—in a user's home folder. To do this, follow these steps:

1. In the terminal, install the **ecryptfs-utils** software package using the command **sudo apt install ecryptfs-utils**.
2. Use the terminal to run **ecryptfs-setup-private** to set up the private folder.
3. Enter your account's password when prompted.
4. Either choose a mount passphrase or generate one.
5. Record both passphrases in a safe location. These are required if you ever have to recover your data manually.
6. Log out and log back in to mount the encrypted folder. After the Private folder has been set up, any files or folders in it will automatically be encrypted.

If you need to recover your encrypted files manually see
https://help.ubuntu.com/community/EncryptedPrivateDirectory

g. Running Windows Programs on Ubuntu

As many Windows users will know, some programs that you can use on a Windows system cease to work on Ubuntu. For example, LibreOffice works on both Windows and Ubuntu systems, but Microsoft Office works only on a Windows system. Since many Windows users who use Ubuntu want all of their Windows programs back, many programmers have worked together to create Wine.

Wine is an acronym for "Wine Is Not an Emulator".

Wine is a background application that allows Linux and OS X users to install and run Windows programs on their system. While not every Windows program is compatible with Wine, many programs seem to be completely compatible with Wine while running on Linux or OS X. For example, Microsoft Office may not be compatible without installing additional components (such as Microsoft.NET Framework 4.0).

Installing Wine

1. Open the terminal and type: sudo apt-add-repository ppa:ubuntuwine/ppa. This will install the Official Wine ppa.
2. After the terminal has finished installing the Wine ppa, type: **sudo apt update**. This will update the ppa list.
3. Once the terminal has finished refreshing the ppa list, type: **sudo apt install -y wine1.8 winetricks**. This will install Wine 1.8.2 and Winetricks. Winetricks is a software center for Wine, and is, in most cases, optional.

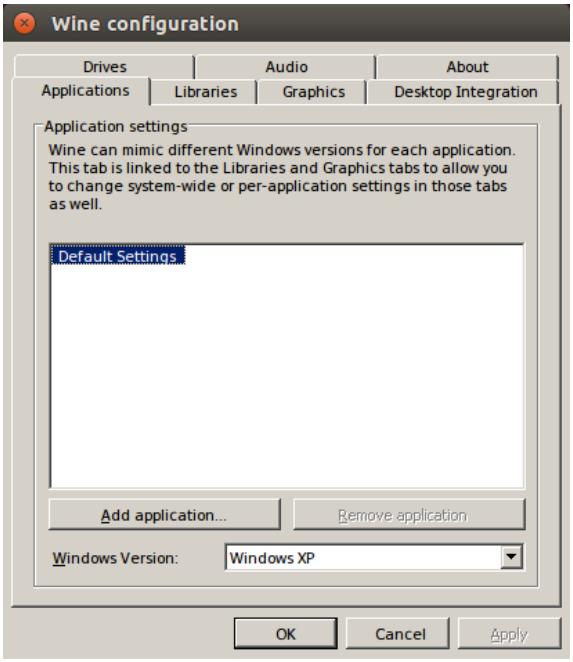
Configuring Wine

Wine 1.8.2 contains many features that will change the look and feel of the Windows applications you are trying to run. For example, you can change the theme of the Windows interface, and what version of Windows you would like to run (from Windows 2.0 to Windows 8).

To change these settings, open the Dash and search for Configure Wine. Then, open the application. You may see a dialog asking you to install the packages Mono and Wine Gecko. You can either press the Install button, or go to the Wine website for details.

Application Tab

In the Application tab, you can change the way Wine runs applications. Some Windows programs work only for specific versions of Windows. This feature allows you to change the version of Windows Wine will run as for a specific application, or for all of them to run under one version.



Libraries Tab
In the Libraries tab, you can change core Windows files, to suit your needs. Many Windows programs install dll files, or Dynamic Link Libraries. These files contain all of the information needed for an application to work on a Windows system. Many dll files are needed for a Windows system to run, and are different between versions of Windows.

In this feature, you may edit or replace existing dll files. This allows you to change the Windows System files, to suit you needs.

Graphics Tab
In the Graphics tab, you can change the look and feel of how Wine runs. You can make Wine emulate a Virtual Desktop (this feature opens a new window that will contain any Windows application that is currently running while this option is in effect), how the applications look, and what resolution to run the application in.

Desktop Integration Tab
In the Desktop Integration tab, you can change the way buttons, menus, and other elements appear in an application. Each version of Windows has brought its own unique visual style for its applications.
In this feature, you can install and change the applied theme. In this tab, you can also change major file folders. For example, while using Ubuntu, your picture folder is located at /home/user/Pictures/ but in Windows, your picture folder is located at C:\Documents and Settings\User\My Documents\My Pictures\ or C:\Users\User\My Pictures\. This feature allows you tell Wine where your folders are, for quick reference.

Drives Tab
In the Drives tab, you can manage the connected drives that Wine will be able to access. Unlike Ubuntu, Windows applies a Drive Letter to each drive. This letter identifies the drive. For example, on every Windows system, the C: drive is the core drive. It contains all of the needed files for the operating system to work. The C: drive is the equivalent to root (File System, or /) in Ubuntu. This feature allows you to change the drive letters for any drive, or add a drive letter for a specific folder in your file system, or for a cd drive.

Audio Tab
In the Audio tab, you can change the audio settings. This feature allows you to change the audio source that Wine will use for Windows applications (speakers, microphones, etc.).

About Tab
In the About tab, you can see the current Wine version you have installed, including Wine's note to all users. This feature also allows you to add a Name and Company Name to the Windows information. Applications use this information to identify you by name.

Microsoft .NET Framework and Wine
Microsoft has created many programs that are needed to run commonly used applications, Microsoft .NET Framework being the most common. .NET Framework is needed to run most of the newer applications created by Microsoft, and by other companies as well. Wine is not fully supported by
all versions of .NET, but is compatible with most versions.

Here is a list of .NET versions, and their compatibility with Wine:

- .NET Framework 1.0
- .NET Framework 1.1
- .NET Framework 2.0
- .NET Framework 3.0
- .NET Framework 3.5
- .NET Framework 4.0
- .NET Framework 4.5

  * * This framework has known issues running under Wine and is, in most cases, installable and stable enough to use for most applications.

- .NET Framework 4.5.1**

  ** This framework has not been tested using a current version of Wine running on Ubuntu, so it is unknown if it will be compatible or not. Use at your own risk.

- .NET Framework 4.5.2**

  For more compatibility information about installing and running Microsoft.NET Framework using Wine, go to: http://appdb.winehq.org/objectManager.php?sClass=application&iId=2586.

Troubleshooting Common Problems

Ubuntu fails to start

Ubuntu fails to start after I've installed Windows Occasionally you may install Ubuntu and then decide to install Microsoft Windows as a second operating system running side-by-side with Ubuntu. This is supported in Ubuntu, but you might also find after installing Windows that you will no longer be able to start Ubuntu.

When you first turn on your computer, a "bootloader" is responsible for initiating the start of an operating system, such as Ubuntu or Windows. A bootloader is the initial software that loads the operating system when the computer is powered up.

When you installed Ubuntu, you automatically installed an advanced bootloader called grub. grub allows you to choose between the various operating systems installed on your computer, such as Ubuntu, Windows, Solaris, or OS X. If Windows is installed after Ubuntu, the Windows installation removed grub and replaced the bootloader with it's own. As a result, you can no longer choose an operating system to use. You can restore grub and regain the ability to choose your operating system by following the steps below, using the same dvd you used to install Ubuntu.

First, insert your Ubuntu dvd into your computer and then restart the computer, making sure to instruct your computer to boot from the dvd drive and not the hard drive. Next, choose your language (e.g., English) and select Try Ubuntu. Once Ubuntu starts, click on the top-most icon in the Launcher (the Dash icon). Then, search for Terminal using the search box. Then, select Terminal in the search results (or press Ctrl+Alt+T).

A window should open with a blinking prompt line.

Enter the following, and press the Enter key:
$ sudo fdisk -l

Disk /dev/hda: 120.0 GB, 120034123776 bytes
255 heads, 63 sectors/track, 14593 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1		1	1224	64228+	83	Linux
/dev/sda2	*	1225	2440	9767520	a5	Windows
/dev/sda3		2441	14593	97618972+	5	Extended
/dev/sda4		14532	14593	498015	82	Linux swap

Partition table entries are not in disk order

This output shows that your system (Linux, on which Ubuntu is based) is installed on device /dev/sda1, but as indicated by the asterisk in the Boot column, your computer is booting to /dev/sda2 (where Windows is located). We need to fix this by telling the computer to boot to the Linux device instead.

To do this, create a place to connect your existing Ubuntu installation with your temporary troubleshooting session:

$ sudo mkdir /mnt/root

Next, link your Ubuntu installation and this new folder:
$ sudo mount /dev/sda1 /mnt/root

If you've done this correctly, then you should see the following:
$ ls /mnt/root
bin dev home lib mnt root srv usr
boot etc initrd lib64 opt sbin sys var
cdrom initrd.img media proc selinux tmp vmlinuz

Now, you can reinstall grub:
$ sudo grub-install --root-directory=/mnt/root /dev/sda

Installation finished. No error reported.
This is the contents of the device map /boot/grub/device.map.
Check if this is correct or not. If any of the lines is incorrect, fix it and re-run the script grub-install.
(hd0) /dev/sda

Next you'll want to unmount the hard drive. This ensures that the drive won't become corrupted when you reboot:
$ sudo umount /mnt/root

Finally, remove the Ubuntu disc from your dvd-rom drive, reboot your computer, and then start enjoying your Ubuntu operating system once again.

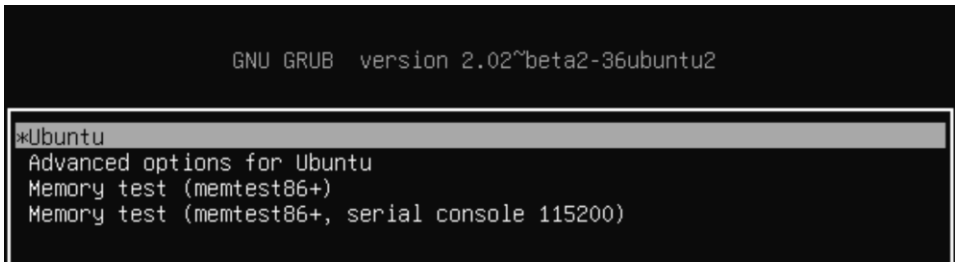
This guide may not work for all Ubuntu users due to differences in the various system configuration. Still, this is the recommended and most successful method for restoring the grub bootloader. If you are following this guide and if it does not restore grub on your computer, then try the other troubleshooting methods at

https://help.ubuntu.com/community/RecoveringUbuntuAfterInstallingWindows.

I forgot my password

If you forgot your password in Ubuntu, you will need to reset it using the "Recovery mode."
To start the Recovery mode, shut down your computer and then start again. As the computer starts up, press Shift. Select the Recovery mode option using the arrow keys on your keyboard. Recovery mode should be under the heading Advanced Options in the list.

Wait until Ubuntu starts up—this may take a few minutes. Once booted, you will not be able to see a normal login screen. Instead, you will be presented with the Recovery Menu. Select root using the arrow keys and press Enter.



You will now be at a terminal prompt:
root@ubuntu:~#

Mount / remount your filesystem:
 # mount -rw -o remount /

To reset your password, enter:
 # passwd username

Replace "username" above with your username, after which Ubuntu will prompt you for a new password. Enter your desired password, press the Enter key, and then re-type your password again, pressing Enter again when done. (Ubuntu asks for your password twice to make sure you did not make a mistake while typing).

Once you have restored your password, return to the normal system environment by entering:
 # init 2

Login as usual and continue enjoying Ubuntu.

I accidentally deleted some files that I need

If you've deleted a file by accident, you may be able to recover it from Ubuntu's Trash folder. This is a special folder where Ubuntu stores deleted files before they are permanently removed from your computer.

To access the Trash folder click on the trash icon at the bottom of the Unity Launcher.
If you want to restore deleted items from the Trash:
1. Open Trash
2. Click on each item you want to restore to select it. Press and hold Ctrl to select multiple items.
3. Click Restore to move the deleted items back to their original locations.

How do I clean Ubuntu?

Ubuntu's software packaging system accumulates unused packages and temporary files through regular updates and use. These temporary files, also called caches, contain files from all of the installed packages. Over time, this cache can grow quite large. Cleaning out the cache allows you to reclaim space on your computer's hard drive for storing your documents, music, photographs, or other files.

To clear the cache, you can either use the clean, or the autoclean option for the command-line program apt-get.

To run clean, open Terminal and enter: The clean command will remove every single cached item, while the autoclean command only removes cached items that can no longer be downloaded (these items are often unnecessary).
$ sudo apt-get clean

Packages can also become unused over time. If a package was installed to assist with running another program—and that program was subsequently removed—you no longer need the supporting package. You can remove it with apt-get autoremove. Load Terminal and enter:
$ sudo apt-get autoremove

I can't play certain audio or video files

Many of the formats used to deliver rich media content are proprietary, meaning they are not free to use, modify, or distribute with an open-source operating system like Ubuntu. Therefore, Ubuntu does not include the capability to use these formats by default; however, users can easily configure Ubuntu to use these proprietary formats.

Ubuntu is not working properly on my Apple MacBook or MacBook Pro

When installed on notebook computers from Apple—such as the MacBook or MacBook Pro—Ubuntu does not always enable all of the computer's built-in components, including the iSight camera and the Airport wireless

Internet adapter. Luckily, the Ubuntu community offers documentation on fixing these and other problems. If you are having trouble installing or using Ubuntu on your Apple notebook computer, please follow the instructions at

https://help.ubuntu.com/community/MacBook.

You can select the appropriate guide after identifying your computer's model number.

Ubuntu is not working properly on my Asus EeePC

When installed on netbook computers from Asus—such as the EeePC—Ubuntu does not always enable all of the computer's built-in components, including the keyboard shortcut keys and the wireless Internet adapter.

The Ubuntu community offers documentation on enabling these components and fixing other problems. If you are having trouble installing or using Ubuntu on your Asus EeePC, please follow the instructions at

https://help.ubuntu.com/community/EeePC

This documentation page contains information pertaining specifically to EeePC netbooks.

To enable many of the features and Function Keys, a quick fix is to add
"acpi_osi=Linux" to your grub configuration.

From the Terminal
$ gksudo gedit /etc/default/grub

and very carefully change the line
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash"
to
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash acpi_osi=Linux"

Save and close the file. Then, from the terminal:
$ sudo update-grub

After the command finishes, and you restart the computer, you will be able to use the Fn keys normally.

My hardware is not working properly

Ubuntu occasionally has difficulty running on certain computers, usually when hardware manufacturers use non-standard or proprietary components.

The Ubuntu community offers documentation to help you troubleshoot many common issues in this situation, including problems with wireless cards, scanners, mice, and printers. You can find the complete hardware troubleshooting guide on Ubuntu's support wiki, accessible at
https://wiki.ubuntu.com/HardwareSupport

16. The Ubuntu community

Live chat
If you are familiar with Internet Relay Chat (irc), you can use chat clients such as XChat or Pidgin to join the channel #ubuntu on irc.freenode.net. In this channel, hundreds of volunteer users can answer your questions or offer technical support in real time. To learn more about using Internet Relay Chat to seek help with Ubuntu, visit https://help.ubuntu.com/community/InternetRelayChat.

LoCo teams
The Ubuntu community contains dozens of local user groups called "LoCo teams." Distributed throughout the world, these teams offer support and advice, answer questions, and promote Ubuntu in their communities by hosting regular events. To locate or contact the LoCo team nearest you, visit http://loco.ubuntu.com/

The Ubuntu Forums
The Ubuntu Forums are the official forums of the Ubuntu community. Millions of Ubuntu users use them daily to seek help and support from one another. You can create an Ubuntu Forums account in minutes. To create an account and learn more about Ubuntu from community members, visit
http://ubuntuforums.org

Launchpad Answers
Launchpad, an open source code repository and user community, provides a question and answer service that allows anyone to ask questions about any Ubuntu-related topic. Signing up for a Launchpad account takes just a few seconds. You can ask a question by visiting Launchpad at
https://answers.launchpad.net/ubuntu.

Ask Ubuntu
Ask Ubuntu is a free, community-driven website for Ubuntu users and developers. Like the Ubuntu Forums, it allows users to post questions for other members of the Ubuntu community to answer. But Ask Ubuntu also allows visitors to "vote" on the answers users provide, so the most useful or helpful responses get featured more prominently on the site. Ask Ubuntu is part of the Stack Exchange network of websites and is one of the best free Ubuntu support resources available. Visit http://www.askubuntu.com to get started.

The Ubuntu community
http://www.ubuntu.com/support/community

Ubuntu is the flagship product created by a global community of passionate users who want to help others adopt, use, understand, and even modify or enhance Ubuntu. By choosing to install and run Ubuntu, you've become part of this community. As you learn more about Ubuntu, you may wish
to collaborate with others as you promote Ubuntu to new users, to share Ubuntu advice, or to answer other users' questions. In this section, we'll discuss a few community projects that can connect you to other Ubuntu users.

Full Circle Magazine
Full Circle Magazine is "the independent magazine for the Ubuntu Linux community." Released every month, Full Circle Magazine contains reviews of new software (including games) for Ubuntu, step-by-step tutorials for projects you can accomplish with Ubuntu, editorials discussing important issues in the Ubuntu community, and Ubuntu tips from other users. Full Circle Magazine is released in many different formats and is always free. You can download current and back issues of Full Circle Magazine at
http://fullcirclemagazine.org/

Other Helpful Ubuntu Terminal Commands:

Privileges

sudo *command* – run *command* as root
sudo -s – open a root shell
sudo -s -u *user* – open a shell as *user*
sudo -k – forget sudo passwords
gksudo *command* – visual sudo dialog (GNOME)
kdesudo *command* – visual sudo dialog (KDE)
sudo visudo – edit /etc/sudoers
gksudo nautilus – root file manager (GNOME)
kdesudo konqueror – root file manager (KDE)
passwd – change your password

Display

sudo /etc/init.d/gdm restart – restart X and return to login (GNOME)
sudo /etc/init.d/kdm restart – restart X and return to login (KDE)
(file) **/etc/X11/xorg.conf** – display configuration
sudo dexconf – reset xorg.conf configuration
Ctrl+Alt+Bksp – restart X display if frozen
Ctrl+Alt+F*N* – switch to tty *N*
Ctrl+Alt+F7 – switch back to X display

System Services[1]

start *service* – start job *service* (Upstart)
stop *service* – stop job *service* (Upstart)
status *service* – check if *service* is running (Upstart)
/etc/init.d/*service* start – start *service* (SysV)
/etc/init.d/*service* stop – stop *service* (SysV)
/etc/init.d/*service* status – check *service* (SysV)
/etc/init.d/*service* restart – restart *service* (SysV)
runlevel – get current runlevel

Package Management[1]

apt-get update – refresh available updates
apt-get upgrade – upgrade all packages
apt-get dist-upgrade – upgrade with package replacements; upgrade Ubuntu version
apt-get install *pkg* – install *pkg*
apt-get purge *pkg* – uninstall *pkg*
apt-get autoremove – remove obsolete packages
apt-get -f install – try to fix broken packages
dpkg --configure -a – try to fix broken packages
dpkg -i *pkg.deb* – install file *pkg.deb*
(file) **/etc/apt/sources.list** – APT repository list

Network

ifconfig – show network information
iwconfig – show wireless information
sudo iwlist scan – scan for wireless networks
sudo /etc/init.d/networking restart – reset network for manual configurations
(file) **/etc/network/interfaces** – manual configuration
ifup *interface* – bring *interface* online
ifdown *interface* – disable *interface*

Special Packages

ubuntu-desktop – standard Ubuntu environment
kubuntu-desktop – KDE desktop
xubuntu-desktop – XFCE desktop
ubuntu-minimal – core Ubuntu utilities
ubuntu-standard – standard Ubuntu utilities
ubuntu-restricted-extras – non-free, but useful
kubuntu-restricted-extras – KDE of the above
xubuntu-restricted-extras – XFCE of the above
build-essential – packages used to compile programs
linux-image-generic – latest generic kernel image
linux-headers-generic – latest build headers

Firewall[1]

ufw enable – turn on the firewall
ufw disable – turn off the firewall
ufw default allow – allow all connections by default
ufw default deny – drop all connections by default
ufw status – current status and rules
ufw allow *port* – allow traffic on *port*
ufw deny *port* – block *port*
ufw deny from *ip* – block *ip* adress

Application Names

nautilus – file manager (GNOME)
dolphin – file manager (KDE)
konqueror – web browser (KDE)
kate – text editor (KDE)
gedit – text editor (GNOME)

System

Recovery - Type the phrase "REISUB" while holding down Alt and SysRq (PrintScrn) with about 1 second between each letter. Your system will reboot.
lsb_release -a – get Ubuntu version
uname -r – get kernel version
uname -a – get all kernel information